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Minding the implementation gap: A mixed-method study of producer capabilities and institutional pressures in U.S. Midwest values-based food procurement

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Abstract

Values-based institutional food procurement (VBIFP) aligns institutional purchasing with shared social values, including sustainability, nutrition, and equitable supplier inclusion. Using a mixed-methods approach combining a survey of 189 producers with stakeholder interviews, this study examines producer readiness, participation, and systemic barriers to VBIFP adoption in the U.S. Midwest region, with particular attention on small-scale and ethnic-minority producers. Despite growing adoption of values-based procurement among public institutions, many producers whose operations most closely embody these principles—small-scale, sustainability-oriented, and ethnic-minority suppliers—remain largely excluded from institutional markets. Minimum volume thresholds and certification mandates emerged as the most

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Conflict of Interest Declaration

The authors declare that there are no conflicts of interest related to this research. All authors have reviewed and approved this statement.

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significant barriers to participation. While small-scale and ethnic-minority producers were more likely to engage in values-based practices like cultivating culturally relevant crops and implementing sustainable practices, entrenched procurement norms centered on cost minimization continue to limit their market access. Technological limitations and the lack of supplier aggregation further restrict VBIFP adoption. Integrating resource-based and institutional theories, this study provides empirical evidence showing how producer resource constraints interact with *coercive* procurement rules and *normative* practices to exclude values-aligned suppliers. Actionable policy and procurement recommendations—including values-aligned scoring, flexible contracting models, and cooperative aggregation partnerships—can expand equitable participation in institutional food markets.

Keywords
values-based procurement, small-scale producers, sustainable supply chain, institutional food systems

Introduction

Institutional food procurement (IFP), which encompasses public agencies, private organizations, hospitals, universities, and other large-scale buyers, represents enormous purchasing power in the U.S. (Jones & Toossi, 2024). This purchasing power has prompted policymakers to use public procurement to promote local economic development, social equity, and environmental sustainability goals (Baek & Radziwon, 2023; Salvatore et al., 2021; Sonnino, 2009; Tregear et al., 2022). IFP systems must feed large congregate populations, requiring large volumes of standardized products at affordable prices (Carlisle et al., 2019; Izumi et al., 2010; Klein, 2015). Institutionalization forces have shaped procurement systems to meet these goals (DiMaggio & Powell, 1983), but have also led to industry concentration and created supply chain vulnerabilities. During COVID-19, for example, institutional food supply chains were disrupted due to facility and border closures. By contrast, diverse local supplier networks demonstrated more resilience and adaptability, underscoring the need for more inclusive and decentralized procurement systems (Hendrickson, 2020; Thilmany et al., 2021).

Values-based institutional food procurement (VBIFP) emerged as a framework to harness the transformative potential of IFP and promote social values. VBIFP integrates social, economic, and environmental objectives into purchasing decisions while maintaining traditional metrics like cost and volume (Berti & Mulligan, 2016; Campbell, 2023; Food and Agriculture Organization of the United Nations [FAO], n.d.; Salvatore et al., 2021). The Good Food Purchasing Program (GFPP) is the most popular VBIFP program in the U.S., adopted by 30 cities and counties (Center for Good Food Purchasing [CFGFP], 2025; Daniels & Delwiche, 2022). Between 2011 and 2017, Los Angeles institutions participating in GFPP reported over US$56 million in local economic benefits and significant greenhouse gas reductions (Daniels & Delwiche, 2022).

The existing literature documents VBIFP program structures, and identifies participation barriers for local producers revealing a persistent implementation gap. Despite the growing adoption of VBIFP, producers whose operations most closely embody values-based principles—small-scale, sustainability-oriented, and local suppliers—remain largely excluded from the institutional markets, limiting the realization of VBIFP's intended outcomes (CFGFP, 2023; DiBella et al., 2023; Lehtinen, 2012; Michel-Villarreal, 2022). The mechanisms shaping VBIFP implementation (producer readiness and institutional receptivity) are not unique to the U.S. Similar tensions exist internationally. For example, in the European Union's Farm-to-Fork program, policymakers seek to promote more sustainable, transparent, and community-focused food systems (Elshaer et al., 2023). Nonetheless, small producers face comparable barriers related to certification costs, aggregation challenges, and minimum volume thresholds. These requirements limit participation in institutional procurement, despite producers' alignment with sustainability and nutrition goals (Cimino et al., 2024; Jackson et al., 2024; Kumar et al., 2025; Miranda, 2018; Peterson et al., 2022; Walker & Preuss, 2008).

Although, research recognizes this implementation gap, important empirical and theoretical limitations remain. First, there is limited empirical evidence quantifying how the adoption of values-

based practices varies across producer size and demographic characteristics (Augustine, 2019; Love et al., 2025). Second, few studies systematically examine how institutional procurement mechanisms translate into concrete access barriers (Daniels & Delwiche, 2022). Finally, existing research rarely integrates institutional theory and resource-based theory to explain how structural pressures and producer capabilities interact to shape VBIFP outcomes (Campbell, 2023; Federal Good Food Purchasing Coalition [FGFPC], 2023; Smith et al., 2016; Tregear et al., 2022). Without a clearer understanding of these dynamics, policymakers lack the evidence needed to design targeted interventions that bridge the gap between VBIFP's aspiration and its practical implementation.

This study addresses these gaps in the Metro Chicago region, using a mixed-methods design that combines a survey of 189 producers with stakeholder interviews. Specifically, it examines (1) how the adoption of VBIFP practices varies by producer demographics (RQ1); (2) what systemic barriers limit small-scale and ethnic-minority producers' access to institutional markets (RQ2); and (3) what buyer-side constraints impede VBIFP implementation (RQ3). By providing empirical evidence on both producer and institutional dynamics, this research offers insights that can help policymakers develop targeted interventions to meet VBIFP's aspirations while expanding equitable participation in institutional food procurement.

Literature Review

This literature review introduces VBIFP and establishes the theoretical foundation for understanding VBIFP implementation dynamics.

Values-Based Institutional Food Procurement (VBIFP)

VBIFP represents a shift from traditional high-volume and efficiency-oriented procurement models to collaborative, ethical, and relational sourcing by public and private institutions. Traditional food procurement models rely on supply chains characterized by cost minimization, efficiency, and length (Peterson et al., 2022; Stevenson & Pirog, 2008). VBIFP aligns with the logics for sustainable supply chains (SSC) and values-based supply chains (VBSC) (Campbell, 2023). While SSCs are focused on sustainability values and span many diverse industries, VBSCs focus on food systems, emphasize shared values and product differentiation, including farm identity (Lerman, 2012).

VBIFP applies SSC and VBSC principles to institutional contexts, where public and private buyers leverage purchasing power for broader policy objectives and sustainability goals (Berti & Mulligan, 2016; Campbell, 2023; Love et al., 2025). Initiatives such as the U.S.'s farm-to-school and farm-to-institution programs (Buckley et al., 2013; D. Conner et al., 2014; Harris et al., 2012; Izumi et al., 2010; Matts et al., 2016); Canada's Local Food Infrastructure Fund, the EU's Farm to Fork Strategy (Enthoven & Van den Broeck, 2021), and Copenhagen's Food Strategy reflect this approach (Cavallari et al., 2024). These efforts are reinforced by consumer-driven trends, such as the growth of farmers markets and community support agriculture (Brown & Miller, 2008; GFI, 2021; Hassoun et al., 2022; Martinez & Park, 2021; Woods et al., 2017).

Proponents argue that VBIFP offers significant benefits. Institutional markets offer farmers opportunities for larger demand, diversification, and stability, as well as increased market orientation, the development of new products, and processes including improved data management systems (Morley, 2021). Peterson et al. (2022) found that 81% of farmers participating in VBSCs gained "access to new or larger markets" (p. 394). For institutions and food management companies, sourcing from local suppliers strengthens local economies and reinforces mutual economic and social benefits (Goggins, 2018). Local food procurement programs contribute to nutrition-related outcomes, including healthier eating patterns (Matts et al., 2016; Soares et al., 2017), economic growth, creating a positive multiplier effect that extends beyond individual channel partners (Preuss, 2007; Tregear et al., 2022).

Institutional Forces Shaping Procurement Systems

Institutional theory describes how coercive, mimetic, and normative forces shape institutional contexts and organizations' and individuals' behav-

iors within those contexts (DiMaggio & Powell, 1983). In the procurement context, coercive forces operate through formal requirements, e.g., certifications, insurance and volume thresholds, favoring larger vendors with greater administrative and financial resources (Flynn & Davis, 2017; Loader, 2015; Nemec, 2024). Normative forces are evident in professional procurement standards that prioritize cost efficiency as the dominant evaluation criterion, encouraging what Izumi et al. (2010) term "cost-based contracting culture" that disadvantages small-scale producers due to economies of scale and their more labor-intensive production practices. Empirical evidence supports this assertion: Tikkanen and Caleva (2011) found that cost remained the dominant award criterion and indeed served as the sole factor in municipal food tenders. Mimetic forces emerge through organizations' copying of successful peer behaviors, reinforcing standardized practices, structured contracting processes, and norms of large established supplier relationships (Campbell, 2023; Carlisle et al., 2019; Klein, 2015; Sonnino, 2009). The concentration of food-service management exemplifies this pattern: by 2015, 75% of U.S. distribution service contracts were held by two conglomerates with similar structures and service offerings (Federal Trade Commission [FTC], 2015).

Together, these institutional pressures systematically shape procurement market mechanisms, creating market access barriers for small and medium enterprises (SMEs), particularly through complex bidding procedures, and financial compliance and certification requirements (Enthoven & Van-den-Broeck, 2021; Flynn & Davis, 2017; Jablonski et al., 2016; Loader, 2015; Martinez et al., 2010; Nemec, 2024; Sonnino, 2009).

Transitioning to sustainable procurement practices like VBIFP necessitates a shift in institutional forces to alter buyers' and suppliers' behaviors (Goggins, 2018; Meehan & Bryde, 2011; Singh & Joshi, 2024). Research suggests that environmentally and socially responsible initiatives are more likely to be adopted when supported by regulatory frameworks, peer influence, and cultural expectations (Biggi et al., 2023; Glover et al., 2014; Saha et al., 2020). Alternatively, voluntary frameworks embraced by leading institutions can accelerate this shift (Grob & Benn, 2014). Institutional theory thus explains why VBIFP initiatives may fail despite good intentions: deeply ingrained norms and institutional structures resist change, favoring established ways of working and suppliers who can mimic incumbents.

Producer Resources and Capabilities

Strategic resources are unique assets that enable businesses to differentiate themselves and gain a competitive advantage in the market (Forsman, 2004). Similarly, organizations' unique capabilities shape their structures and processes, creating a competitive edge in the business environment (Grob & Benn, 2014). The resource-based theory literature describes how firms leverage their unique resources and capabilities to meet institutional and market demands. Firms that align their assets and organizational knowledge, including purchasing and supply functions, can improve economic performance and sustainability, which contributes to their competitive advantage (Kähkönen & Lintukangas, 2022)

Much of the literature on SMEs demonstrates that they lack many of the resources and capabilities of larger enterprises, which can limit their competitiveness when operating in markets where the latter is favored (Ashton et al., 2017; Hoekman & Taş, 2022; Lawrence et al., 2006; Miranda, 2018). In IFP, these include limited access to information, financial constraints, inconsistent product availability and quality, and limited technical capabilities. Small, local food producers also face external infrastructure constraints such as limited processing facilities, transportation, and storage limitations (Akenroye et al., 2020; Faulkner et al., 2023; Flynn & Davis, 2017; Galloway et al., 2023; Loader, 2015; Mahuwi & Israel, 2023; Martinez et al., 2010; Nemec, 2024).

Ethnic-minority producers encounter additional structural inequities. Historical exclusion from land ownership, financing, and federal agricultural support programs has disproportionally impacted them (Figueroa & Alkon, 2017; Carlisle et al., 2019). The 2017 Census of Agriculture indicated that only 1.4% of U.S. producers identified as Black, and that Black growers owned significantly smaller farms than white farmers (U.S. Department

of Agriculture, National Agricultural Statistics Service [USDA NASS], 2019). Gilbert-Overland (2024) studied how systemic racism perpetuates the barriers, including lack of access to land, capital, infrastructure, and knowledge, facing Black farmers and highlighted that VBIFP's potential is contingent upon addressing structural racism.

However, small food producers can use their unique firm attributes and market tactics to differentiate themselves. The local food movement leverages small producers' flexibility to produce a diversity of goods and close ties to local markets to their advantage (Belletti et al., 2020). Local food supply chains are seen as a more sustainable choice offering shorter deliveries, compact work-in-progress inventories, greater transparency, and more flexibility (Lehtinen, 2012). Similarly, Charters et al. (2017) emphasize the role of geographical and cultural resources as unique value propositions through *terroir* products: those with place-based characteristics that create market differentiation. Beyond geographical characteristics, terroir includes cultural heritage and local traditions, enabling producers to leverage their unique historical, cultural, and environmental contexts into their value proposition. Likewise, Nogueira et al. (2020) highlighted the ways urban food stakeholders leverage cultural capital to share knowledge, co-create processes and spark innovation.

Ethnic-minority farmers, including those who are Black, Indigenous, and People of Color (BIPOC), have demonstrated significant resilience through cultural preservation and collective agency (Nunoo, 2023). Many immigrant farmers from Latin America actively maintain traditional agricultural practices to sustain cultural identity and economic viability (Minkoff-Zern, 2019) favoring culturally significant crops and minimal synthetic inputs, thus aligning with VBIFP principles.

A Framework for Understanding the VBIFP Implementation Challenges

Understanding VBIFP implementation challenges requires integrating insights from institutional and resource-based theories (Mardani et al., 2020). Figure 1 illustrates how institutional pressures—coercive (mandated certifications), normative (price-focused contracts), and mimetic (emulating efficiency-focused procurement models)—influence market-shaping mechanisms such as eligibility rules, vendor approval processes, and contracting standards. These mechanisms, in turn, generate access frictions, including certification costs, minimum volume thresholds, and data or traceability requirements, which ultimately determine which

Figure 1. Research Questions on How Institutional Forces Shape Values-based Institutional Food Procurement

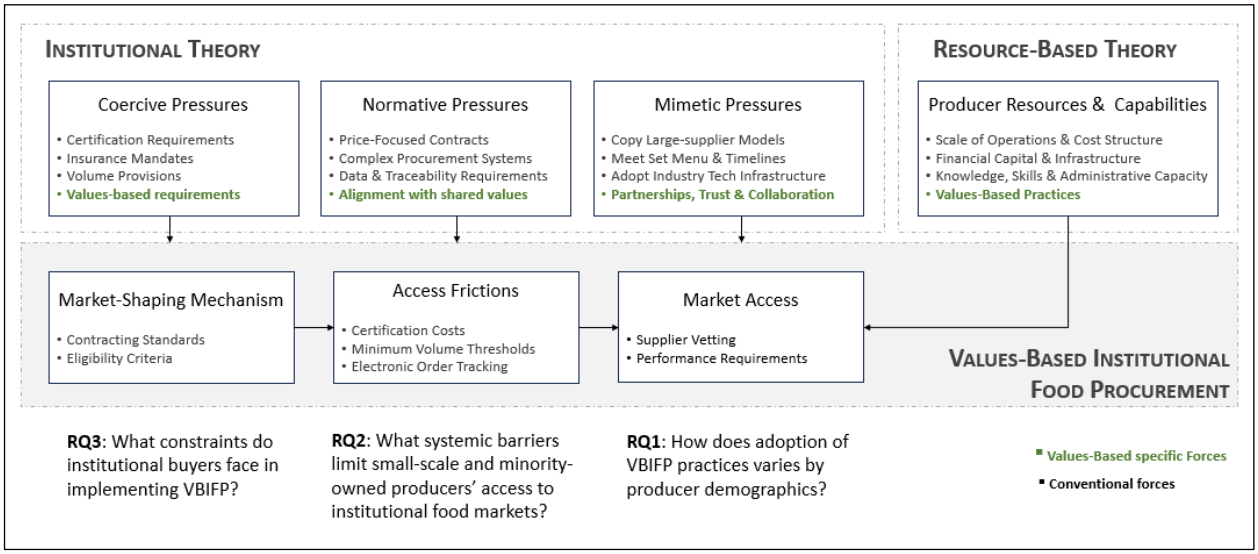


Figure created by the authors for this study.

producers can enter institutional supply chains. Producer entry and participation depend on the resources and capabilities they possess (scale, financial assets, and administrative capacity), as well as their alignment with institutional norms.

VBIFP introduces additional dynamics into this system. In particular, it incorporates norms around shared values such as sustainability, trust-building partnerships with SMEs outside of incumbent networks, and seeks to recognize suppliers who employ values-based production practices. The interaction of these institutional pressures, governance mechanisms, and producer capabilities shape VBIFP implementation and determine the extent to which institutional procurement can deliver its intended socio-economic and environmental benefits.

This framework builds on the conceptual framework proposed by Behravesh et al. (2022) on sustainable public-purchasing adoption, which focuses on organizational capacity, internal stakeholders, culture, and macroeconomic settings. Our study extend this work in several important ways. First, it integrates institutional and resource-based theories to trace the mechanisms linking institutional pressures to producer-level access frictions and market participation. Second, it incorporates both supplier and buyer perspectives through an empirically grounded mixed-methods approach that captures implementation dynamics across the procurement process. Third, it centers small-scale and BIPOC producers in the analysis, highlighting the historical and structural inequities that have shaped their uneven access to institutional markets.

Together, these contributions enable a system-level analysis of the VBIFP implementation gap (defined as the disconnect between values-based procurement goals and the extent to which institutions can purchase from values-aligned producers and the latter can sell to institutional markets) to generate actionable, policy-relevant insights grounded in implementation science. Specifically, this research examines (1) the adoption of values-aligned practices among suppliers, (2) the key barriers facing producers seeking to access institutional markets, and (3) the constraints institutional buyers face when implementing VBIFP.

Methodology

The study applied a sequential design (quantitative-qualitative) methodology to investigate VBIFP adoption and its challenges (Venkatesh et al., 2023). In the first phase, a quantitative survey explored regional producers' adoption of values-based practices and identified statistical patterns across distinct producers' groups and characteristics. These results informed the second, qualitative phase: interviews with targeted farmers, food producers, supply chain intermediaries and IFP decision-makers. These aimed to capture the complex institutional dynamics and procurement decision-making processes and to uncover key barriers that influence VBIFP implementation that cannot be revealed through a survey data alone. Interviews provide deeper, more contextual evidence for the forces identified in the framework. This sequential integration methodology facilitated systematic data collection and understanding of the interplay of institutional forces, VBIFP adoption behaviors, and market barriers (Creswell & Clark, 2017).

Quantitative Approach

From December 2020 to March 2021, producers within a 300-mile (483-km) radius of Chicago, mainly in Illinois, Indiana, Michigan, and Wisconsin, were invited to participate in an online survey. They were contacted via email through convenience networks, leveraging listservs at Chicago Food Policy Action Council (CFPAC), Illinois Stewardship Alliance, University of Illinois, Michigan State University, and University of Wisconsin-Madison. Efforts were made to recruit underrepresented producers, including persons identifying as women and/or BIPOC. Producers reported on owner demographics, business characteristics, values-based practices (nutrition, labor, sustainability, animal welfare, local economies), and associated benefits, barriers, and operational challenges. The survey (instrument is in Supplemental File 1) was reviewed by experts and pre-tested with five producers.

Responses from companies located outside the Midwest region were excluded, ensuring geographical scope, as were answers collected under 300 seconds (a threshold data quality control based on a timed-completion exercise of the full survey).

This yielded 189 valid company-level responses and 32,870 item-level observations from 140 binary dummy variables (i.e., implemented/not implemented) after cleaning. Chi-square independence tests in SAS evaluated statistically significant associations between categorical variables. This is an appropriate nonparametric approach for binary data examining relationships between firm characteristics, values-based practices adoption, perceived benefits, and challenges. Given the large number of tests performed, we applied a conservative interpretation focusing on associations with p values ≤ 0.05 and effect sizes (Cramer's $V \gtrsim 0.20$). The findings section highlights these significant associations.

Qualitative Approach

From fall 2023 through summer 2024, semi-structured interviews (interview questions are in Supplemental File 2) were conducted with 12 stakeholders to generate insights about VBIFP adoption barriers highlighted in the survey and supplier selection processes. Purposive sampling (Creswell & Clark, 2017) drawing on professional networks was used to identify interview participants with knowledge and direct roles in institutional food procurement. The interviewees were independent from survey respondents and included representatives from the City of Chicago ($n = 2$), Cook County ($n = 3$), a private hospital ($n = 1$), food service management companies (FSMCs, $n = 4$) representing buyers' perspectives, along with distributors and aggregators ($n = 2$), farmers ($n = 2$) and food producers ($n = 1$), representing sellers' perspectives. Topics included governance, manuals and regulations for purchasing decisions, operational workflows, supplier relationship management, GFPP implementation strategies and evaluation criteria, challenges, and supply chain adaptations. Interviews averaged 70 minutes.

Two researchers coded and analyzed the interviews using Braun and Clarke's (2006) thematic framework (familiarizing with the data, generating initial codes, searching themes, reviewing themes, defining and naming themes, producing reports), guided by institutional theory and resource-based theory supported by memo-writing and visual mapping. Finally, the qualitative themes were compared against quantitative patterns to identify concurrent evidence and explanatory understandings of statistical associations. This integrative step synthesized findings from both phases, producing a cohesive interpretation that links statistical trends with contextual insights.

Findings

Table 1 presents respondents' demographic and business characteristics. Key highlights reflect deliberate efforts to ensure diverse representation among producers. Specifically, micro and small producers, with sales between $10K and $250K, represent 80% of respondents, a direct result of targeted outreach. The sample also includes an overrepresentation of BIPOC (12%) producers relative to their representation in the broader farming population (USDA, 2019). By doing so, we aim to capture perspectives from groups most often excluded from institutional procurement systems and provide context for the adoption and barrier patterns reported below.

Adoption of VBIFP Practices by Size and Ownership (RQ1)

Our analysis of adoption patterns reveals clear differences by firm size and ownership status (see Appendix, Table A1). Smaller firms and BIPOC-owned firms disproportionally engaged in values-aligned practices. Micro and small producers reported a significantly higher adoption of seasonal production practices (74% and 71%, respectively) versus medium (33%) and large (55%); ($\chi^2 = 12.38$, $p < 0.01$, Cramer's $V = 0.25$). Similarly, BIPOC producers were nearly twice as likely as non-BIPOC producers to cultivate culturally significant crops that relate to the cultural heritage of specific communities (74% versus 39%; $\chi^2 = 9.93$, $p < 0.01$, Cramer's $V = 0.23$).

While producers across all sizes adopted sustainability practices, differences emerged for practices such as composting organic waste (66% overall, with more prevalence among micro (74%) and small (70%) producers; $\chi^2 = 11.68$, $p = 0.0086$, df=3, Cramer's $V = 0.25$), practicing regenerative agriculture (60% overall, with higher prevalence among small producers (70%), and avoiding hazardous chemicals (70% overall; 83% and 77% for

medium and small producers, respectively; χ^2 = 19.75, $p < 0.001$, *df*=3, Cramer's $V = 0.32$). Animal welfare practices were infrequently reported and showed no significant associations.

Labor and equity-related practices varied systematically. Larger businesses had a nearly universal adoption of safety practices, versus 39% of micro-producers ($\chi^2 = 22.85$, $p < 0.001$, *df*=3, Cramer's $V = 0.35$). BIPOC producers reported higher safe labor and healthy working conditions practices than non-BIPOC (78% vs 58%, respectively; $\chi^2 = 3.52$, $p < 0.06$, $df = 1$, Cramer's $V = 0.14$). Diversity-focused hiring practices were more common in larger businesses for local communities (75%), women (70%), and BIPOC individuals (60%), compared to smaller counterparts ($\chi^2 = 22.79$, $p < 0.0001$, *df*=3, Cramer's $V = 0.35$ for local; $\chi^2 = 17.99$, $p < 0.0004$, *df*=3, Cramer's $V = 0.31$ for women; and $\chi^2 = 9.13$, $p < 0.0276$, *df*=3, Cramer's $V = 0.22$ for BIPOC). However, BIPOC-owned enterprises showed significantly higher commitment to diverse hiring, particularly BIPOC workers (70% vs. 29% for non-BIPOC, $\chi^2 = 14.90$, $p < 0.001$, *df*=1, Cramer's $V = 0.28$), women (65% vs 44%), and socially disadvantaged groups (52% vs 24%).

Nearly half of producers (48%) reported collaborating with nonprofits and/or government agencies and participating in activities to support local economies, with BIPOC significantly more likely to engage ($\chi^2 = 7.25$, $df = 1$, $p = .0071$, Cramer's $V = .20$). Purchasing practices reflected this commitment: 78% prioritized SME suppliers, 73% favored small, family or cooperative-owned operations, and 69% sourced within the same county. Similarly, BIPOC-owned businesses showed a strong preference for purchasing from other BIPOC suppliers as compared to non-BIPOC-owned businesses (70% vs. 21%; $\chi^2 = 24.10$, $p < 0.0001$, $df = 1$, Cramer's $V = 0.36$).

Table 1. Characteristics of Producers in the Sample (*N* = 189) (All currencies in US$)

Approximate annual sales	**(%)**
Less than $10,000	24
$10,000–$24,999	15
$25,000–$49,999	13
$50,000–$99,999	15
$100,000–$249,999	13
$250,000–$499,999	10
$500,000–$999,999	4
$1,000,000–$4,999,999	6
Greater than $5,000,000	1
Size	
Micro	24
Small	56
Medium	10
Large	11
State	
Illinois	38
Michigan	33
Wisconsin	19
Indiana	8
Other inside the region	2
Profit Orientation	
Traditional	86
Social orientation	14

Gender (%)	**%**
Female	59
Male	36
Other	3
Prefer not to say	2
Agriculture Specialization (multiple choice)	
Specialty Crops	69
Animal Production	28
Fruit & vegetable preserving and specialty food manufacturing	14
Commodity Crops	13
Dairy products	4
Other	31
Ownership (multiple choice)	
Family-owned business	51
Woman-owned business	36
Black, Indigenous or Person of Color-owned business	12
Veteran-owned business	7
Business owned by persons with disabilities	4
Worker-owned cooperative business	4
Minority/Women-Owned Business Enterprise (MWBE) certified	3
Other	6
None	21

Associations by business size have 52% of micro-enterprises prioritizing women-owned suppliers, followed by small (43%), medium (11%) and large producers (25%) ($\chi^2 = 11.31$, $p < 0.011$, $df = 3$, Cramer's $V = 0.24$).

Sales channels reflected size-related differentiation. Direct-to-consumer models dominated overall: 61% sold in-person and 50% sold online. Smaller operations were more likely to engage in these channels: 70% of small producers sold through farmers markets, compared to 56% of medium and 30% of large producers ($\chi^2 = 14.18$, $p < 0.003$, $df = 3$, Cramer's $V = 0.27$). By contrast, while nearly half of small (46%), medium (44%), and large (40%) producers sold to restaurants and food service providers, only 13% of micro producers did so ($\chi^2 = 14.18$, $p < 0.003$, $df = 3$, Cramer's $V = 0.27$). Similarly, community supported agriculture (CSA) programs showed a moderate association with business size, with more smaller operations engaged in them.

These patterns indicate that while smaller and minority-owned business producers may lack resources, they often adopt VBIFP practices more fully than larger operations. Larger businesses more often adopted formal safety measures. BIPOC-owned businesses reported higher engagement in diversity hiring. Similarly, BIPOC-producers were significantly more likely to support economic development initiatives. Further, results reflect clear differentiation by size in terms of sales channel strategy, with smaller producers opting more heavily to sell through direct-to-consumer channels.

Systemic Barriers that Limit Access to Institutional Markets (RQ2)

Seven percent of respondents reported sales to institutions. Two coercive requirements emerged as the most significant barriers: volume thresholds and certification requirements.

Volume thresholds were the most frequently cited challenge, with 34% of producers citing insufficient volume to meet institutional demand. This constraint was strongly associated with business size ($\chi^2 = 22.19$, $p < 0.0001$, Cramer's $V = 0.34$), indicating that smaller producers are systematically disadvantaged by minimum volume requirements.

Certification requirements also block market access. One third of producers reported operating without any certification, a factor associated with business size ($\chi^2 = 6.54$, $p = 0.0881$, $df = 3$, Cramer's $V = 0.19$). Among those with certifications, Food Safety Modernization Act (FSMA) training was the most prevalent (held by 30% of respondents), and also showed significant variation by size ($\chi^2 = 8.56$, $p = 0.0356$, $df = 3$, Cramer's $V = 0.21$). No significant associations were found between certification status and owner demographics.

Beyond these formal requirements, structural resource constraints were also cited as access barriers. Financial constraints emerged as the most reported barrier overall (52%) and were disproportionally cited by BIPOC producers (78% vs. 49%; $\chi^2 = 7.03$, $p = 0.0080$, $df = 1$, Cramer's $V = 0.19$). Lack of additional land or infrastructure resources (39% overall) also showed a strong statistical association with ownership, with BIPOC producers twice as likely as non-BIPOC producers to face them (70% vs. 35%; $\chi^2 = 10.17$, $p = 0.0014$, $df = 1$, Cramer's $V = 0.23$). Access to capital was another critical constraint reported by 33% of all respondents, and more than twice as frequently among BIPOC farmers (65% vs. 30%; $\chi^2 = 11.50$, $p = 0.0007$, $df = 1$, Cramer's $V = 0.25$).

Labor availability showed a significant association with business size ($\chi^2 = 12.27$, $p = 0.0065$, $df = 3$, Cramer's $V = 0.25$), affecting medium-sized business the most (61%), followed by small (34%), large (25%), and micro (17%) producers as a barrier to institutional access.

These findings show that coercive (volume and certification) requirements combined with persistent financial, land, and capital constraints systematically disadvantage smaller and minority-owned businesses, limiting their access to institutional food markets.

Buyer-side Constraints Limiting VBIFP Adoption (RQ3)

Interviews with institutional buyers and FSMC representatives highlighted how institutional pressures also exclude smaller, values-aligned suppliers from their supply chains. Based on semi-structured interviews, these dynamics align with the framework in Figure 1, each reflecting financial, technological,

and logistical constraints that define procurement mechanisms and reinforce the access frictions described under RQ2. These are summarized in Figure 2.

Coercive and Normative Pressures: The interviews revealed that public and private institutional food procurement decisions were consistently driven by cost-efficiency norms and volume expectations. As one procurement officer explained, "The vendor with the lowest overall cost wins the contract." Because institutional contracts rank lower-cost bids higher, smaller producers who could not compete on price are effectively sidelined, despite being well aligned with VBIFP goals. Institutional buyers also described the challenge of balancing multiple GFPP pillars; that is, advancing one objective (such as local sourcing) could conflict with another (such as sustainability). These tensions reflect how evaluation criteria and standards function as normative constraints that reinforce a culture of trade-offs rather than holistic assessment to navigate competing priorities.

Mimetic Pressures: Contracting favors incumbent suppliers or new players who can demonstrate similar size and operational capabilities. Even when procurement officers support values-based purchasing, they may have little oversight of, or influence over, supplier selection if their food contracts are managed by FSMCs. As one interviewee stated, "We have no control over the awarding of contracts. … If we find a product that aligns with our goals, we can share it with the management companies for consideration. Ultimately, the decision to purchase is in their hands." The reliance on FSMC-managed contracts limits flexibility. Supply aggregation was seen as a potential solution to meet volume and certification requirements. As one interviewee noted,

> Small-scale producers lacking formal certification may complete our safety procedures to demonstrate alignment with required standards. We assume the risk of small-volume operations; however, as their volume increases, formal certification becomes necessary. To ensure that growth does not lead to market exclusion, we further support producers in pursuing them.

But buyers recognized the difficulty of organizing small producers, who often lack the financial resources and technical know-how, to create food hubs. As another procurement officer stated, "Unless they get together and form their own group or subcontract, there's nothing we can do."

Figure 2. Values-based Institutional Food Procurement Challenges (Thematic Map from Interviews)

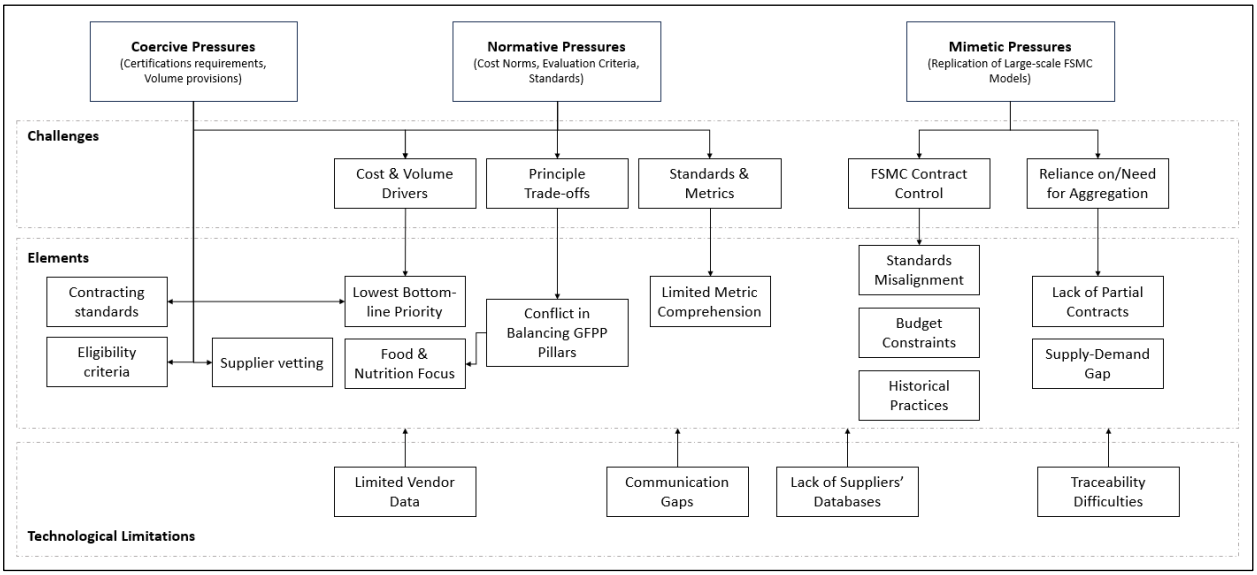


Figure created by the authors for this study.

Technological Limitations: These institutional pressures were reinforced by gaps in information technology (IT) and data infrastructure. Buyers noted that many institutions lacked the systems to track supplier compliance with VBIFP principles, and smaller producers often lack the IT infrastructure to maintain such records, making them non-competitive in institutional markets. As one interviewee noted, "The bigger ones tend to have data, but the smaller ones don't. And if they do, they're usually priced out of the market." Moreover, the lack of open-access, updated supplier databases hampered efforts to identify values-aligned vendors, slowing the progress towards VBIFP adoption.

These findings show how coercive and normative expectations such as cost-driven standards and mimetic mechanisms tied to FSMC models and aggregation requirements, compounded by technological limitations, curtail institutional buyers' ability to implement VBIFP, even when there is strong commitment to values-based procurement.

Discussion

This study provides the empirical evidence on the adoption of values-based practices among U.S. Midwest producers and elucidates the ways institutional pressures limit the inclusion of smaller and BIPOC-owned businesses in IFP despite their values-aligned practices adoption. It demonstrates how internal and external dynamics jointly affect VBIFP implementation using an institutional and resource-based theoretical lens. Current institutional procurement systems are not well equipped to accommodate smaller producers into VBIFP. Coercive requirements such as certifications and volume thresholds, while intended to ensure compliance and efficiency, perpetuate structural advantages that favor large-scale producers while systematically excluding smaller producers (Grob & Benn, 2014; Hatanaka et al., 2005; Oya et al., 2018). One third of surveyed producers, particularly small and micro-operators, lack formal certifications, and our interviews confirmed that certification rules are applied rigidly as evaluation criteria, imposing disproportionate costs and administrative burdens on smaller producers. Volume and process standardization requirements similarly exclude smaller producers. Normative pressures also perpetuate exclusion through cost-based contract evaluations that prioritize lowest-price bids, reinforcing "cost-based contracting culture" (Izumi et al., 2010). These disadvantage producers offering local, sustainable, and culturally relevant foods, which typically carry higher prices (Belletti et al., 2020; Lehtinen, 2012; Minkoff-Zern, 2019), limiting institutions' ability to integrate values-based criteria for supplier selection.

Despite facing these structural challenges, small and BIPOC producers demonstrated significant values-based capabilities. Survey results showed greater adoption of seasonal production, culturally relevant and nutrient-rich crops, sustainability practices, and local economic engagement among these groups, extending prior findings on cultural capital and terroir to the VBIFP context (Charters et al., 2017; Minkoff-Zern, 2019). Smaller producers also leveraged their unique local knowledge, proximity to regional markets, and direct-to-consumer channels to gain a competitive advantage. BIPOC producers, for their part, prioritized hiring from historically marginalized groups and supporting other BIPOC-owned businesses to create pathways for community empowerment and economic resilience, which is consistent with findings in the collective agency literature (Nunoo, 2023). These findings suggest that despite structural impediments, small and minority-owned businesses engage in and embody many of the principles VBIFP seeks to advance. However, their capabilities remain undervalued in wholesale channels and procurement scoring systems, where formal certifications and cost efficiency dominate.

These insights suggest institutional procurement reforms that reduce coercive and normative barriers while establishing mechanisms to recognize and reward the distinct capabilities of smaller and minority-owned producers. We suggest actions that stakeholders could take to close the VBIFP implementation gap.

Institutions and FSMCs

- Revise scoring criteria to include values-aligned practices beyond certifications.
- Pilot partial, seasonal, or quota-based contracts

to better match small suppliers' realities.
- Partner with food hubs or cooperatives for aggregation and supply consistency.
- Adopt interoperable systems using standardized language and metadata frameworks, ensuring compatibility and transparency.
- Provide legal technical assistance for navigating contracts.

Policymakers
- Subsidize or create tiered pathways for certifications (e.g., grants, cost-sharing).
- Develop vendor databases to reduce information gaps.
- Facilitate and/or subsidize traceability and compliance tools for small producers so they can meet procurement standards.
- Permit waivers for flexible eligibility and contracting rules.
- Invest in technological infrastructure (platforms for improved supply-demand matching and certification compliance).
- Set data governance protocols, standards, and incentives to ensure interoperable systems, standardized language, and metadata frameworks.

Producers
- Pursue aggregation strategies through food hubs and cooperatives to meet volume and certification requirements.
- Strengthen institutional partnerships for trust and visibility.
- Document values-aligned practices in standardized formats that can be assessed by buyers.
- Engage in peer-to-peer "best practices" training initiatives to share knowledge on meeting procurement standards and scaling operations.

Limitations and Future Research
The generalizability of this research is constrained by several factors, including the use of convenience networks, small subgroup sample sizes, and the study's focus on Metro Chicago institutions. These limitations introduce potential selection bias, and the findings should therefore be interpreted as context-specific insights rather than representative of all U.S. Midwestern producers and institutional buyers. Furthermore, the cross-sectional nature of the data prevents us from establishing causal relationships or assessing how producer characteristics and values-based practices evolve over time.

Future research could test these findings using larger and more representative samples across regions and institutional contexts. Additional work is needed to evaluate the effectiveness of policy interventions aimed at institutionalizing VBIFP, including local sourcing requirements, procurement preferences for vendors who integrate sustainable and local suppliers, and the adoption of more flexible procurement mechanisms. Research could also examine how small-scale and ethnic-minority producers can strategically leverage their cultural, geographical, and community-based assets to strengthen their competitive position within VBIFP.

Further investigation is warranted into the potential of cooperative models, food hubs, and other collaborative efforts to help small producers aggregate their goods and collectively meet institutional requirements. Given the technological barriers identified in this study, future research is needed to explore how data-driven models and digital platforms could improve supply-demand matching, supply coordination, and traceability and compliance verification. Finally, additional empirical work is needed to quantify the economic multiplier effects of VBIFP adoption on local communities.

While this study focuses on small-scale and BIPOC producers due to their underrepresentation in institutional markets, this does not imply that values-based supply chains should exclusively support small businesses. Large enterprises can and do operate with strong values-based commitments, and future research could examine these different organizational-scale contexts, strategies, and outcomes.

Conclusion
This study's findings suggest that institutional pressures—rather than a lack of values-alignment—are the primary factors that limit producers' participation in institutional food procurement in the U.S. Midwest. Small and BIPOC producers reported higher adoption of values-aligned practices, includ-

ing the cultivation of seasonal and culturally relevant crops, implementation of sustainability measures, diversity hiring, and community engagement. However, coercive requirements (e.g., certifications and volume thresholds), normative cost-based criteria, and mimetic reliance on food service management companies' (FSMC) procurement models continue to restrict their participation in institutional markets. At the same time, structural resource constraints related to financing, land, and capital access further limit producers' ability to meet institutional requirements despite strong alignment with VBIFP goals.

Closing these implementation gaps requires a multipronged approach. In the short term, institutions and FSMCs can revise scoring criteria and pilot such flexible mechanisms as partial or seasonal contracts within existing procurement frameworks. These efforts can help determine whether flexible contracts and aggregation models enable smaller suppliers to reliably meet volume and certification requirements. Partnerships with aggregators can also provide producers with access to certification expertise and compliance support, reducing barriers to entry into institutional markets.

Policymakers can further reduce participation barriers by subsidizing certification costs, introducing tiered certification pathways, and investing in shared traceability systems and vendor databases to improve market visibility and reduce information gaps. At the producer level, strengthening cooperative aggregation strategies and expanding training opportunities can help smaller suppliers to scale operations and meet institutional procurement standards. Together, these measures can alleviate institutional pressures facing both buyers and suppliers and better align procurement practices with the goals of values-based institutional food procurement.



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Appendix

Table A1. Main Survey Results and Chi-Squared Independent Test by Size and BIPOC Characteristic (*N* = 189)

		Size				BIPOC			
Description	**Sample %**	**χ^2**	**df**	***p*-value**	**Cramer's *V***	**χ^2**	**df**	***p*-value**	**Cramer's *V***
Sales channels implemented									
In-person direct to consumer	61	7.08	3	0.0694*	0.19	0.26	1	0.6099	–
Farmers market	59	14.18	3	0.0027***	0.27	0.05	1	0.824	0.02
Online direct to consumer	50	13.09	3	0.0045***	0.26	0.41	1	0.5219	–
Restaurant and/or food service providers	37	15.25	3	0.0016***	0.28	1.34	1	0.2459	–
Community Supported Agriculture (CSA)	36	8.70	3	0.0336**	0.21	1.59	1	0.2065	0.09
Distributors, wholesalers, aggregators	20	--	--	--	--	--	--	--	--
Food hub	14	--	--	--	--	--	--	--	--
Co-operative grocery	13	--	--	--	--	--	--	--	--
Conventional grocery	11	--	--	--	--	--	--	--	--
Institutional buyers (e.g., schools, hospitals)	7	--	--	--	--	--	--	--	--
Certifications implemented									
None	33	6.54	3	0.0881*	0.19	0.40	1	0.5292	0.04
Food Safety Modernization Act	30	8.56	3	0.0356**	0.21	0.16	1	0.6914	–
Other certifications	19	--	--	--	--	--	--	--	--
Good Agricultural Practices (GAP)	11	--	--	--	--	--	--	--	--
Illinois Food Sanitation	9	--	--	--	--	--	--	--	--
Safe Food Certifications	7	--	--	--	--	--	--	--	--
FDA Food Facility Registration	4	--	--	--	--	--	--	--	--
Benefits from implementing									
Increased customer satisfaction	76	--	--	--	--	0.10	1	0.7566	0.02
Improved brand image	68	0.90	3	0.8243	0.07	0.39	1	0.5339	0.05
Increased market opportunity	62	5.21	3	0.1568	0.17	0.03	1	0.8687	–
Increased productivity and/or output	46	3.40	3	0.3335	0.13	0.06	1	0.8113	0.02
Ensured compliance with food-related laws	45	5.92	3	0.1153	0.18	2.24	1	0.1348	–
Increased employee satisfaction	40	10.39	3	0.0155**	0.23	1.04	1	0.3076	–
Increased owner or shareholder satisfaction	37	3.23	3	0.357	0.13	0.03	1	0.8545	–
Reduced operational costs	34	0.16	3	0.9836	0.03	0.32	1	0.5689	0.04
No benefits	19	--	--	--	--	--	--	--	--
Other benefits	7	--	--	--	--	--	--	--	--
Difficulties of implementing									
Lack of financial resources to implement practices	52	2.92	3	0.4044	0.12	7.03	1	0.0080***	0.19
Lack of additional land or infrastructure/resources needed to implement practices	39	2.60	3	0.4571	0.12	10.17	1	0.0014***	0.23
Lack of assistance from farmer-focused organizations	25	--	--	--	--	1.38	1	0.2405	0.09
No way to signal implementation of practice to customers	23	--	--	--	--	1.40	1	0.236	–

Description	Sample %	Size				BIPOC			
		χ^2	df	*p*-value	Cramer's *V*	χ^2	df	*p*-value	Cramer's *V*
No government policies that mandate implementation of practices	17	--	--	--	--	--	--	--	--
No demand from customers	12	--	--	--	--	--	--	--	--
Challenges to growing your farming operations and farm income									
Limited access to capital	34	5.59	3	0.1333	0.172	11.50	1	0.0007***	0.25
Limited availability of labor	32	12.27	3	0.0065***	0.2548	9.07	1	0.0026***	--
Changing weather patterns (e.g., drought, flooding, storms)	27	7.59	3	0.552**	0.2004	6.81	1	0.0091***	--
COVID-19	24	--	--	--	--	0.59	1	0.4406	--
Other challenges	21	--	--	--	--	--	--	--	--
Reasons not selling to institutional buyers									
Insufficient product volume to meet demands of large orders	34	22.19	3	<0.001***	0.34	6.00	1	0.0143**	0.18
Insufficient capacity to enter contracts or MOUs (e.g., legal status, required certifications)	17	--	--	--	--	--	--	--	--
No relationships with institutions or contractors	17	--	--	--	--	--	--	--	--
Lack of shared facilities to collaborate (warehousing, processing or kitchen space)	11	--	--	--	--	--	--	--	--
Lack of food hubs/distributors/aggregators that source from local producers	10	--	--	--	--				
Nutritional practices									
Growing locally seasonal fruits and vegetables	67	12.38	3	0.0062***	0.25	2.99	1	0.0835*	0.13
Choosing culturally relevant, nutrient-rich crops	43	8.14	3	0.0431**	0.20	9.93	1	0.0016***	0.23
Produce value-added products	39	2.76	3	0.4346	0.12	0.83	1	0.3656	--
Choosing heritage breeds	38	2.74	3	0.4333	0.12	0.12	1	0.727	--
Other nutritional practices	19	--	--	--	--	--	--	--	--
Labor practices									
Building safe and healthy working conditions	60	22.85	3	0.0001***	0.35	3.52	1	0.0605*	0.14
Eliminating discrimination with respect to employment or occupation	41	12.65	3	0.0051***	0.26	1.28	1	0.257	0.08
Eliminating all forms of forced or compulsory labor	34	5.10	3	0.1647	0.16	0.96	1	0.3276	0.07
Restricting the employment and abuse of children as workers	34	7.09	3	0.0688**	0.19	0.14	1	0.7109	--
Respecting employees' freedom of association and collective bargaining	23	--	--	--	--	3.68	1	0.0550**	0.14
Sustainability practices									
Avoid use of potentially hazardous or toxic chemicals in operations	70	19.75	3	0.0002***	0.32	0	1	0.9754	--
Compost organic waste	66	11.68	3	0.0086***	0.25	0.13	1	0.7109	0.03
Practice regenerative agriculture	60	12.89	3	0.0049***	0.26	0.15	1	0.6914	--
Purchase local raw materials	57	1.10	3	0.776	0.08	0.82	1	0.3642	--
Reduce carbon footprint	52	2.92	3	0.4032	0.12	0.75	1	0.3844	0.06
Ensure workplace conditions are healthy and safe	52	5.88	3	0.1176	0.18	3.25	1	0.0714**	--

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Description	Sample %	Size				BIPOC			
		χ^2	df	*p*-value	Cramer's *V*	χ^2	df	*p*-value	Cramer's *V*
Animal welfare practices									
Animal housing, management, care, and use	23	--	--	--	--	7.96	1	0.0048***	--
Utilize "high welfare" farming practices (e.g., access to pasture, easy access to food and fresh water)	21	--	--	--	--	--	--	--	--
Prevent pain, injury or disease to animals by rapid diagnosis and treatment	19	--	--	--	--	--	--	--	--
Purchase animal products from sources that have third party certifications for high welfare practices	6	--	--	--	--	--	--	--	--
Have operations certified by a recognized animal welfare certification scheme or standard	5	--	--	--	--	--	--	--	--
Local economies									
Work with other organizations (e.g., businesses, not-for-profit organizations, government agencies) to support local economic development activities	48	3.75	3	0.2892	0.14	7.26	1	0.0071***	0.20
Support local workforce development (e.g., hire graduates of workforce training programs)	18	--	--	--	--	--	--	--	--
Establish contracts, partnerships or MOUs with community-serving business or organization with mission to serve disadvantaged populations	12	--	--	--	--	--	--	--	--
Establish formal hiring policy prioritizing local residents with barriers to employment	9	--	--	--	--	--	--	--	--
Other local economies practices	6	--	--	--	--	--	--	--	--
Diversity hiring practices									
Hire persons from local community	48	22.79	3	<0.0001***	0.35				
Hire women	47	17.99	3	0.0004***	0.31	3.66	1	0.0556*	0.14
Hire BIPOC (Black, Indigenous, People of Color) persons	34	9.13	3	0.0276**	0.22	14.90	1	0.0001***	0.28
Hire persons who are socially disadvantaged	28	12.30	3	0.0064***	0.26	7.98	1	0.0047***	0.21
Hire LGBTQ (lesbian, gay, bisexual, transgender, queer) persons	27	11.56	3	0.0090***	0.25	11.59	1	0.0007***	0.25
Prioritized purchasing practices									
Small and medium-sized businesses	78	--	--	--	--	0.00	1	0.9526	0.00
Farmer-owned (small-scale, family, or cooperatively owned) business	73	2.57	3	0.4623	0.12	1.96	1	0.1614	--
Businesses located within the same county as your business	69	0.71	3	0.869	0.06	0.88	1	0.3489	--
Businesses located within 300 miles of your business	52	4.09	3	0.2514	0.15	0.00	1	0.9737	0.00
Women-owned businesses	40	11.31	3	0.0105*	0.24	9.39	1	0.0022***	0.22
Black, Indigenous, People of Color (BIPOC)-owned businesses	27	6.24	3	0.1003	0.18	24.10	1	<0.0001***	0.36

Notes: *, **, and *** signify statistical significance at the 0.1, 0.05, and 0.01 levels, respectively
Chi-squared values are not reported for cases where some expected cell counts are below 5

Table A2. Frequency Table of Survey Results by Firm Size

Table entries represent **the number of producers (percentage of group).**
X (Y%): X is the number of engaged producers and Y% is their proportion within the group.

Category	Description	Large *n* = 20	Medium *n* = 18	Small *n* = 105	Micro *n* = 46
Sales channels	In-person Direct to Consumer	7 (35%)	13 (72%)	67 (64%)	29 (63%)
	Farmers Market	6 (30%)	10 (56%)	73 (70%)	22 (48%)
	Online Direct Consumer	6 (30%)	11 (61%)	62 (59%)	15 (33%)
	Restaurant and/or Food Service Providers	8 (40%)	8 (44%)	48 (46%)	6 (13%)
	Community Supported Agriculture (CSA)	2 (10%)	7 (39%)	45 (43%)	14 (30%)
Certification	No certifications	3 (15%)	8 (44%)	32 (30%)	20 (43%)
	Food Safety Modernization Act	5 (25%)	3 (17%)	40 (38%)	8 (17%)
Diversity hiring	Hiring local community talent	15 (75%)	11 (61%)	55 (52%)	9 (20%)
	Hiring women	14 (70%)	11 (61%)	53 (50%)	10 (22%)
	Hiring BIPOC	12 (60%)	6 (33%)	36 (34%)	10 (22%)
	Hiring social disadvantaged persons	9 (45%)	3 (17%)	35 (33%)	5 (11%)
	Hiring LGBT	10 (50%)	2 (11%)	32 (30%)	7 (15%)
Purchasing practices	Purchasing from women-owned business	5 (25%)	2 (11%)	45 (43%)	24 (52%)
Nutrition	Growing locally seasonal fruits and vegetables	11 (55%)	6 (33%)	75 (71%)	34 (74%)
Labor	Building safe and healthy working conditions	20 (100%)	13 (72%)	63 (60%)	18 (39%)
	Eliminating discrimination with respect to employment or occupation	15 (75%)	7 (39%)	43 (41%)	13 (28%)
Sustainability	Avoid use of potentially hazardous or toxic chemicals in operations	6 (30%)	15 (83%)	81 (77%)	30 (65%)
	Compost organic waste	7 (35%)	10 (56%)	74 70%)	34 (74%)
	Practice regenerative agriculture	7 (35%)	11 (61%)	74 (70%)	22 (48%)
Challenges for selling to institutions	Insufficient product volume	2 (10%)	2 (11%)	33 (31%)	27 (59%)
Operations and farm income growing challenges	Limited availability of labor	5 (25%)	11 (61%)	36 (34%)	8 (17%)
	Changing weather patterns	2 (10%)	6 (33%)	35 (33%)	8 (17%)
Benefits	Increased employee satisfaction	14 (70%)	5 (28%)	43 (40%)	14 (30%)

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Table A3. Frequency Table of Survey Results by BIPOC and Non-BIPOC Ownership

Table entries represent **the number of producers (percentage of group)**
X (Y%): X is the number of engaged producers and Y% is their proportion within the group.

Category	Description	BIPOC *n* = 23	No-BIPOC *n* = 166
Diversity hiring	Hiring women	15 (65%)	73 (44%)
	Hiring BIPOC	16 (70%)	48 (29%)
	Hiring social disadvantaged persons	12 (52%)	40 (24%)
	Hiring LGBT	13 (57%)	38 (23%)
Purchasing practices	Purchasing from women-owned business	16 (70%)	60 (36%)
	Purchasing from BIPOC-owned business	16 (70%)	35 (21%)
Nutrition	Growing locally seasonal fruits and vegetables	19 (83%)	107 (64%)
	Choosing culturally relevant, nutrient-rich crops	17 (74%)	65 (39%)
Labor	Building safe and healthy working conditions	18 (78%)	96 (58%)
Local economies	Work with other organizations (e.g., businesses, not-for-profit organizations, government agencies) to support local economic development activities	17 (74%)	73 (44%)
Difficulties from implementing VBIFP practices	Lack of financial resources to implement practices	18 (78%)	81 (49%)
	Lack of additional land/infrastructure/resources needed to implement practices	16 (70%)	58 (35%)
Top challenges to growing your farming operations and farm income	Limited access to capital	15 (65%)	49 (30%)

Table A4. Frequency Table by State and Chi-square Independency Test Results

Table entries represent **the number of producers (percentage of group)**

X (Y%): X is the number of producers from given state and Y% is their proportion within the group.

Category	Description	χ^2	df	*p*-value	Cramer's *V*	Illinois	Indiana	Michigan	Other	Wisconsin
Nutrition	Choosing culturally relevant, nutrient-rich crops	8.71	4	0.0686*	0.21	39 (55%)	4 (27%	21 (33%)	3 (60%)	15 (43%)
	Choosing heritage breed	12.97	4	0.0114**	0.262	35 (50%)	4 (27%)	14 (22%)	2 (40%)	17 (49%)
Sustainability	Practice regenerative agriculture	28.82	4	<0.0001***	0.39	47 (66%)	13 (87%)	22 (35%)	4 (80%)	28 (80%)
	Reduce carbon footprint	11.89	4	0.0181**	0.25	41 (58%)	12 (80%)	25 (40%)	1 (20%)	20 (57$)
	Reduce water footprint	8.57	4	0.0728*	0.21	34 (48%)	10 (67%)	21 (33%)	2 (40%)	20 (57%)
	Compost organic waste	8.83	4	0.0654*	0.21	55 (77%)	10 (67%)	34 (54%)	4 (80%)	22 (63%)
	Ensure workplace conditions	11.69	4	0.0197**	0.25	39 (55%)	13 (87%)	27 (43%)	1 (20%)	19 (54%)
Local economies	Work with other organizations to support local economic development activities	10.59	4	0.0315**	0.24	43 (61%)	6 (40%)	21 (33%)	2 (40%)	18 (51%)
Difficulties from implementing VBIFP practices	Lack of additional land/infrastructure/resources needed to implement practices	11.03	4	0.0262**	0.24	37 (52%)	2 (13%)	23 (37%)	2 (40%)	10 (29%)
Top challenges to growing your farming operations and farm income	Limited access to capital	8.77	4	0.0667*	0.22	25 (35%)	7 (47%)	14 (22%)	1 (20%)	17 (49%)