FARMFORWARD

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COSTCO CHICKEN UNDER THE MICROSCOPE: HIGH CONTAMINATION AND ANTIBIOTIC-RESISTANT SALMONELLA

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EXECUTIVE SUMMARY

In December 2025, Farm Forward published an investigative report revealing that Costco's Nebraska chicken plant, Lincoln Premium Poultry (LPP), has repeatedly failed USDA's Food Safety and Inspection Service (FSIS) salmonella standards since the plant opened in 2019.[1] For our latest research, we analyzed salmonella testing data to identify the specific types of salmonella found in the plant from 2020 to 2025.[2] Our findings are alarming.

The answers to three questions we asked to evaluate the full scope of the salmonella problem at Costco's LPP plant, paint a disturbing picture of the risk Costco chicken poses to consumers:

1. How contaminated is the LPP plant?

– **Highly contaminated:** The plant failed FSIS standards 84.5% of the time between 2019 and the end of 2025.

2. How prevalent at LPP are the salmonella strains (serotypes) most likely to cause illness in humans (*Infantis, Enteritidis,* and *Typhimurium*)?

– **Very prevalent:** In 2025, two of the top serotypes associated with human illness (*Infantis* and *Enteritidis)* made up 63.6% of positive samples. Across 2020-2025, overall, *Infantis, Enteritidis,* and *Typhimurium* accounted for 58.6% of samples.

3. How resistant to antibiotics that are important for human medicine are LPP salmonella samples, and thus how difficult would salmonella infections be to treat?

– **Extremely resistant:** In 2025, 50% of *Enteritidis* samples and 100% of *Infantis* samples were resistant to at least one antibiotic the World Health Organization classifies as highly important for human medicine. Across 2020-2025, 40% of *Enteritidis* samples, 90% of *Infantis* samples, and 100% of *Typhimurium* samples were antibiotic resistant. In 2025, 20% of *Infantis* samples were multidrug resistant (meaning resistance to three or more antibiotic classes), and across 2020-2025, 76% of *Infantis* samples were multidrug resistant.

For Costco shoppers, this means that for chicken coming from the LPP plant: 1) the likelihood of buying chicken that came into stores contaminated is high, 2) the contaminated raw chicken shoppers buy has high probability of containing salmonella that can make them sick, and 3) if consumers do get severely ill, antibiotics used to treat these infections simply may not work.[3] LPP currently supplies about 40% of Costco's chicken.[4]

1 "Inside Costco's Chicken Supply Chain: Salmonella Contamination and the True Costs of the $4.99 Rotisserie Chicken," Farm Forward, December 2025. For Farm Forward's full report on salmonella contamination across the poultry industry, see: "How the USDA & the US Poultry Industry Fail to Protect Americans from Foodborne Disease," Farm Forward, October 2025.
2 "Raw Poultry Sampling," USDA Food Safety and Inspection Service (FSIS). Data analyzed for FY2020-FY2025.
3 Both the WHO and CDC warn that antimicrobial resistance (AMR) is one of the greatest global health challenges of our time, a crisis that may mean that even common infections will become untreatable. Animal agriculture is driving this crisis. Two-thirds (66%) of medically important antibiotics are purchased for use in farmed animals, most of which are used not to treat discrete infections, but in continuous subtherapeutic doses to keep animals alive in unhygienic, disease-ridden living conditions. The WHO reports that antibiotic use in livestock is a serious threat to human health, directly compromising the ability to treat virulent human infections, and threatening the efficacy of antibiotics used to treat even common infections.
4 Roy Graber, "Judge Moves Nebraska Poultry Farm Plans Forward," WATTPoultry, January 7, 2021.

The overall 84.5% contamination rate of the LPP plant exacerbates these risks. Because Costco allows salmonella to proliferate in its LPP plant, it has ongoing opportunities to evolve, increase virulence, and develop resistance to vitally important antibiotics.

Costco knows the chicken it produces is contaminated with high rates of salmonella. It knows the strains of salmonella in these products include those most associated with human illness. And it knows that the salmonella found on their products harbors high rates of antibiotic resistance. With the high level of control over chicken in LPP's supply chain, the company is uniquely suited to solving this problem and reinventing the poultry industry in ways to improve food safety and protect the health of their consumers.

BACKGROUND

Costco's Lincoln Premium Poultry (LPP) plant has repeatedly failed the USDA Food Safety and Inspection Service (FSIS) performance standards for salmonella contamination since the plant opened in 2019. Between 2019 and the end of 2025, LPP failed 84.5% of the time.[5]

The performance standards that FSIS sets are based on maximum allowable percentage of samples found positive for salmonella contamination, and the agency assigns categories to these percentages. Category 3, the worst rating, indicates that the plant failed the standard. Even when a plant chronically fails the standard, however, the federal government has not granted FSIS the authority to stop the sale of contaminated products, order recalls, or suspend or shut down the plant. If FSIS were able to enforce the standards it sets, LPP would be forced to address its salmonella problem and reduce contamination in its products. Instead, Costco is allowed to routinely sell chicken products from its highly contaminated plant, putting consumers at risk for contracting this potentially dangerous pathogen.

Between its opening in 2019 and the end of 2025, Costco's LPP plant failed the USDA's Food Safety and Inspection Service salmonella standard 84.5% of the time, and it failed badly.

Costco has not only repeatedly failed the standard, it's failed badly. For whole chicken carcasses (like those used for Costco's rotisserie chicken), between 2019 and 2025, on average, about 1 in 7 samples from the LPP plant tested positive (13.7%).[6] This average is approximately 40% higher than the allowable percentages of

5 "How the USDA & the US Poultry Industry Fail to Protect Americans from Foodborne Disease," Farm Forward, October 2025. See page 11, Figure 4.

6 The weighted average contamination rate was calculated by multiplying each year's salmonella contamination percentage by the number of samples collected that year, summing these weighted values, and dividing by the total number of samples across all six years. This accounts for differences in sample size between years and provides a more accurate overall estimate than a simple unweighted average. The resulting weighted average was then converted to the intuitive "1 in …" format by taking its reciprocal. **Note:** In our first report on Costco, we calculated the contamination rate in general terms based on the maximum percentage positive percentages FSIS assigns to the performance standard categories (e.g., for whole chicken carcasses, 9.8% positive passes the standard and, for chicken parts, 15.4% passes the standard). For this new analysis, we identified the exact percentages positive for the LPP plant.

9.8% positive whole chicken samples. Because FSIS standards are so lax, even chicken products that pass, or almost pass, the standard have egregiously high levels of contamination. The average percentage of contaminated chicken parts from LPP only marginally exceeds the maximum allowable percentage (by 0.1 percentage points), but salmonella was still, on average, found in roughly 1 in 6 samples from LPP.

Even this high prevalence of contamination belies the more serious reality of Costco's contamination problem and the risk it poses to consumers. In its category ratings, FSIS tracks whether the plant exceeds, meets, or fails standards based on allowable percentages of positive tests, but it does not take into account how badly the plant fails the standards in its category assignment. For instance, a plant receives a Category 3 rating for chicken parts whether it has 15.5% or 48.6% contamination (LPP's highest level of contamination, in 2020). Further, although FSIS also collects data on which strains (serotypes) of salmonella are found in samples, as well as whether the sample is resistant to one or more antibiotics important for human medicine, these do not factor into FSIS ratings. This omission is concerning, in that this information is critical for assessing the actual risk posed to consumers.

Farm Forward analyzed FSIS's data on salmonella serotypes and antibiotic resistance and found that a significant portion of serotypes contaminating the chickens in the plant are those that most commonly cause illness in humans, and that a large portion of samples showed resistance to one or more antibiotics important for treating human disease, including salmonella infections.

Photograph by Haig / World Animal Protection / We Animals

COSTCO ALLOWS VIRULENT STRAINS OF SALMONELLA TO CIRCULATE *AT ITS LINCOLN PREMIUM POULTRY PLANT*

Three of the ten serotypes found at the LPP plant are among those most likely to make humans sick: *Enteritidis, Typhimurium,* and *Infantis.*[7] These three alone account for over 59% of the plant's positive samples. See appendix A for a full list of serotypes found at LPP.

***Infantis* is by far the most prevalent at LPP, accounting for 45.4% of positive samples in 2025 and 48% of overall samples across 2020-2025.**

Salmonella Infantis cases have risen significantly in recent years, alarming public health officials with their rapidly increasing prevalence;[8] between 2015 and 2021, diagnosed *Infantis* cases multiplied fivefold, with poultry a common source of infection.[9]

Salmonellosis (including that caused by the *Infantis* serotype) causes symptoms of diarrhea, fever, nausea, and vomiting in otherwise healthy individuals. However, children, elders, and those with weakened immune systems are at higher risk for severe disease that requires hospitalization and, in some cases, can be fatal.[10]

This is precisely what happened in 2018, when a strain of *Infantis* caused a multi-state outbreak, sickening 129 people, hospitalizing 25, and killing one.[11] Antibiotics typically used to treat salmonella weren't working because *Infantis* has developed a high level of resistance to multiple commonly used antibiotics.[12] The outbreak baffled public health officials as the strain kept popping up in different states without a clear source. Eventually, the source was identified as contaminated chicken products. Although the outbreak continued, in February 2019, the CDC closed its investigation even as the agency reported that "illnesses could continue because this *Salmonella* strain appears to be widespread in the chicken industry."[13] The outbreak continued to spread.[14]

7 USDA-FSIS, "Salmonella Framework for Raw Poultry Products: A Proposed Rule by the Food Safety and Inspection Service," *Federal Register*, 9 CFR Part 381, August 8, 2024.

8 Diana M. Alvarez et al., "A Review of the Global Emergence of Multidrug-resistant Salmonella Enterica Subsp. Enterica Serovar Infantis," *International Journal of Food Microbiology* 403 (2023): 110297; Jennifer Mattock et al., "A One Health Perspective on Salmonella Enterica Serovar Infantis, An Emerging Human Multidrug-Resistant Pathogen," *Emerging Infectious Diseases* 30, no. 4 (2024): 701-710.

9 Bernice Yueng et al., "America's Food Safety System Failed to Stop a Salmonella Epidemic. It's Still Making People Sick," *ProPublica*, October 29, 2021.

10 "Salmonella (Salmonellosis)," U.S. Food and Drug Administration, March 29, 2019.

11 These are the cases documented by the CDC. In reality, the number is likely much higher. The CDC estimates that only 1 in 30 cases of salmonella is diagnosed. "Estimates: Burden of Foodborne Illness in the United States," CDC, accessed October 1, 2025.

12 Yueng et al., "America's Food Safety System Failed."

13 "Investigation Notice," Centers for Disease Control (CDC), February 21, 2019.

14 Yeung et al., "America's Food Safety System Failed."

The CDC has tracked outbreaks of the persistent *Infantis* strain REPJFX01 linked to poultry since 2012. In its analysis of 12% of cases, the agency reported that 30% of people were hospitalized, 6% were admitted to intensive care, and 1% died. For those who received antibiotics, **79% of cases were resistant to an antibiotic** the patients were given to treat the infection.[15] Because *Infantis* cases are increasing in prevalence, these cases should be a warning that *Infantis* could pose a serious threat to the public, especially in the context of raw poultry.

Some serotypes of salmonella come and go in birds tested in poultry plants, but others, like *Infantis*, can survive and adapt to birds and their environment, persisting and spreading in operations that grow, slaughter, and process chickens for meat.[16] This appears to be occurring at Costco's plant. Whereas other serotypes emerge sporadically at LPP, *Infantis* shows up persistently in every FSIS report since the plant opened (2020-2025).

Although other salmonella serotypes have appeared sporadically over the years, ***Infantis*** *has shown up in every FSIS report since the LPP plant opened in 2019.*

At LPP, in 2025, 18.1% of samples were identified as *Enteritidis*, meaning that together, *Enteritidis* and *Infantis* account for 63.6% of positive samples. Across 2020-2025, overall, *Infantis, Enteritidis,* and *Typhimurium* accounted for 58.6% of samples.

15 "Data Summary: Persistent Strain of Salmonella Infantis (REPJFX01)," CDC, July 9, 2025.
16 Biovet S.A., "Importance of Salmonella Infantis at the Present Time," *Veterinaria Digital*, July 6, 2023.

COSTCO CHICKEN CARRIES SALMONELLA STRAINS RESISTANT *TO LIFE-SAVING ANTIBIOTICS*

The risk consumers are exposed to with Costco's LPP chicken is not just in contracting one of these strains, but also in being sickened by a strain resistant to (often multiple) antibiotics used to treat these illnesses. The plant is a breeding ground for prolific antibiotic resistance. **54.5% of positive samples showed resistance to at least one antibiotic, and 9% were multidrug resistant.** For a summary of the prevalence of antibiotic resistance at the plant, see appendix C.

If a person contracts an antibiotic-resistant strain of salmonella, and especially a multidrug-resistant strain, medications that would normally cure the infection may no longer be effective. The more antibiotics a strain resists, the more limited options doctors have for effective medications. This is an immediate threat to people who contract salmonella (since antibiotic-resistant salmonella can lead to more severe cases that require hospitalization and, in some cases, cause death). Antibiotic resistance puts millions of Americans at risk every day, as it threatens the ability to treat cases of salmonella that require antibiotics.

The WHO and CDC both warn that antimicrobial resistance (AMR) is a top global public health crisis, raising the risk that even commonplace infections could become untreatable.[17] According to the CDC, there are already more than 2.8 million antibiotic-resistant infections in the U.S. each year.[18] 1 in 80 people with these infections die as a result.[19]

Costco's chicken production system contributes directly to this crisis. In the U.S., two-thirds (66%) of antibiotics important for human medicine are sold for use in farmed animals,[20] typically *not* to treat illnesses but for disease *prevention*. Industrial farms are breeding grounds for pathogens, necessitating widespread, regular application of antibiotics for animals to survive the squalid conditions in which they are raised.[21] Many of these drugs are commonly used to treat human infections. For decades, the WHO has cautioned that antibiotic use in farmed animals contributes to resistance that can spread to people, undermining the effectiveness of life-saving drugs.[22] Still, Costco allows antibiotic-resistant salmonella to run rampant through its supply chain.

17 "Antibiotic Resistance Threats in the United States 2019," CDC; "Antimicrobial Resistance: Key Facts," World Health Organization (WHO), 2021.
18 "Antibiotic Resistance Threats in the United States 2019," CDC.
19 "Antibiotic Resistance Threats in the United States 2019," CDC.
20 David Wallinga et al., "A Review of the Effectiveness of Current US Policies on Antimicrobial Use in Meat and Poultry Production." *Current Environmental Health Reports* 27, no. 9 (2022): 339–354.
21 Wallinga et al., "A Review of the Effectiveness of Current US Policies on Antimicrobial Use."
22 "Stop Using Antibiotics in Healthy Animals to Prevent the Spread of Antibiotic Resistance," WHO, November 7, 2017; Xu C et al., "A Review of Current Bacterial Resistance to Antibiotics in Food Animals," *Frontiers in Microbiology* 13 (2022): 822689.

When FSIS conducts its salmonella sampling at plants, it tests positive samples with 17 different antibiotics—all classified by the WHO as "Highly Important Antimicrobials" (HIA), "Critically Important Antimicrobials" (CIA), or "Highest Priority Critically Important Antimicrobials" (HPCIA) to human medicine.[23] See appendix B for WHO classifications of the full list of antibiotics included in FSIS testing.

At LPP, FSIS found resistance to 10 of these medically important drugs, including considerable levels of resistance to two (nalidixic acid and ceftriaxone) classified as HPCIAs, categories of drugs considered to be a last line of defense against severe infections.[24] Both antibiotics are in classes used to treat the most severe cases of salmonella. At LPP, 90% of samples were resistant to nalidixic acid and 20% of samples were resistant to ceftriaxone. For a full list of antibiotics found to have resistance at LPP with WHO classifications, see appendix D.

The antibiotic resistance reality at LPP is of significant concern:

1. ***Infantis*:** In 2025, 100% of samples were antibiotic resistant, and 20% were multidrug resistant, with some samples showing resistance to up to 8 antibiotics.
2. ***Enteritidis*:** 50% of samples were antibiotic resistant, including all to nalidixic acid and one to ceftriaxone.
3. ***Typhimurium*:** Fully 100% of positive samples were resistant to sulfisoxazole and tetracycline, both HIAs.

We know that these are among the serotypes most likely to cause illness in humans, which makes it obvious why antibiotic resistance is a problem. Contracting these serotypes means that drugs to treat them might not work.

But even serotypes classified as "low risk" to humans, like the *Salmonella Kentucky* strain, could pose a threat to human health when antibiotic resistance enters the picture. *Kentucky* is one of the most prevalent forms of salmonella in the poultry industry, and indeed, after *Infantis*, it is the most prevalent serotype found at the LPP plant (across 2020-2025, 41.6% of samples were *Kentucky*). Although *Kentucky* itself is considered "low risk" for humans by the CDC, this belies the broader danger it poses to public health.

The WHO and CDC both warn that antimicrobial resistance (AMR) is a top global public health crisis, raising the risk that even commonplace infections could become untreatable.

When different salmonella serotypes carrying distinct antibiotic-resistance genes are present in the same poultry environment, it creates far more than an isolated contamination problem. It becomes a potential hotbed for the evolution and spread of more complex and harder-to-treat bacteria.[25] Salmonella strains circulating on farms and in processing facilities do not exist in isolation. They share space on surfaces, in water, in animals, and on equipment, and crucially, they can exchange genetic material that encodes resistance to antibiotics. In bacteria, genetic elements move from one strain to another, meaning

23 The list includes seven that are considered by the WHO to be "Highly Important Antimicrobials," four "Critically Important Antimicrobials," and six "Highest Priority Critically Important Antimicrobials." Drugs in these classes are essential for the treatment of common and life-threatening bacterial infections, including those reserved as last-resort options to treat multidrug resistant infections. For a full list, see: "WHO List of Medically Important Antimicrobials," WHO, 2024.

24 "WHO List of Medically Important Antimicrobials," WHO.

25 H. Oh et al., "Antibiotic-Resistant Salmonella in Animal Products Jeopardize Human Health," *Food Science of Animal Resources* 45, no. 2 (2025): 409-428.

resistance traits can combine in ways that make infections in people harder to cure.[26]

This is exactly the threat posed by the prevalence of *Kentucky* at LPP. The evidence: more than a third (41.6%) of samples identified as the *Kentucky* serotype resisted one or more antibiotics, including ceftriaxone (HPCIA), gentamicin (CIA), sulfisoxazole (HIA), and tetracycline (HIA).[27]

When a serotype confers resistance, it can threaten public health by compromising the effectiveness of antibiotics in cases where they are required to treat other types of salmonella or other infections.

This means that while consuming poultry contaminated with *Kentucky* may not be likely to make consumers sick, the resistance developed in these samples has the potential to jump to other salmonella serotypes or even to other bacteria, like *E. coli*.[28] When a serotype confers resistance in this way, it can threaten public health by compromising the effectiveness of antibiotics in cases where they are required to treat other types of salmonella or other infections where those antibiotics are typically used for treatment.

Antibiotic resistance isn't something shoppers likely think about when they swing by Costco to purchase their affordable whole chickens, chicken breasts, and other raw chicken products.[29] It may seem like an abstract problem, or one that won't affect them or their families. But as the families of millions of Americans can attest, the threat of antibiotic resistance is real, present, and growing. Antibiotic resistance in salmonella has the potential to impair our ability to treat increasingly virulent strains of not only salmonella, but other bacterial infections that sicken Americans every year.

26 Gang Liu et al, "Antimicrobial-induced Horizontal Transfer of Antimicrobial Resistance Genes in Bacteria: A Mini-review," *Journal of Antimicrobial Chemotherapy* 77, no. 3 (2022): 556–567; G.I. Krüger et al., "Mobile Genetic Elements Drive the Multidrug Resistance and Spread of Salmonella Serotypes Along a Poultry Meat Production Line," *Frontiers in Microbiology* 14 (2023): v1072793.

27 "Raw Poaultry Sampling," USDA FSIS. Data analyzed for FY2020-FY2025.

28 W.F. Fricke et al., "Antimicrobial Resistance-Conferring Plasmids with Similarity to Virulence Plasmids from Avian Pathogenic Escherichia coli Strains in Salmonella enterica Serovar Kentucky Isolates from Poultry," *Applied and Environmental Microbiology* 75 (2009).

29 Raw whole birds from the LPP plant have high rates of contamination. Farm Forward has no knowledge of the level of contamination in Costco rotisserie chicken products once cooked and offered to consumers because this data is not tracked and reported.

COSTCO AND THE FEDERAL GOVERNMENT *COULD CHOOSE TO DO BETTER*

Costco is in a unique position to address the crisis of salmonella in the chicken it sells. The company controls the full supply chain connected to its LPP plant, including the ways birds are raised, transported, slaughtered, processed, and distributed. Although FSIS tracks salmonella only in slaughter and processing plants, the problem starts long before, where birds are raised. Because Costco chose to control each stage of production for LPP's production to ensure "quality and safety," it has the opportunity to be a leader in salmonella safety in the poultry industry. To protect the health of Costco consumers:

1. **Costco should start upstream in the supply chain** and adopt slower-growing breeds of birds with genetics more resistant to disease, reduce stocking density and improve living conditions to reduce the prevalence of associated foodborne illnesses, and adopt more humane slaughter methods to address the established link between inhumane handling and foodborne disease transmission.
2. **Costco must keep its word** and follow through on its 2018 commitment to practice responsible antibiotic stewardship in its birds and poultry practices to meaningfully address the chronic problem of antibiotic overuse leading to antibiotic resistance.
3. **USDA must declare salmonella an adulterant** so that it has the power to regulate and enforce its standards, to protect consumers from companies otherwise unwilling to change their practices.

APPENDICES

Appendix A: Serotypes Identified at Lincoln Premium Poultry (2020-2025)

Salmonella Serotype	Percentage of Positive Samples
Infantis	48%
Kentucky	25.9%
Schwarzengrund	10.5%
Enteritidis	6.7%
Typhimurium	3.8%
Alachua	1.9%
Montevideo	0.96%
Hadar	0.96%
Senftenberg	0.96%

Appendix B: Antibiotics Included in FSIS Serotype Testing with WHO Rankings of Medical Importance

USDA's Food Safety and Inspection Service (FSIS) tests salmonella serotypes found in poultry plants for resistance to these 17 antibiotics important to human medicine. FSIS found that the bolded antibiotics were resisted by the salmonella strains found at LPP.

World Health Organization (WHO) Rankings: **HPCIA** = Highest Priority Critically Important Antimicrobials, **CIA** = Critically Important Antimicrobials, **HIA** = Highly Important Antimicrobials.

Antibiotic	WHO Ranking
ampicillin	**HIA**
amoxicillin	**HIA**
ceftriaxone	**HPCIA**
azithromycin	CIA
chloramphenicol	**HIA**
ciprofloxacin	HPCIA
colistin	HPCIA
trimethoprim_sulfamethoxazole	**HIA**
cefoxitin	**HIA**
gentamicin	**CIA**
kanamycin	CIA
meropenem	HPCIA
nalidixic acid	**HPCIA**
sulfisoxazole	**HIA**
streptomycin	CIA
tetracycline	**HIA**
ceftiofur	HPCIA

Source: "WHO List of Medically Important Antimicrobials," World Health Organization, 2024.

Appendix C: Prevalence of Antibiotic Resistance in Positive Samples at Lincoln Premium Poultry by Serotype

Salmonella Serotype	Percentage AMR (1 or more drugs)	Percentage MDR (three or more drug classes)
Infantis	90%	76%
Typhimurium	0%	100%
Alachua	50%	0%
Kentucky	41.6%	0%
Enteritidis	40%	0%
Schwarzengrund	0%	0%
Montevideo	0%	0%
Hadar	0%	0%
Senftenberg	0%	0%

Appendix D: Percentage Samples at Lincoln Premium Poultry with Antimicrobial Resistance by Medical Importance

World Health Organization (WHO) Rankings: **HPCIA** = Highest Priority Critically Important Antimicrobials, **CIA** = Critically Important Antimicrobials, **HIA** = Highly Important Antimicrobials.

Antibiotic	WHO Ranking	Percent of Samples w/ AMR
ampicillin	HIA	20%
amoxicillin	HIA	2%
ceftriaxone	HPCIA	20%
chloramphenicol	HIA	40%
trimethoprim sulfamethoxazole	HIA	12%
cefoxitin	HIA	2%
gentamicin	CIA	16%
nalidixic acid	HPCIA	90%
sulfisoxazole	HIA	74%
tetracycline	HIA	76%

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Farm Forward was founded in 2007 as the nation's first nonprofit devoted exclusively to end factory farming. We are a team of strategists, campaigners, and thought leaders guiding the movement to change the way our world eats and farms. More information about Farm Forward's work and our other publications can be found at farmforward.com.

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