



The Global Language of Business

GS1 US FSMA Rule 204 Distributor Pilot

Findings and Takeaways



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GS1 US®, a member of GS1 global, is a not-for-profit information standards organization that facilitates industry collaboration to help improve supply chain visibility and efficiency through the use of GS1 Standards, the most widely used supply chain standards system in the world. Nearly 300,000 businesses in 25 industries rely on GS1 US for trading partner collaboration that optimizes their supply chains, drives cost performance and revenue growth, while also enabling regulatory compliance. They achieve these benefits through solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code (EPC®)-based RFID, data synchronization, and electronic information exchange.

About Dot Foods

Dot Foods, Inc. carries 130,000 products from 1,500 food industry manufacturers, making it North America's largest less-than-truckload consolidator in the food industry. Through Dot Transportation, Inc., an affiliate of Dot Foods, the company distributes foodservice, convenience, retail, and vending products to distributors in all 50 states and more than 55 countries. Dot Foods operates 13 U.S. distribution centers, which are located in Bullhead City, Arizona; Modesto, California; Bear, Delaware; Vidalia, Georgia; Burley, Idaho; Mt. Sterling, Illinois; University Park, Illinois; Cambridge City, Indiana; Williamsport, Maryland; Liverpool, New York; Ardmore, Oklahoma; Dyersburg, Tennessee; and Manchester, Tennessee. Dot Foods' Canadian operations are located in Ingersoll, Ontario and Calgary, Alberta. For information, visit DotFoods.com.

About Gordon Food Service

Gordon Food Service is the largest family-operated, privately held foodservice distributor in North America. Since 1897, the company has remained committed to delivering uncompromised quality and heartfelt service to its customers. Gordon Food Service supplies food and related products to restaurants, healthcare facilities, schools, and other foodservice operators across the United States and Canada. It also operates more than 180 Gordon Food Service Stores in the US, which are open to the public. Headquartered in Wyoming, Michigan, the company partners with organizations across industries to help customers create food experiences people enjoy and remember. For more information, please visit www.gfs.com.

About Performance Food Group

Performance Food Group is an industry leader and one of the largest food and foodservice distribution companies in North America with more than 150 locations. Founded and headquartered in Richmond, Virginia, PFG and our family of companies market and deliver quality food and related products to over 300,000 locations including independent and chain restaurants; businesses, schools and healthcare facilities; vending and office coffee service distributors; and big box retailers, theaters and convenience stores. PFG's success as a Fortune 100 company is achieved through our approximately 43,000 dedicated associates committed to building strong relationships with the valued customers, suppliers and communities we serve. To learn more about PFG, visit pfg.com.

About Sysco

Sysco is the global leader in selling, marketing and distributing food and related products to customers who prepare meals away from home. This includes restaurants, healthcare and educational facilities, lodging establishments, entertainment venues, and more. Sysco operates 333 distribution centers, in 10 countries, with 75,000 colleagues serving approximately 670,000 customer locations. The company generated sales of more than \$84 billion in fiscal year 2026 that ended June 27, 2026. As the world's largest food-away-from-home distributor, Sysco offers customized supply chain solutions, bespoke specialty product offerings, and culinary support to drive customers to innovate and optimize their operations. We act as a trusted business partner to our customers, helping them grow through our industry-leading portfolio that includes fresh produce, premium proteins, specialty products, sustainably focused items, equipment and supplies, and innovative culinary solutions. For more information, visit www.sysco.com. For important news and key information for Sysco investors, visit the Investor Relations section of the company's website at investors.sysco.com.

1 Overview

The GS1 US Food Safety Modernization Act Rule 204 (FSMA Rule 204) Distributor Pilot provides a data-driven baseline of how traceability data is currently received and stored across food distributors. By analyzing approximately 880,000 data records from real distributor–supplier transactions, this study offers a clear view of industry readiness for FSMA Rule 204 requirements.

Participating distributors included:

- Dot Foods
- Gordon Food Service
- Performance Food Group
- Sysco
- Texas-based Food Product & Alcoholic Beverage Distributor

The pilot evaluated both the presence of data and completeness of the data. Data completeness focused on whether it was usable, correctly formatted, and aligned to FDA requirements across all KDE categories.

The findings show that while core transactional data is consistently strong, critical gaps remain in traceability-specific data, particularly in Traceability Lot Code (TLC) capture, product description completeness, and the use of standardized identifiers¹.

This report establishes a shared starting point for the industry to align, standardize, and strengthen traceability practices ahead of FSMA Rule 204 deadlines.

¹ Data collected between July 2025 and April 2026. They point to patterns that were common across the group and are not meant to be a statistically representative benchmark for the full industry. All results are anonymized and aggregated, and each distributor carries equal weight so that no single large dataset skews the averages. The percentages reflect data as it was exported from distributor systems at the time of analysis, which is not always everything a supplier keeps or could assemble from other sources, so some gaps may come down to export limits rather than data that is truly missing.

Table 1 – Findings Snapshot

Key Data Element (KDE)	Description	Avg. Presence (%)	Avg. Completeness (%)	Overall Performance
Traceability Lot Code (TLC)	Unique alphanumeric descriptor of a traceability lot. Best practice is Global Trade Item Number® (GTIN®) + Batch/Lot.	50%	50%	Variable: Inconsistent across participants. Because TLC is essential for event traceability, performance depends heavily on multiple trading partners.
Quantity	The amount of product received, expressed as a numeric value.	100%	100%	Strong: Consistently complete across participants, indicating this field is well established in inbound data flows and provides a solid FSMA Rule 204 foundation.
Unit of Measure	The unit in which the quantity is expressed (e.g., cases or pounds).	100%	100%	Strong: Consistently complete across participants, confirming it is well established in inbound data flows and supports FSMA Rule 204 readiness.
Product Description	Identifying details of the product based on the U.S. FDA definition of product description for FSMA Rule 204.	86%	0%	Gap: Often available at a basic level, but it does not meet U.S. FDA requirements because key sub-attributes are not consistently captured in structured fields. The FDA defines several sub-attributes as 'if applicable', so 100% completeness is not a realistic target.
Previous Location Description	The location the product was shipped from (incl. business name, address, and contact details, or GLN or DUNS) based on the U.S. FDA definition of product description for FSMA Rule 204.	80%	70%	Variable: Commonly descriptive rather than standardized. Business names are often present, but address, phone, and standard identifiers vary.
Receiving Location Description	The location where the product was received (incl. business name, address, and contact details, or GLN or DUNS) based on the	98%	38%	Gap: High presence but low completeness because complete business information or

	U.S. FDA definition of product description for FSMA Rule 204.			standardized identifiers are not consistently available.
Date Received	The date the product was received.	99%	99%	Strong: Near complete across participants, confirming this field is consistently available in inbound data flows.
TLC Source Location Description	The physical location where the traceability lot code was assigned (business name, address, and contact details or geographic coordinates).	18%	2%	Gap: Low presence and completeness as the data often is not shared by suppliers, captured by distributors, or available in WMS fields.
TLC Source Reference	An alternative way to reference the TLC source location (FDA Food Facility Registration Number, GLN, DUNS, or a web address/QR code/GS1 Digital Link).	18%	9%	Gap: Minimally used, with only occasional GLN or internal identifier references observed.
Reference Document Type	The type of business document supporting the transaction (e.g., Bill of Lading (BOL), Advance Ship Notice (ASN), Purchase Order (PO), packing slip, or invoice).	100%	100%	Strong: Consistently complete indicating supporting document type data is consistently captured.
Reference Document Number	The unique identifier of that reference document (e.g., the BOL #, PO #, or ASN #).	100%	100%	Strong: Consistently complete indicating a reliable foundation for traceability records.

2 Background

FSMA Rule 204 introduces new requirements for capturing and sharing traceability data across the food supply chain. Organizations must be able to provide accurate, complete data to regulators within tight timeframes, making consistency and interoperability critical.

Distributors play a pivotal role in this process. They receive data from a wide network of suppliers, often across inconsistent formats, systems, and data standards. This creates challenges in normalizing and sharing traceability data efficiently.

To better understand these challenges, GS1 US launched this pilot to:

- Assess the current state of traceability data in real-world distributor workflows.
- Identify common strengths and gaps across the industry.
- Provide insights to guide GS1 Standards adoption and implementation.

The goal is simple: help organizations move from fragmented data practices to scalable, interoperable traceability.

3 Methodology

GS1 US analyzed inbound supplier data provided by multiple food distributors, reflecting how data is received, stored, and shared within existing systems. The study analyzed data as received from distributors and did not independently verify it against suppliers or trading partners.

The analysis included:

- Data from multiple distributors and approximately 600 suppliers.
- Over 880,000 data records sourced primarily from transactional records.
- Mapping of data fields to FSMA Rule 204 Key Data Elements (KDEs).

Each data element was evaluated across three dimensions:

- Presence: Whether the data exists.
- Completeness: Whether the data meets required structure and format.
- Accuracy: Whether identifiers are valid.

This approach allowed GS1 US to go beyond surface-level analysis and identify where data may exist but still fall short of traceability requirements.

Table 2 – Examples of Presences vs Completeness for Location Description and Product Description

KDE	Presence	Completeness
Previous Location Description	Food Supplier Co.	Food Supplier Co., 123 Supplier Way, (555)-678-9101
Product Description	Tomatoes	Brand ABC, Tomatoes, Cherry, 25 lb., Carton

4 Findings

The FSMA Distributor Pilot revealed a set of consistent, data-driven patterns across participating organizations. These findings highlight both areas of strength and concentrated gaps that directly impact traceability readiness.

Image 1 - Aggregated Results of Populated Fields KDE Presence & Completeness (Normalized)

KDE Presence (Normalized)												
Supplier	GTIN	TLC	Qty	Unit of Measure	Product Desc	Prev Loc. Desc.	Recv Loc. Desc.	Date Received	TLC Src	TLC Src Ref	Ref Doc Type	Ref Doc #
#1	80	40	100	100	80	74	94	94	20	20	100	100
#2	75	50	100	100	75	100	96	100	25	25	100	100
#3	67	67	100	100	87	100	83	83	49	66	100	100
#4	39	33	99	100	100	67	100	100	0	0	100	100
#5	50	50	100	100	100	100	100	100	50	50	100	100
#6	0	0	100	100	100	100	90	100	0	0	100	100
All	71	50	100	100	86	80	98	99	16	17	100	100

KDE Completeness (Normalized)												
Supplier	GTIN	TLC	Qty	Unit of Measure	Product Desc	Prev Loc. Desc.	Recv Loc. Desc.	Date Received	TLC Src	TLC Src Ref	Ref Doc Type	Ref Doc #
#1	68	40	100	100	0	72	34	94	0	20	100	100
#2	66	50	100	100	0	65	50	100	0	25	100	100
#3	67	67	100	100	0	80	50	83	16	58	100	100
#4	27	33	99	100	0	61	0	100	0	0	100	100
#5	50	50	100	100	0	96	50	100	50	50	100	100
#6	0	0	100	100	0	82	0	100	0	0	100	100
All	57	50	100	100	0	70	38	99	2	9	100	100

Image 2 - KDE Data Completeness Heat Map

Distributors	GTIN	TLC	Qty	Unit of Measure	Product Desc	Prev Loc. Desc.	Recv Loc. Desc.	Date Received	TLC Src	TLC Src Ref	Ref Doc Type	Ref Doc #
A	0	0	100	100	0	62	0	100	0	0	100	100
B	100	100	100	100	0	100	100	100	0	22	100	100
C	31	55	100	97	0	100	0	100	0	0	100	100
D	58	0	98	100	0	0	0	100	0	0	100	100
E	95	93	100	100	0	89	92	96	12	22	100	100

4.1 Strong Performance in Core Transactional Data

Across all participants, foundational transactional data elements demonstrated consistently high completeness. Fields such as Quantity, Unit of Measure, Reference Document Type, Reference Document Number, and Date Received were at or near 100% completeness in most datasets.

This indicates that distributors already have reliable systems in place to support day-to-day operations. From a readiness perspective, this strong baseline provides a critical advantage that organizations can build on existing processes rather than starting from scratch.

4.2 Product Identification Is Present but Lacks Consistency

Product-related data is widely available, but its usability varies significantly. While identifiers such as GTINs are present in many cases, their completeness and accuracy are inconsistent, with issues such as invalid formats, missing check digits, and non-standard lengths observed.

In addition, what the industry typically captures does not align with how the U.S. FDA defines a complete product description under FSMA Rule 204.

This gap reflects a broader challenge: the way product data is commonly captured today does not align with how it must be structured for regulatory traceability.

4.3 Traceability Lot Code Capture Shows Significant Variability

Traceability Lot Code (TLC) is one of the most critical data elements for traceability and one of the most inconsistent. Completeness in the pilot ranged from 0% to 100% across participants, with significant variability even within individual distributor datasets at the supplier level.

This variability suggests that TLC capture is heavily influenced by upstream supplier practices and data-sharing expectations. In many cases, inconsistencies may originate from differences in whether lot codes are provided, how they are formatted, or how they are ingested by distributor systems.

Because lot codes are essential for linking events in a traceback scenario, this inconsistency represents a high-priority area for improvement.

4.4 TLC Source and Reference Data Are Major Gaps

The most significant gaps identified in the pilot relate to TLC Source and TLC Source Reference data. These elements were frequently missing altogether, with many participants showing 0% presence.

Even when present, the data was often incomplete, typically limited to basic company names without supporting attributes such as address, phone number, or globally unique identifiers. This could be due to data not shared by suppliers, not captured by the distributors, or not an existing field within WMS systems. The newness of TLC source as a field to capture means legacy systems are likely still in the process of transitioning over.

This lack of structured source data limits the ability to connect traceability events across the supply chain, reducing the effectiveness of downstream investigations.

4.5 Location Data Is Primarily Descriptive, Not Standardized

Across the datasets, location-related data consistently relied on free-text descriptions (e.g., business names) rather than globally unique identifiers such as Global Location Numbers (GLNs). Adoption of standardized identifiers remained low, approximately in the 20–30% range in most cases.

While descriptive data can support internal use, it introduces challenges at scale. Variations in naming conventions across trading partners make it difficult to match locations reliably, increasing the risk of delays or manual intervention during traceability events. The use of standardized identifiers like the GLN

can help improve master data alignment by reducing data density, enabling a cleaner and simpler way for trading partners to share data.

4.6 Event-Level Traceability Data Is Less Reliable

Data elements tied to specific traceability events, particularly Receiving Location Description and Previous Location, showed lower and more variable completeness compared to transactional fields. In some cases, completeness ranged from 0% to 100% depending on the dataset and available attributes.

This variability reflects the complexity of capturing and standardizing data at key handoff points in the supply chain, where multiple systems and partners are involved.

4.7 Data Presence Does Not Equal Traceability Readiness

One of the most important findings from the pilot is that the existence of data does not guarantee its usability. Fields that are populated may still be unusable due to inconsistent formats, incomplete attributes, or reliance on non-standard identifiers.

This distinction has direct regulatory implications. In practice, incomplete data carries the same risk as missing data when responding to a traceability request.

4.8 Data Gaps Are Concentrated in High-Impact Areas

Rather than being evenly distributed, gaps are concentrated in a small number of critical KDE categories:

- Traceability Lot Code
- TLC Source and TLC Source Reference
- Standardized location identifiers

This concentration is a positive signal for the industry. It means that targeted improvements in a few areas can significantly enhance overall traceability readiness, reducing complexity and accelerating progress.

4.9 Data Accuracy Remains a Critical but Overlooked Factor

Beyond presence and completeness, the pilot identified data accuracy as an important dimension of traceability readiness. For example, a meaningful portion of GTINs and GLNs failed validation checks, rendering them unusable despite appearing complete.

5 Takeaways

For organizations preparing for FSMA Rule 204, the implications are clear:

You are not starting from scratch

Much of the required data already exists in current systems. The opportunity lies in improving quality, consistency, and alignment.

Data usability is a key challenge

Incomplete or inconsistent data carries the same risk as missing data. Prioritizing data quality is essential.

Supplier alignment is critical

Variability in upstream data highlights the need for stronger agreements and shared expectations between trading partners.

Standardization unlocks scale

Using global identifiers (e.g., GTINs, GLNs) reduces manual effort and enables reliable data exchange across systems.

Targeted improvements deliver impact

Because gaps are concentrated, focusing on a few key areas can significantly improve overall traceability readiness.

6 Conclusion

This pilot establishes a clear, fact-based view of where the food distribution industry stands today and where it needs to go next.

The path to meeting FSMA Rule 204 requirements is not just about capturing more data. It's about ensuring that data is complete, standardized, and ready to be shared when it matters most.

No single company can solve this alone. FSMA Rule 204 readiness is fundamentally an industry coordination challenge that requires alignment and immediate action across distributors, suppliers, solution providers, and standards organizations to meet requirements.

GS1 US stands ready to support the industry with standards, guidance, and collaboration to close the gaps identified in this study and help meet requirements of FSMA Rule 204. We provide resources, step-by-step guidance, and FAQs to help you get started. You can find these resources and more at www.gs1us.org/fsma.



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