

Lab 2: Deep Research, SDG Mapping, and Bias Detection

John Doe (Instructor Example) | SE 395-2: AI Tools for Social Impact | September 22, 2026

Section 1: Research Design

Partner and Rationale

I chose Second Harvest Food Bank of Central Florida, a nonprofit that distributes over 100 million meals annually through 800+ partner agencies across six counties (Feeding America, 2025). Food insecurity is a challenge I have seen firsthand through volunteer work, and the organization is large enough to have documented operations but small enough at the staff level that AI adoption questions are real. Unlike a national organization where AI tools are already in place, Second Harvest sits in the middle: big enough that efficiency gains matter, but not so resourced that they can hire a data science team.

Sub-Queries

- 1. **Domain research:** How are food banks currently using AI? What applications have documented evidence of working vs. what is experimental or just hype?
- 2. **SDG alignment:** Which specific UN SDG targets connect to food bank operations, and what evidence links food distribution work to measurable progress on those targets?
- 3. **Tool landscape:** What AI tools are available and affordable for mid-size nonprofits (50-200 staff) in food distribution? What do they cost, who built them, and what data do they collect?

These queries are independent: the domain research does not depend on knowing which SDG targets apply, and the tool landscape does not depend on either of the other two results. Each stream can run simultaneously, which is why I ran all three as separate Gemini Deep Research sessions at the same time.

Section 2: Source Evaluation Table

Source	Type	Credibility	Verified?	Bias Notes
Feeding America Annual Report (2025)	Org. report	High	Yes	Self-reported; incentive to show impact
UN FAO State of Food Security (2024)	UN report	High	Yes	Global focus; may underweight US domestic issues
Sengul Orgut & Lodree (2023), <i>Production and Operations Management</i>	Peer-reviewed	High	DOI confirmed	Single food bank case study; southeastern US only
McKinsey, "AI for Social Good" (2018)	Consulting	Medium	Yes	Maps AI to SDGs without measuring impact; 8 years old

Stanford HAI AI Index (2026)	Academic	High	Yes	Industry-focused; less on social sector
Microsoft "AI for Good" blog (2024)	Marketing	Low	Unverified	Promoting own products; no independent eval of claimed outcomes
Salesforce.org "Nonprofit AI" page	Marketing	Low	Product exists	Selling Nonprofit Cloud; 22% donor increase figure has no independent verification
Tomasev et al. (2020), Nature Communications	Peer-reviewed	High	DOI confirmed	Western-centric; limited Global South coverage
Copia website	Company site	Medium	Exists	Self-reported metrics (10M lbs diverted); no third-party audit
USDA ERS food waste data (2024)	Government	High	Yes	US-only; methodology debates on measurement

Verification Details

I used Perplexity to fact-check 7 specific claims from my Gemini research. The results ranged from fully verified to outright fabricated, which changed how I used the sources in this report.

Claim (from Gemini)	Perplexity Finding	Verdict
"DeepMind partnered with WFP to develop AI models for supply chain optimization"	No evidence of a direct DeepMind-WFP partnership. Google.org (separate entity) provided grants to WFP Innovation Accelerator. Palantir partnered with WFP on data, not DeepMind. Likely conflated Google.org grants with DeepMind's logistics research.	Fabricated
MealConnect uses "AI-powered" matching to connect food donations with agencies	MealConnect exists and is operated by Feeding America. However, Feeding America describes it as a "technology platform," not an AI tool. No published evidence of machine learning as a component. Algorithm does not equal AI.	Exaggerated
"Only 8% of US food banks had adopted any form of AI" (Urban Institute, 2024)	No 2024 Urban Institute report with this claim found. NTEN's 2024 report found 60%+ of nonprofits use AI in some capacity, a very different number. The 8% figure may be extrapolated or fabricated.	Unverifiable
"1.3 billion tons of food wasted globally each year" (UN FAO)	From FAO's 2011 study, over a decade old. Current UNEP Food Waste Index 2024 uses different methodology (1.05B tons household waste alone). Still commonly cited but outdated.	Outdated
Copia "has diverted over 10 million pounds of food"	Copia exists and uses predictive analytics. The 10M figure appears on their website and in press coverage, but media	Self-reported

	articles cite Copia's own numbers without independent verification.	
Salesforce Einstein increased recurring donations by 22% at Food Bank of the Rockies	Food Bank of the Rockies uses Salesforce for CRM (confirmed via careers page). Whether they use Einstein AI specifically is unconfirmed. The 22% figure likely comes from Salesforce marketing, not independent evaluation.	Self-reported
Dutch government resigned in January 2021 over algorithmic childcare benefits scandal affecting 26,000 families	Fully verified. PM Rutte's government resigned Jan 15, 2021. Algorithm disproportionately targeted families with dual nationality. Amnesty International documented it as a rights violation.	Accurate

The pattern that emerged from verification was clear: claims sourced from peer-reviewed research and government reports held up. Claims sourced from corporate marketing or vendor case studies were consistently exaggerated, unverifiable, or self-reported. Gemini presented both categories side by side without distinction, which is a problem if you take its output at face value.

Section 3: SDG Map

SDG Target	Connection to Second Harvest	Strength	Source
2.1 End hunger; ensure year-round food access	Core mission: 100M+ meals annually across six Florida counties. This is the most direct connection. AI demand forecasting could help anticipate need at the zip-code level, but it does not increase the total food supply.	Strong	Feeding America (2025)
12.3 Halve food waste at retail/ consumer levels by 2030	Food rescue diverts surplus from retailers and farms that would otherwise go to landfill. Matching platforms like MealConnect (even if not truly "AI") demonstrably reduce waste. This is the most measurable connection.	Strong	USDA ERS (2024); Sengul Orgut & Lodree, 2023
1.2 Reduce proportion of people living in poverty by half	Food assistance frees household income for housing and medicine. The causal link is real but indirect. A food bank is several steps removed from poverty reduction as measured by this target.	Moderate	Feeding America (2025)
17.17 Encourage effective public-private and civil society partnerships	Operates through 800+ partner agencies. The network model itself is genuine multi-stakeholder collaboration. However, citing corporate AI partnerships (Google.org, Microsoft) as evidence of SDG 17 progress risks circular reasoning: the partnership exists to deploy AI, and the AI is then cited as evidence of partnership.	Moderate	Tomasev et al. (2020)

I initially mapped Second Harvest to 8 SDG targets based on Gemini's suggestions: Targets 2.1, 2.4, 12.3, 1.2, 3.4, 4.2, 10.2, 13.2, and 17.17. After checking the evidence for each one, I cut it to 4. The dropped

targets had connections that sounded reasonable but fell apart when I asked for proof. SDG 3 (health) and SDG 4 (education) require too many causal steps. SDG 10 (inequality) is so generic that any social service could claim it. SDG 13 (climate action) is real but incidental to their mission. Fewer strong connections are more useful than many weak ones.

Section 4: Bias Audit

Bias 1: Geographic and Demographic

All three tools produced findings overwhelmingly from US-based organizations and English-language sources. Gemini returned zero results from Latin America, Sub-Saharan Africa, or South Asia, where food insecurity is most severe. The AI solutions being discussed are designed for well-resourced American food banks with digital infrastructure, internet connectivity, and staff who can operate software platforms. These do not transfer to the contexts where food insecurity is most urgent. Any recommendation I make is drawn from a sample biased toward organizations that already have resources (Dhaliwal & Hou, 2024).

Bias 2: Corporate Framing

Three of my sources (Microsoft, Salesforce.org, Copia) were marketing materials that framed AI adoption as inevitable and positive, with no discussion of costs, failures, or privacy concerns. Gemini surfaced these alongside peer-reviewed research without distinguishing between them. This matters because the framing shapes perception: a Salesforce case study claiming "22% increase in recurring donations" sounds like evidence, but it is a company selling its own product and reporting its own numbers. No independent evaluator confirmed that figure.

This is the "corporate capture" pattern Iazzolino and Stremlau (2024) describe. When Google, Microsoft, and Salesforce donate AI tools to food banks, they are not just being generous. They gain access to distribution data with market research value, create platform dependency that is expensive to exit, generate case studies that burnish their brand, and position themselves as essential partners at the policy table. The "evidence" for AI effectiveness comes almost entirely from the companies providing the AI, not from independent researchers or the food banks themselves.

Bias 3: Survivor Bias

Every AI implementation example in my research was a success story. No tool surfaced a food bank that tried AI and abandoned it, or one where an algorithm produced harmful recommendations. Even though the NTEN 2024 report found that over 60% of nonprofits now use AI in some capacity (NTEN & Heller Consulting, 2024), that figure is driven by large, well-funded organizations. Small rural food pantries, church-based food closets, and community fridges serve some of the most vulnerable populations and have zero AI capacity. Organizations that fail with AI rarely document the failure publicly, so the available evidence systematically excludes negative outcomes.

Bias 4: SDG Framing

The SDG framework itself privileges measurable, quantifiable outcomes. It makes food distribution visible (tons diverted, meals served) but obscures the relational and community-building work that food

banks do. A volunteer who drives meals to a homebound senior and checks on them weekly is doing work that matters but does not map neatly to any SDG target. Claude raised this point during my bias analysis, and it made me realize the SDG mapping exercise is useful but incomplete. The framework shows what it was designed to show, not everything that matters.

Corporate Capture Analysis

Tool	Builder / Model	Data Risk	Lock-in	Open Alternative
Salesforce Nonprofit Cloud	Salesforce (\$31B rev.); subscription SaaS, \$60/user/mo nonprofit pricing	All donor/client data on Salesforce servers. Terms allow aggregated data use for product improvement. Donor giving patterns become training data for Salesforce's AI models.	High. Migration is expensive and complex. Organizations build custom workflows that are difficult to port. Nonprofit pricing increases over time.	CiviCRM (open source, self-hosted). Less polished but the organization owns its data completely.
Copia	VC-backed startup (Andreessen Horowitz, Y Combinator); enterprise SaaS	Collects surplus food data, logistics data, partner info. Data ownership terms unclear in public-facing materials.	Medium. If Copia shuts down (common for VC-backed startups), the food bank loses its logistics platform entirely with no migration path.	No direct equivalent. Google Sheets + Google Maps API for basic matching is a low-tech workaround.

Section 5: Synthesis and Reflection

The biggest thing this lab taught me is how wide the gap is between the story AI tells about itself and what the evidence actually supports. Gemini flooded me with 30+ sources in minutes, and the initial picture looked impressive: food banks using machine learning for demand forecasting, AI-powered matching platforms diverting millions of pounds of food, corporate partnerships driving 20% cost reductions. It took Perplexity to show me how much of that was built on sand. Out of 7 claims I checked, one was fabricated (the DeepMind-WFP partnership never happened), two were exaggerated, and two more were self-reported vendor marketing with no independent verification. Only two held up cleanly. The pattern was consistent: claims from peer-reviewed research and government reports survived verification, while claims from corporate sources did not. Gemini presented both categories side by side without distinction, which is dangerous if you take its output at face value. The three tools worked best as a sequence: Gemini generated the raw material, Perplexity filtered out what was real, and Claude helped me think critically about the patterns in what remained. Using only one would have meant either accepting fabrications (Gemini alone), having facts without a framework (Perplexity alone), or analyzing nothing concrete (Claude alone).

Claude's bias analysis surfaced insights I would not have reached on my own. The most important was survivor bias: every example in my research was a success story. No food bank that tried AI and

abandoned it, no algorithm that produced bad recommendations, no honest postmortems. Even though the NTEN 2024 report says 60%+ of nonprofits use AI in some form (NTEN & Heller Consulting, 2024), that adoption skews heavily toward large organizations, and none of the reported use cases include failures. Small rural food pantries, church-based food closets, community fridges: these serve some of the most vulnerable people and have zero AI capacity. Claude also pushed me to see what the SDG framework makes invisible. A volunteer who drives meals to a homebound senior and checks on them every week is doing work that matters deeply, but it does not map to any SDG target. The framework is useful for what it measures, but it is not a complete picture of impact. That said, the SDG mapping turned out to be more valuable than I expected, once I applied the evidence test. Gemini suggested 8 targets. I cut it to 4. The ones I dropped sounded plausible but could not survive the question "where is your evidence?" The framework works best as a filter that forces intellectual honesty, not as a checklist where more connections means better work.

If I were advising Second Harvest today, I would tell them to start with free tools they already control: Google Sheets for distribution tracking, Google Analytics for their website. Not exciting recommendations, but honest ones. The paid platforms like Salesforce and Copia both create dependency that is expensive to exit (Iazzolino & Stremlau, 2024). Salesforce stores all donor data on their servers and makes migration painful by design. Copia is VC-backed, which means it could shut down at any time, leaving the food bank without a logistics platform. Before adopting either, Second Harvest should get data portability commitments in writing.

What I still do not know, and what no AI tool could tell me, is how Second Harvest actually operates day to day. What manual processes eat the most staff time? Have they tried technology solutions before? If I sat down with their staff, they would probably talk about things none of my research touched: the emotional weight of the work and the relationships with partner agencies that no software can replace (Tomasev et al., 2020). This lab gave me a research foundation, but the next step is listening.

References

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