

AGRINOVUS

Velocity

# FOOD IS HEALTH

## PROBLEM STATEMENT

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Accelerate innovation focused on driving increased access to food, improving middle-mile logistics to gain efficiencies, or unlock the power of food at the production and/or molecular level to positively impact healthier lives, communities and environment.

## AGRINOVUS RESOURCES

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*Accelerate 2050: A Vision for Indiana Agbioscience* identifies Indiana’s economic performance across food, animal health, plant science, agtech and production agriculture and defines priority opportunities to position Indiana’s agbioscience economy for differentiated growth amid future uncertainty. According to the study, Indiana’s three key opportunities include: farmer-focused innovation, food is health and bioinnovation.

[Download the full report here.](#)

## Food is Health

The Food is Health opportunity encompasses three complementary aspects aligned to the ecosystem's desire to nurture an agrifood system that creates healthier lives, communities, and environment: (1) accelerating food-focused research and commercialization at the intersection of plant, animal, human, and environment health; (2) enabling farmers to diversify production into horticulture crops and supply regional food economies; and (3) growing the value-added food-manufacturing base to address emerging consumer food interests (e.g., personalized nutrition, nutrient density, macronutrient profiles, functional foods) and improve human health outcomes. Together, the components of this opportunity unlock the power of food at the molecular, raw-product, and processed-goods levels.

**Indiana has the opportunity to drive innovation at the intersection of plant, animal, human, and environmental health, recognizing food as the nexus of these domains, to create both economic growth and improved health outcomes.**

## Opportunity in Context

Food is emerging as a central focus in the Indiana agbioscience ecosystem, with consumers increasingly recognizing the impact of their food choices on personal, community, and environmental health. At the same time, scientific advances and emerging technology platforms (e.g., microbiome engineering) create a high potential for intersectional innovation that capitalizes on the similarities in underlying biology and sector challenges.

Also, Indiana agbioscience GDP is poised for further growth if the state can more concertedly translate the outputs of its sizable agricultural production platform into inputs for an expanded value-added food and nutrition platform. Many food companies are shifting toward natural ingredients and exploring new product-development approaches. Others are deepening relationships with farmers and investing in their transition to regenerative agricultural practices to reduce supply chain risks and meet sustainability commitments. Indiana is well-positioned to emerge as a Food is Health leader, with efforts spanning upstream intersectional research to strengthened regional food economies bolstered by diversified agricultural production and an expanded based of value-added food companies.

## Critical Components to Capture the Opportunity

- **Dedicated leadership** to prioritize cross-sector collaboration and to mobilize their respective organizations to maintain support for shared ecosystem goals
- **Common discovery platforms with corresponding data-sharing agreements** that pool resources and enable discoveries relevant to plant, animal, human, and environmental health
- **Shared spaces and convening organizations** (e.g., networks, shared projects, QUADRANT events) that create collision opportunities by bringing people together on broad and focused cross-sector topics
- **Multidisciplinary research teams** that can identify opportunities and discover novel solutions at the intersection of traditionally siloed scientific domains and industries
- **Enabling incentives and structures that promote collaboration** across the food value chain and with adjacent industries such as pharmaceuticals; nutraceuticals; health care; and medical technology, which may include joint initiatives or co-funded activities
- **Focused efforts to build homegrown or recruit value-added food companies** that align with the Food is Health opportunity
- **Deepened understanding of local food demand and regional agrifood systems**, including ways to shorten food supply chains by better connecting local agricultural production and value addition with communities' food needs
- **High-level support and incentives for crop diversification** among state agencies, commodity groups, and other key agricultural sector leaders who can influence policies, resourcing, and other support for regional and local food systems



## Indiana Strengths to Build Upon

In addition to the strengths identified in the Current State section (pages 11–19), the following are opportunity-specific strengths from which Indiana is well-positioned to build:

- **Presence of industry leaders in plant, animal, and human health.** Indiana is home to major companies across the full spectrum of plant, animal, and human health (e.g., Eli Lilly and Company, Elanco, Corteva, Elevance Health).
- **Indiana’s new One Health Innovation District.** The recently announced One Health Innovation District aims to be a “globally recognized research innovation district dedicated to optimizing the health of people, animals, plants and the planet.”<sup>14</sup>
- **Strong research universities.** Indiana is home to three R1 research universities: Purdue University, Indiana University Bloomington (IU), and University of Notre Dame. Purdue University ranks 11th nationally for animal science majors and IU School of Medicine ranks 13th among all U.S. public medical schools in funding from the National Institutes of Health.<sup>15,16</sup>
- **Growing food science and food-manufacturing base.** Leveraging the availability of local source materials and its proximity to other regional agricultural producers, Indiana continues to support the recruitment and expansion of a variety of food manufacturers such as Clif Bar, Kraft Heinz, and Mission Foods.
- **Foundations for growth in food innovation.** Purdue’s Food Science Technology program ranks fourth nationally, and the Food Science Extension program aids Indiana food entrepreneurs and food and beverage companies with everything from food safety to preservation and packaging.<sup>17</sup>
- **Financial support for specialty crop expansion and food systems infrastructure.** Indiana state government offers block grants for specialty crop expansion that could be expanded and embedded in a broader crop diversification strategy.<sup>18</sup> It also offers grants to improve food supply resilience in the middle of the food chain.<sup>19</sup>

**The Indianapolis One Health Innovation District will serve as a place where “innovators will find a vast ecosystem of support—including one of the world’s leading universities, funding, lab space, collaboration with many other innovators and companies—and most significantly, shared technical development and pilot plant facilities to manufacture and scale innovations.”**

—Jeff Simmons, CEO Elanco

## What might success look like?



**Ecobiome** spins out of Indiana’s plant-animal-human health joint venture in 2038.

Ecobiome’s multidisciplinary R&D team used AI advances to map genetic pathways in soil, plant, livestock, and humans when they discovered commonalities across digestion, immunity, hormonal signaling, and more. These cellular- and molecular-level insights gave way to their flagship platform, SymbioSync, which optimizes soil microbial solutions for health outcomes across the entire food value chain. SymbioSync’s proprietary platform mapped vitamin absorption pathways in the human body and subsequently designed soil strains that upregulate the expression of plant’s endogenous genes to create more nutrient-dense fruits and vegetables with enhanced absorption.

*This is a hypothetical, fictional company.*

## Recommended Ecosystem Actions for Food is Health

Indiana is uniquely positioned to become a global leader in innovation at the intersection of plant, animal, human, and planetary health. Successfully advancing the Food is Health opportunity will depend on the combined efforts of multiple partners, as the scope of this opportunity extends beyond what any single organization can accomplish independently. For Indiana agbioscience to advance this opportunity area and drive economic growth through Food is Health, RTI recommends the following next steps for the ecosystem:

**Define and prioritize more-specific focus areas within Food is Health.** Differentiating Indiana within the broader Food is Health opportunity will require clarifying and establishing traction in specific focus areas. Finding and prioritizing these focus areas should involve diverse ecosystem stakeholders and involves four steps:

**Explore potential focus areas within Food is Health.** Food is Health touches many industry sectors and cross-cutting research and commercialization areas. Mapping the landscape of intersection between food and the agbioscience innovation platforms will clarify potential focus areas within Food is Health. Monitor other ecosystems pursuing intersectional Food is Health type strategies to ensure differentiation.

**Identify Indiana-specific resources and assets aligned with potential focus areas.** Innovating at intersections requires connecting and convening existing assets and building new ones. Build a fresh and data-driven understanding of the breadth of Indiana's food-related assets within each potential focus area.

**Align ecosystem stakeholders on Indiana's differentiated research and commercialization priorities within Food is Health.** Prioritization will drive intentionality and focus to prevent Food is Health from becoming all-encompassing and difficult to communicate or execute.

**Coordinate resources, action plans, and messaging around focus areas.** Chosen focus areas may overlap with other Indiana initiatives or ecosystem actors. A critical role of an ecosystem convener like AgriNovus will be to ensure that related initiatives collaborate rather than duplicate efforts in pursuit of the goal.

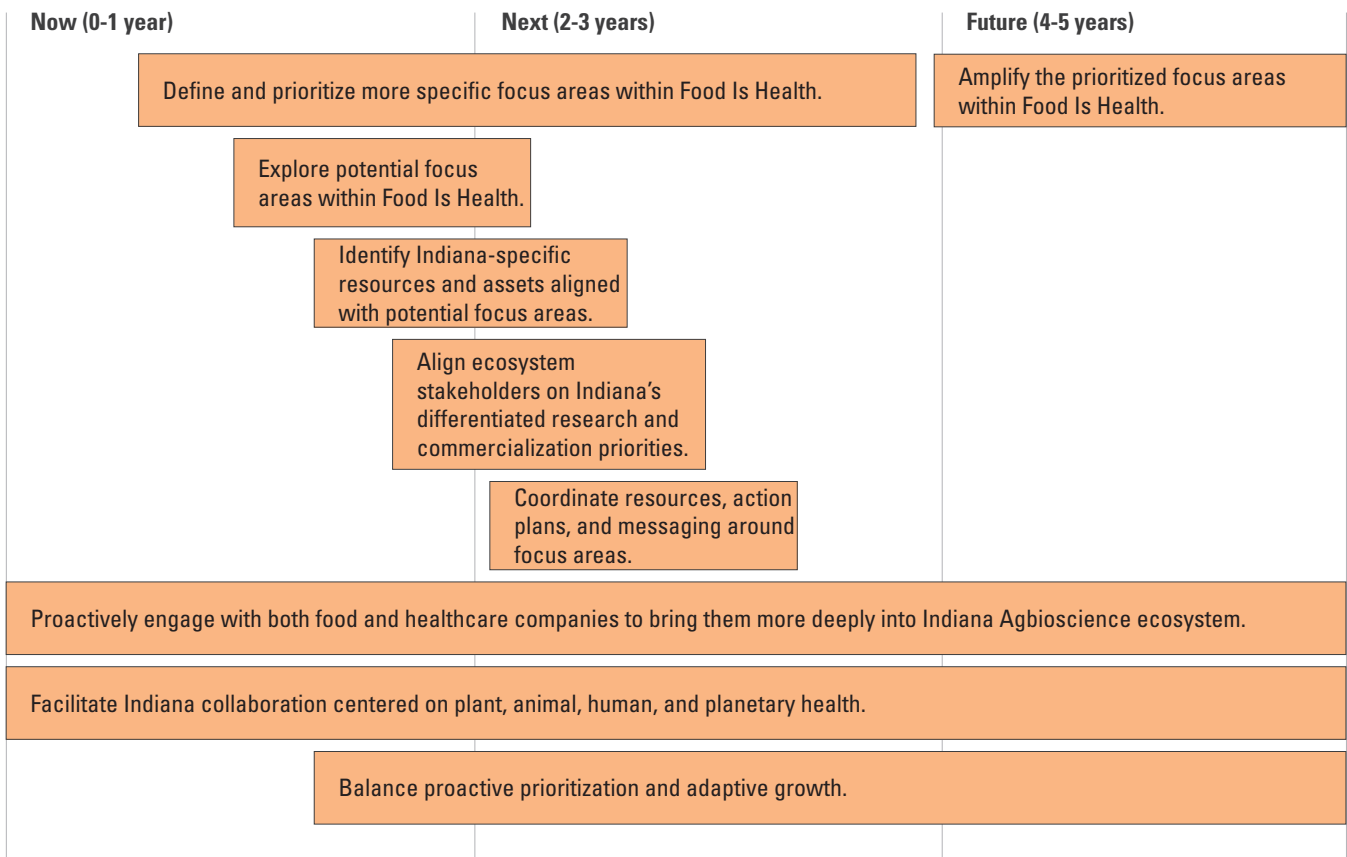
**Proactively engage with food and health care companies to bring them more deeply into Indiana agbioscience ecosystem conversations.** Monitor the landscape of relevant start-ups and establish relationships with related larger entities. Nurture formal (i.e., joint venture agreements) and informal collaborative relationships within the priority focus areas.



**Facilitate Indiana collaboration centered on plant, animal, human, and environmental health.** To succeed, the ecosystem must go all-in on collaboration and build both the physical and social infrastructure needed to make collaboration more than just a buzzword. Indiana agbioscience must continue to foster an environment where various industries collide that are working toward similar goals and are striving to solve similar problems. In addition to broad convenings, topically focused convenings can accelerate specific opportunity identification, drive collaboration, and strengthen the brand of the Indiana agbioscience ecosystem.

**Balance proactive prioritization and adaptive growth.** Food is Health is likely to be a very dynamic opportunity area over the next decade, as advances in AI accelerate scientific discovery, consumer health and wellness trends shape behavior, scientific understanding of precision and personalized nutrition advance, and the health care system evolves. A deeper understanding of differentiated focus areas is necessary, but the agbioscience ecosystem should be adaptive and responsive and should seek to accelerate growth in focus areas that gain early traction. Network effects make attracting the next company within a focus area easier with each successive win.

Figure 15: Recommended Ecosystem Actions for Food is Health



# INDUSTRY RESOURCES

## Elevance Health

- 19% of Commercially Insured patients over 18 list access to healthy food as a Health-Related Social Need

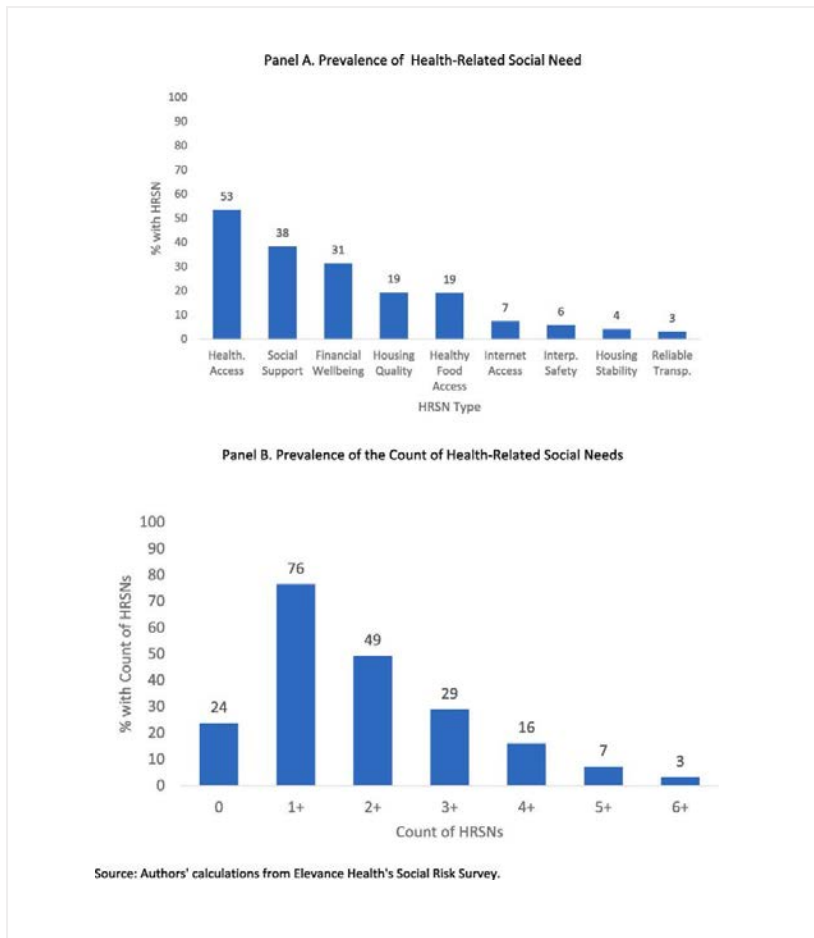


FIG 1. Prevalence and Number of Health-Related Social Needs among a Sample of Commercially-Insured Adults (≥18 years) from Georgia and Indiana, Dec 2021-Mar 2022 Survey (n = 1,160) Source: Authors' calculations from Elevance Health's Social Risk Survey.

**Source:** Falconi AM, Johnson M, Chi W, Stephenson JJ, Marc Overhage J, Agrawal S. Health related social needs and whole person health: Relationship between unmet social needs, health outcomes, and healthcare spending among commercially insured adults. *Prev Med Rep.* 2023 Nov 8;36:102491. doi: [10.1016/j.pmedr.2023.102491](https://doi.org/10.1016/j.pmedr.2023.102491). PMID: 38116266; PMCID: PMC10728312.

- 14% of all households experience food insecurity

**Source:** [Elevance Health](#)



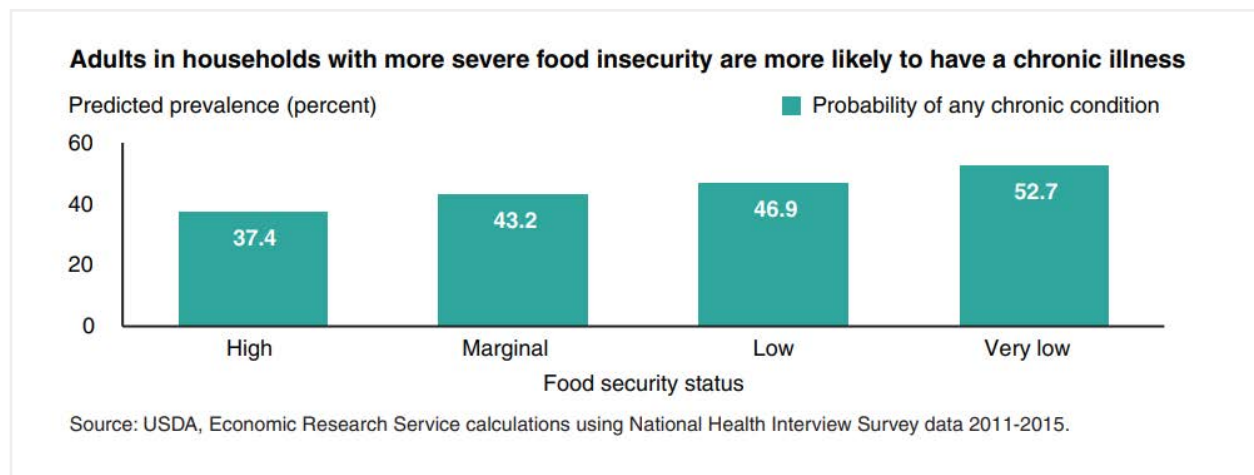
- Many Americans face unmet social, economic and health needs.

Source: [Elevance Health](#)



## U.S. Department of Agriculture (USDA)

- Adults in households with very low food security were 15.3 percentage points more likely to have any chronic illness than adults in households with high food security, as is shown in the figure below. This is a 40-percent increase in overall prevalence.



- “The magnitude of the higher probabilities of chronic illness associated with food insecurity is striking. Even for adults in marginally food-secure households—which are normally classified as food secure and typically endure relatively mild food hardships—the associated increases in the probability of hypertension, diabetes, and COPD are 20, 59, and 158 percent, respectively, compared to the (baseline) prevalence of those diseases in low-income, high food-secure households. The gaps in relative health risks associated with low versus very low food security are even larger.”

Source: Christian A. Gregory, Alisha Coleman-Jensen. [Food Insecurity, Chronic Disease, and Health Among Working-Age Adults](#), ERR-235, U.S. Department of Agriculture, Economic Research Service, July 2017