Issue #16 – August 8, 2025

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🌽 🚜 From South to North: Indiana's Corn Progress Update

(Jeferson Pimentel, Bruno Scheffer, Dan Quinn & Betsy Bower)

Corn Silking

Silking progress advanced well in most Corn Belt states. Indiana reached 87%, just below its average of 90%, but up sharply from last week's 74%, a sign of recovery in pace. Iowa and Illinois are essentially caught up with their averages at 92% and 96%, respectively. See more in **interactive maps 1**.

Corn Dough

Development remains behind in several areas. Indiana's crop reached 33% in the dough stage, up from 19% last week, but still a few points shy of the 36% average. Iowa (53%) is now slightly ahead of average, while Illinois matches its historical pace at 53%. See more in **interactive maps 3**.

Corn Dented:

Most Corn Belt states are also just beginning denting, with only Iowa at 9%, modestly ahead of average. Indiana reported no dented corn yet, consistent with its historical delay at this point in the season (average is just 1%). See more in **interactive maps 4**

Corn Condition

Indiana's crop condition reflects some pressure, with only 51% rated good, and 27% fair. Poor-to-very-poor ratings total 11%, suggesting localized weather stress may be slowing development. This is weaker than Iowa (57% good) and Illinois (52% good), but not as severe as Texas or Kansas. See more in **interactive maps 2.**

Corn development in Indiana is slightly behind the 5-year average, with silking and dough stages progressing slower than usual. Crop conditions remain mostly stable, though some areas show signs of moderate stress. Continued favorable weather will be critical in the coming weeks to support yield potential and help the crop reach maturity on time.

➡️ Let us know if we can help.

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Purdue Corn Team Research Update

(Betsy Bower & Daniel Quinn)

Have you been out to check for disease in your corn fields?

While checking several of our research projects at the Agronomy Center for Research and Education (ACRE) I found several different leaf diseases. Southern Rust has been confirmed in several more counties in Indiana, both southern and northern Indiana. The southern corn rust shown in Figure 1 "turned on" Tippecanoe Co. IN as part of the Crop Protection Network Corn IPM PIPE site.

Environmental conditions, high humidity, and temperatures around 80, have certainly been right to support southern corn rust if disease spores are present. And this infection confirms that spores were delivered by weather fronts at least 2 weeks ago. Remember none of our rusts overwinter in Indiana.

Also, in our plots we are finding tar spot (Figure 2). Tar spot does overwinter in Indiana and is now endemic in every county in Indiana. Conditions such as high relative humidity and prolonged leaf wetness support leaf infection and we certainly have had ample rainfall

the past 3 weeks in parts of Indiana as well as prolonged leaf wetness including heavy dews the past 3-4 weeks.

Figure 1. Southern Rust in West Lafayette, IN.

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But the disease with the greatest level of infection in research fields is Grey Leaf Spot. Grey Leaf Spot can be found nearly every year in corn. Conditions that favor this disease include warm weather with greater than 90% humidity for 12+ hours.

Figure 2. Tar Spot in West Lafayette, IN.

What has been particularly interesting is the difference in the level of infection between our two significant planting dates. While our first planting occurred April 16th for the "Battle of the Belt" planting study comparing corn and soybean planting dates and yield, our first sizeable amount of planting occurred around April 28 and 29. Our second round of planting occurred just 10 days later and the level of disease in the canopy is markedly different with the early April 28 and 29 planting showing the greatest level of canopy infection. In our end of April corn while the bulk of the diseases is in the lower canopy grey leaf spot and southern corn rust is becoming more prevalent on the ear leaf and upper canopy at the late R3 growth stage. While scouting for disease in the May 8 and 9 planted corn (mid R3 growth stage), grey leaf spot was the most common disease in the lower canopy with very low levels (1 -5 very small disease spots) on the ear leaf. I should note our later planting included several more hybrids and some of the hybrids could be different regarding disease susceptibility.

Figure 3. Grey Leaf Spot in West Lafayette, IN

Remember, our goal is to keep the ear leaf free or with very low levels of disease, with less than 5% of the leaf area affected. It is time to scout fields for disease on ear leaves, especially if growth stages are from silking to R4, and a foliar fungicide has not been applied.

R3 Corn Growth Stage: The Milk Stage: What It Means for Yield and Grain Quality

(Bruno Scheffer & Daniel Quinn)

The R3 growth stage in corn, commonly known as the **milk stage**, marks a pivotal phase in kernel development. About **18 to 20 days after silking**, kernels are mostly yellow (Figure 1) and contain a milky white fluid, that's why the name of the stage. This is when **rapid kernel development and grain filling** are underway, and the plant is actively converting photosynthates into sugars and starch to build yield (Nielsen, 2021).

Physiologically, **endosperm deposition** is now taking center stage. Most endosperm cell division has been completed, and kernel growth is driven largely by **cell expansion and starch accumulation** (Long et al., 2024). This period is crucial: even though kernel abortion is less likely than at earlier stages, **severe stress can still cause kernel loss or result in lightweight grain**, compromising final yield and quality (Nielsen, 2021).

At R3, the crop's **photosynthetic machinery is working at full capacity**, and water demand remains high. Any **water or nutrient deficits** can quickly reduce photosynthetic activity, limiting the assimilates available for kernel filling and ultimately reducing grain weight (Wang et al., 2024). According to Long et al. (2024), **abscisic acid (ABA)** plays an increasingly important role at this stage, regulating both grain filling and kernel dehydration. Disruptions in ABA accumulation or transport can impair kernel development and delay dehydration, affecting grain quality.

Maintaining **a healthy upper canopy** is essential, as leaves from the ear leaf to the uppermost leaf provide at least **60% of the photosynthates needed for grain filling** (Nielsen, 2021). Stress that damages this canopy, whether from drought, nutrient deficiencies, or disease, can significantly impact yield potential.

Figure 1: Appearance of kernels at the growth stage R3 (milk). Photo by Bob Nielsen (2021).

Grain Quality Considerations

Beyond yield, R3 is also critical for **grain quality**. Proper management of **moisture content** and **nutrient supply** influences starch accumulation and kernel composition. Inadequate moisture can delay kernel dehydration, complicating postharvest processing and storage (Long et al., 2024). Emerging tools like **near-infrared spectroscopy (NIRS)** can help predict grain moisture content in real time, allowing growers to adjust management strategies to protect grain quality (Wang et al., 2019).

Key Takeaways for Growers

- **Water management is critical**: the most critical stage it's already passed, but corn at R3 is still highly sensitive to drought stress.
- **Importance canopy health**: healthy upper canopy can provide at least 60% of the photosynthates needed for grain filling.
- **Watch for late-season stresses**: even though not much can be fixed now, watch for temperature extremes, shading, and nutrient deficiencies that can influence grain filling and final quality.

A **stress-free grain filling period** can make the difference between achieving maximum yield potential and falling short. Thoughtful management now helps ensure that the efforts invested throughout the season translate into a strong harvest.

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🌞 New Ag Climate Dashboard makes climate resources more accessible for Midwest farmers!

(Beth Hall)

The **Midwestern Regional Climate Center** (MRCC), with support from the **United Soybean Board**, has launched the **Ag Climate Dashboard**, a centralized digital hub offering streamlined access to integrated climate and agricultural data and decision-support tools for producers, advisors, and researchers in the Midwest.

Designed to support on-farm decision-making, the Ag Climate Dashboard offers up-to-date weather data, National Weather Service forecasts, Climate Prediction Center outlooks, historical records, and interactive tools for monitoring crop growth, pest threats, climate anomalies, and extreme weather events.

The dashboard also connects users to regional ag climate products and a variety of state-specific resources. State-specific pages, such as Indiana's, link to tools and resources like the Purdue Mesonet and the Indiana State Climate Office.

"We want to provide as much clear, well-organized information to producers and advisors as possible so they can make confident management decisions, whether that's on their own farms or helping clients," said Austin Pearson, climatologist at the MRCC and Indiana State Climate Office.

By placing these tools in a single, easy-to-navigate platform, the dashboard allows users to make better-informed decisions and support profitability and yield.

The idea for the dashboard stemmed directly from farmers. "In 2023, we hosted workshops with farmers and one of the biggest takeaways was that while many ag climate tools exist, they aren't found in one location," Pearson said.

The dashboard hosts tools both developed by Purdue University and trusted external sources. For example, MRCC's **Corn Growing Degree Day tool** helps track crop progress and predict maturity, while the **Pest Forecasting Map from the Iowa Environmental Mesonet** alerts farmers to threats like alfalfa weevil. Within the dashboard, users also have access to the **Climate Prediction Center** outlooks for temperature and precipitation, interactive maps, crop and disease forecasting, fieldwork planning tools, and localized climate summaries — all designed to support timely, informed decision-making throughout the year.

"The forecasting tools help farmers understand what pests — whether weeds, insects or diseases — could be an issue and when management is crucial," Pearson said. "I encourage users to get into the dashboard and explore, as new tools are frequently added."

Users can also consult climatologies through the platform to gain insights into historical weather patterns that may influence marketing and management strategies.

Beth Hall, director of the MRCC and Indiana State Climate Office, emphasized the broader vision of the project. "We're discovering that individual states provide tools that are limited geographically. While searching for information, we found that there are missing tools — those that cover the full soybean production region. This inspires us to keep growing the dashboard to create a dynamic system that's helpful for both a small geographic area and the whole region."

Future enhancements will be guided by feedback from farmers and advisors. One requested addition is an irrigation planning tool, as several farmers are seeking region-specific guidance on how much water to apply to minimize waste. While isolated tools like this exist, they often lack the geographic specificity needed for practical field use.

Looking ahead, the MRCC plans to incorporate more interactive, user-friendly features, such as location-based maps that respond to ZIP code input, providing a customized experience for each user.

"This is just round one of the dashboard," Hall said. "We really wanted to provide people a taste and hopefully get them excited about the future. I envision more and more of our tools offering a greater user experience."

Additional information about the Ag Climate Dashboard can found on the Midwestern Regional Climate Center's **website**.

Acknowledgments

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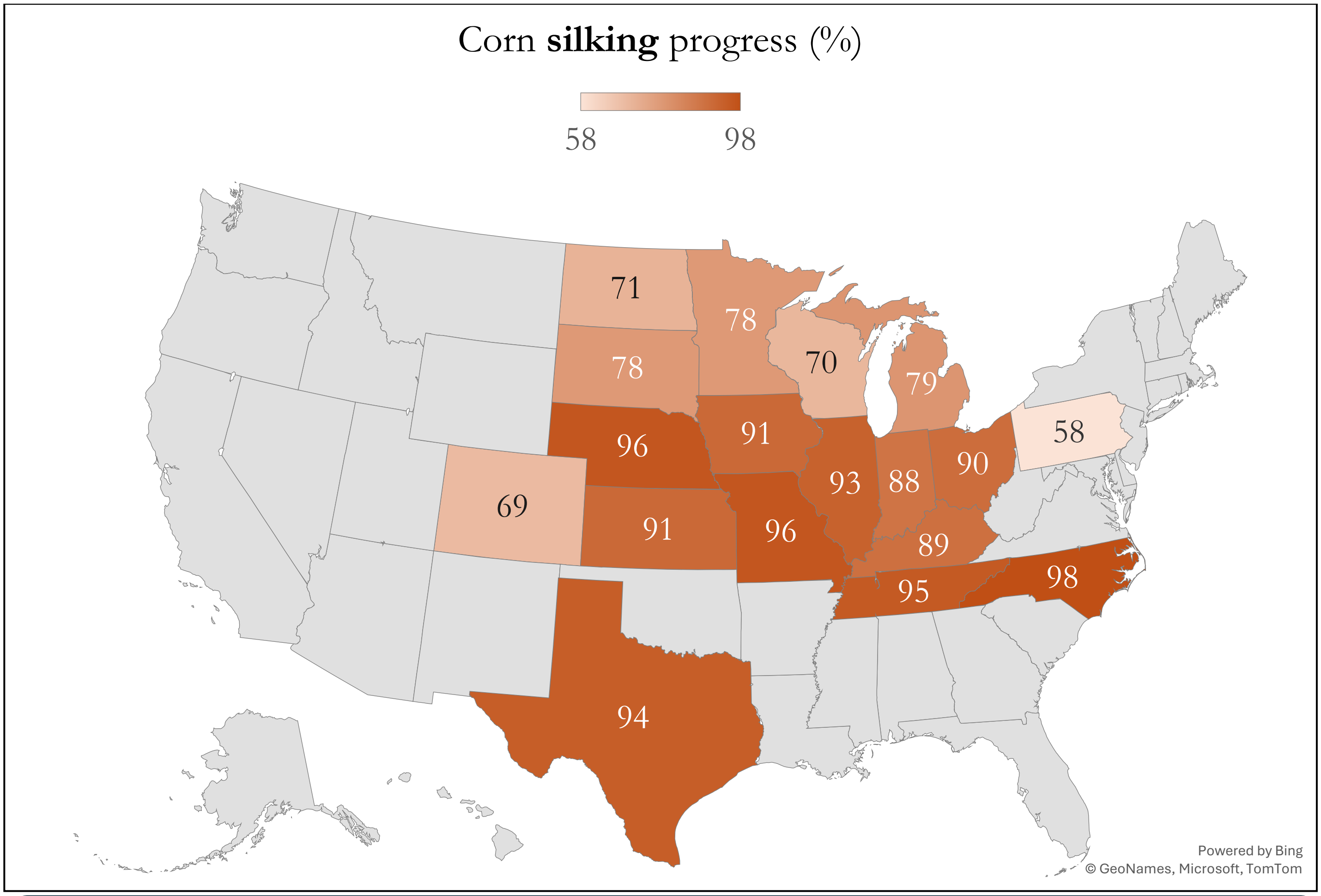

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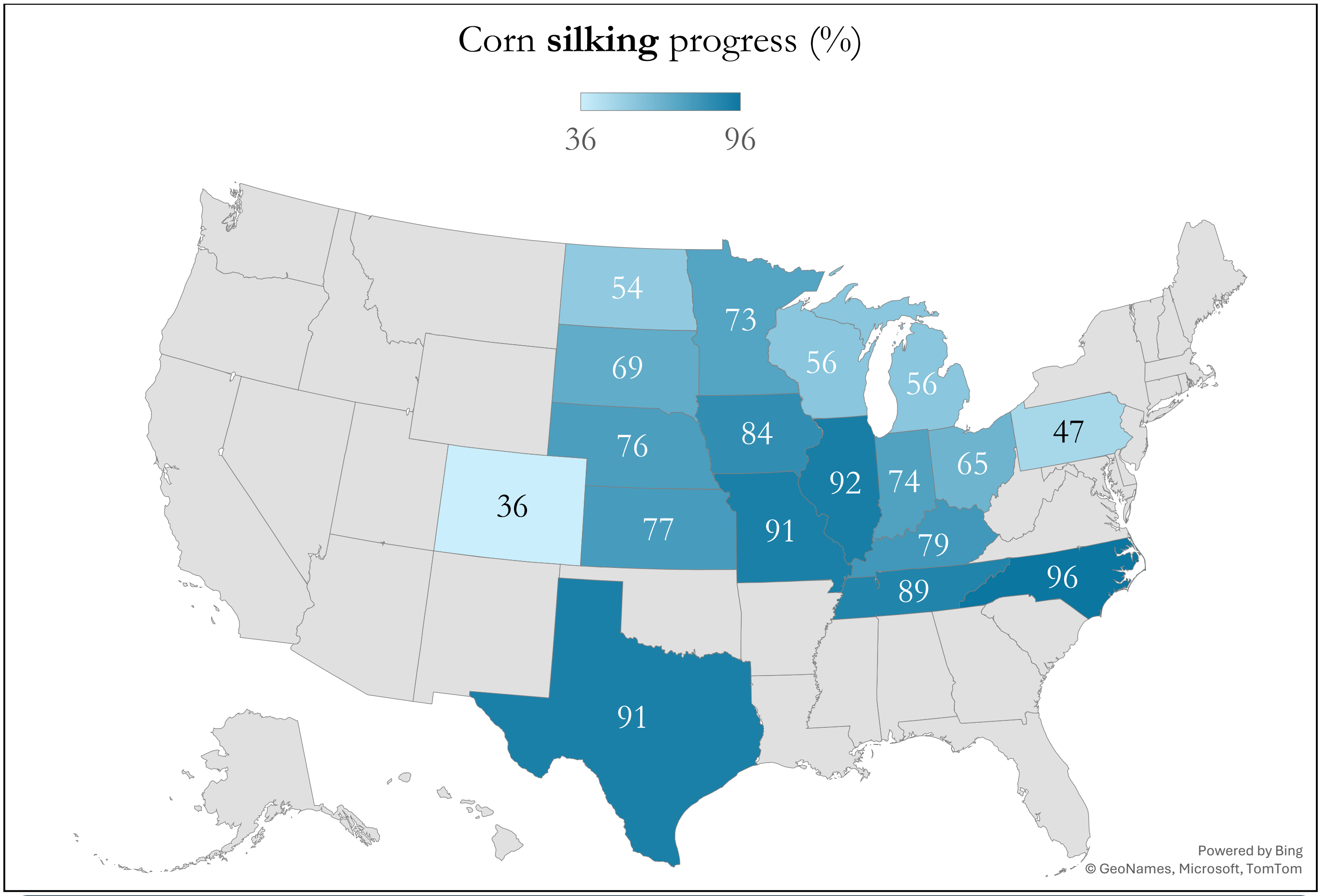

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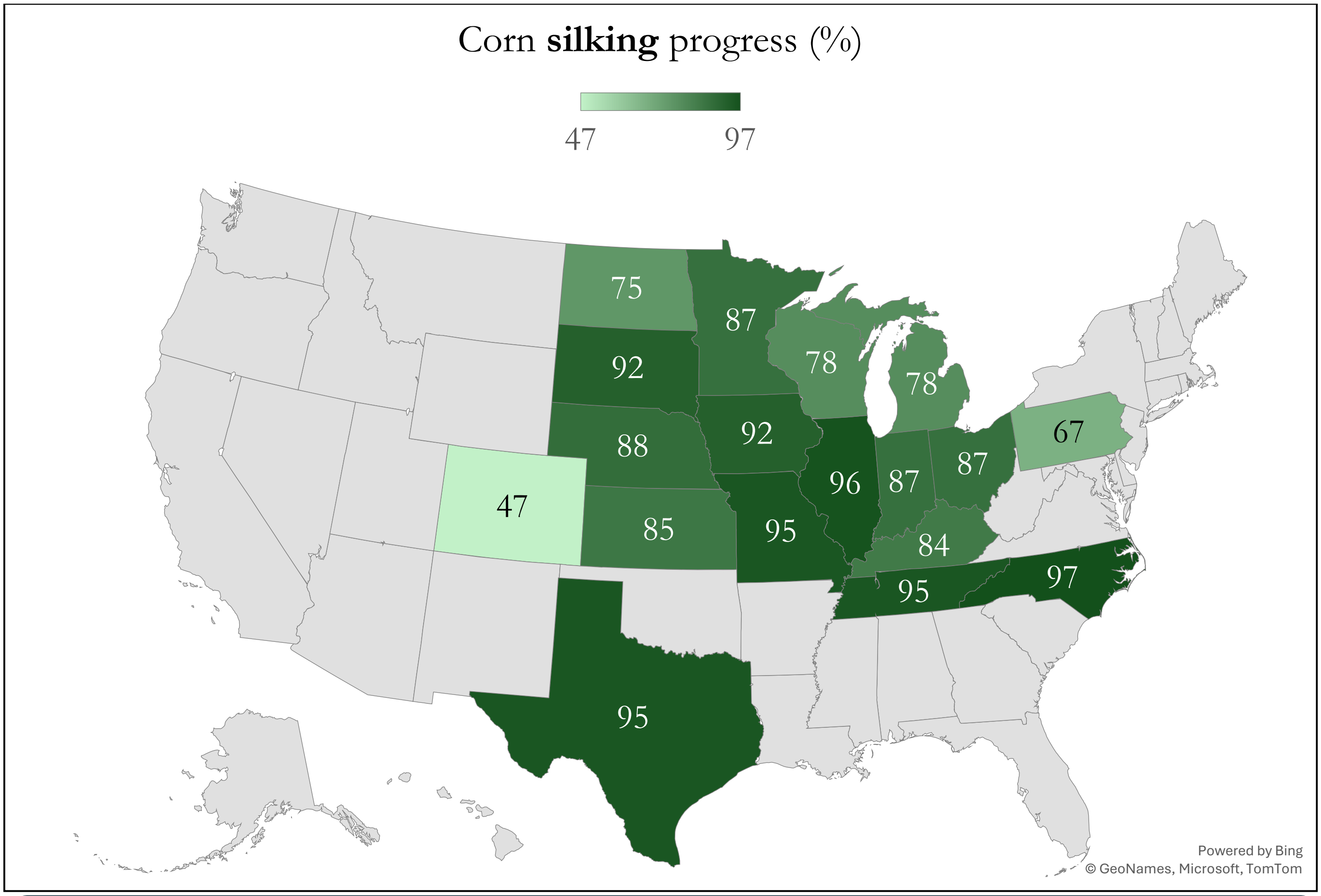

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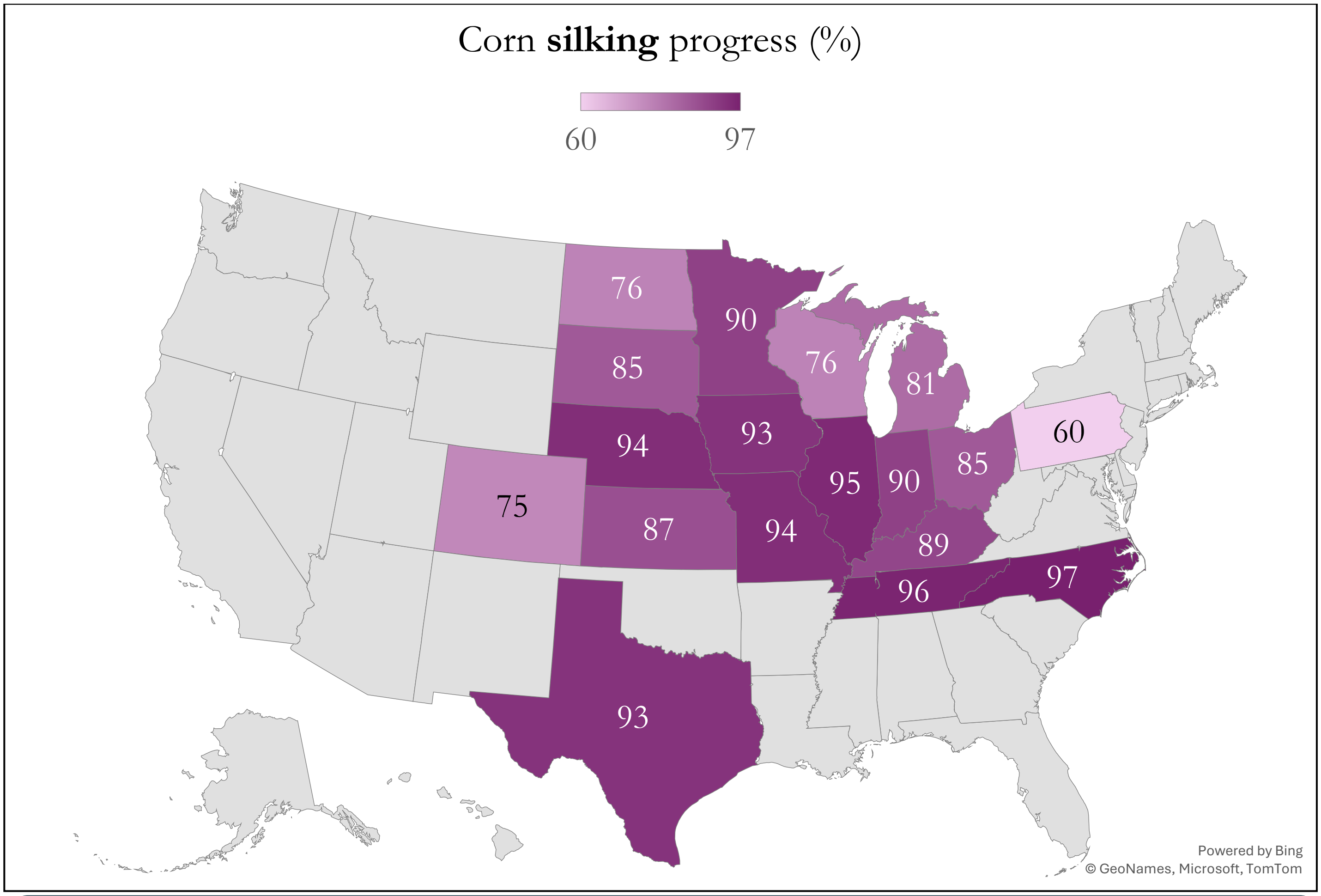

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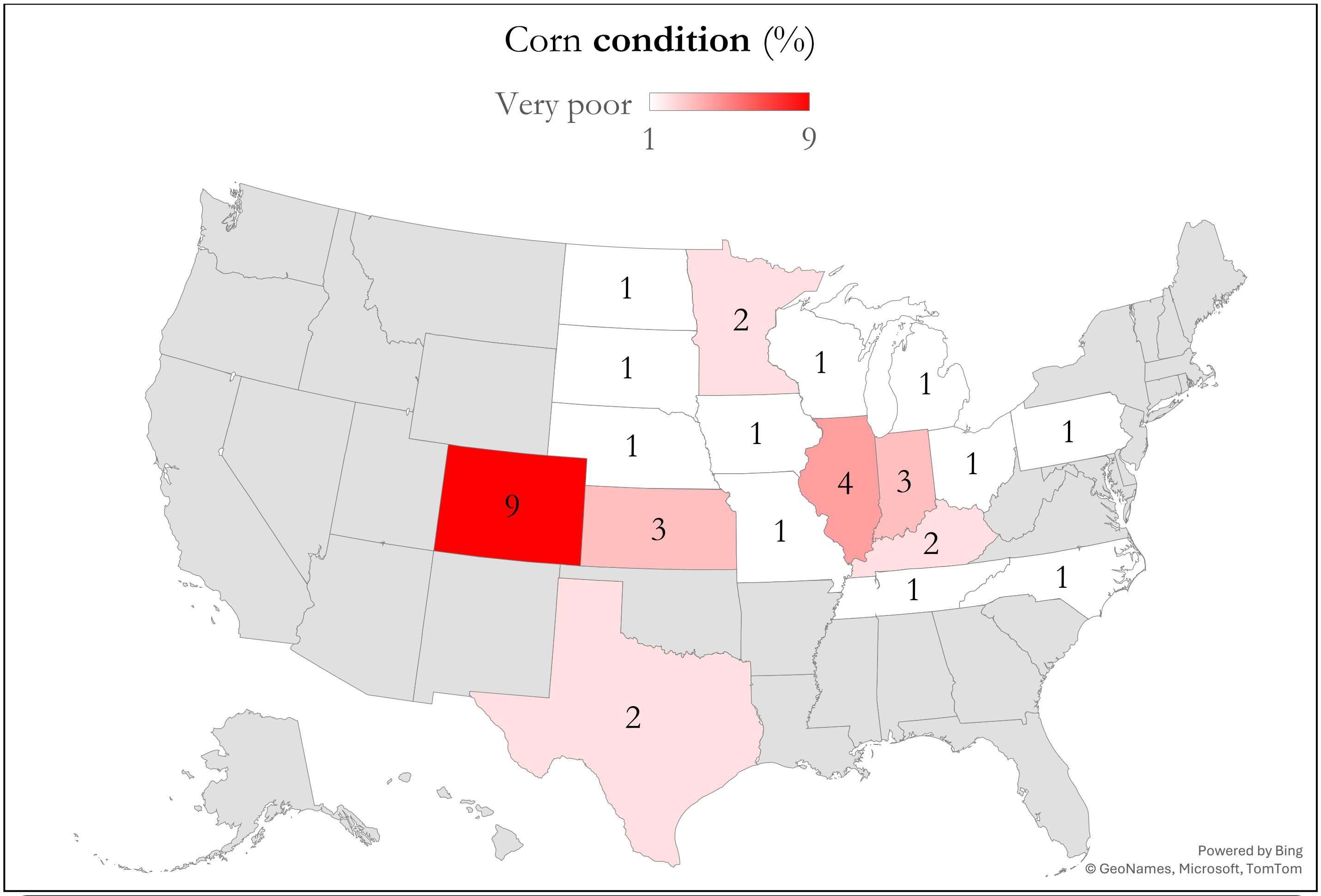

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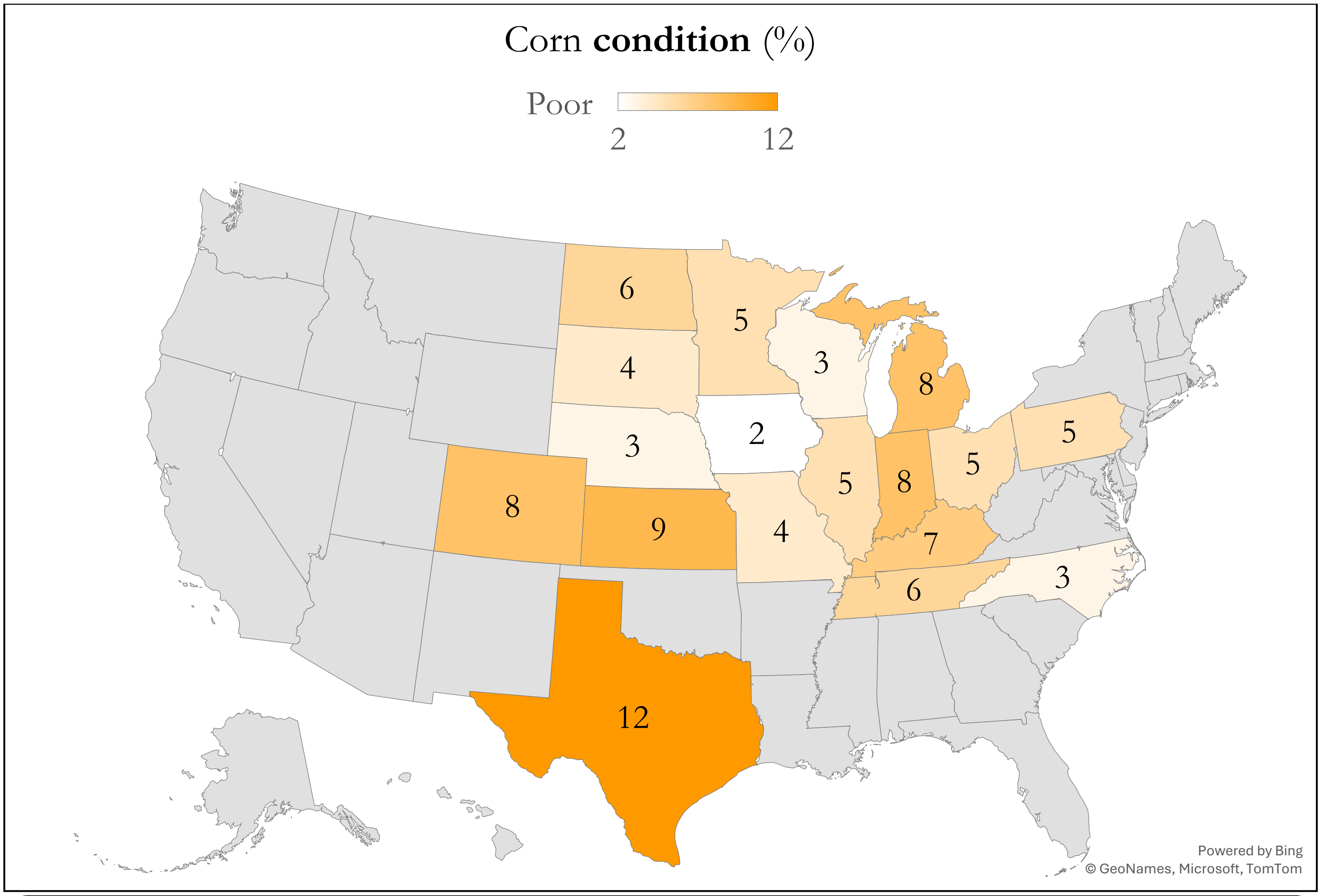

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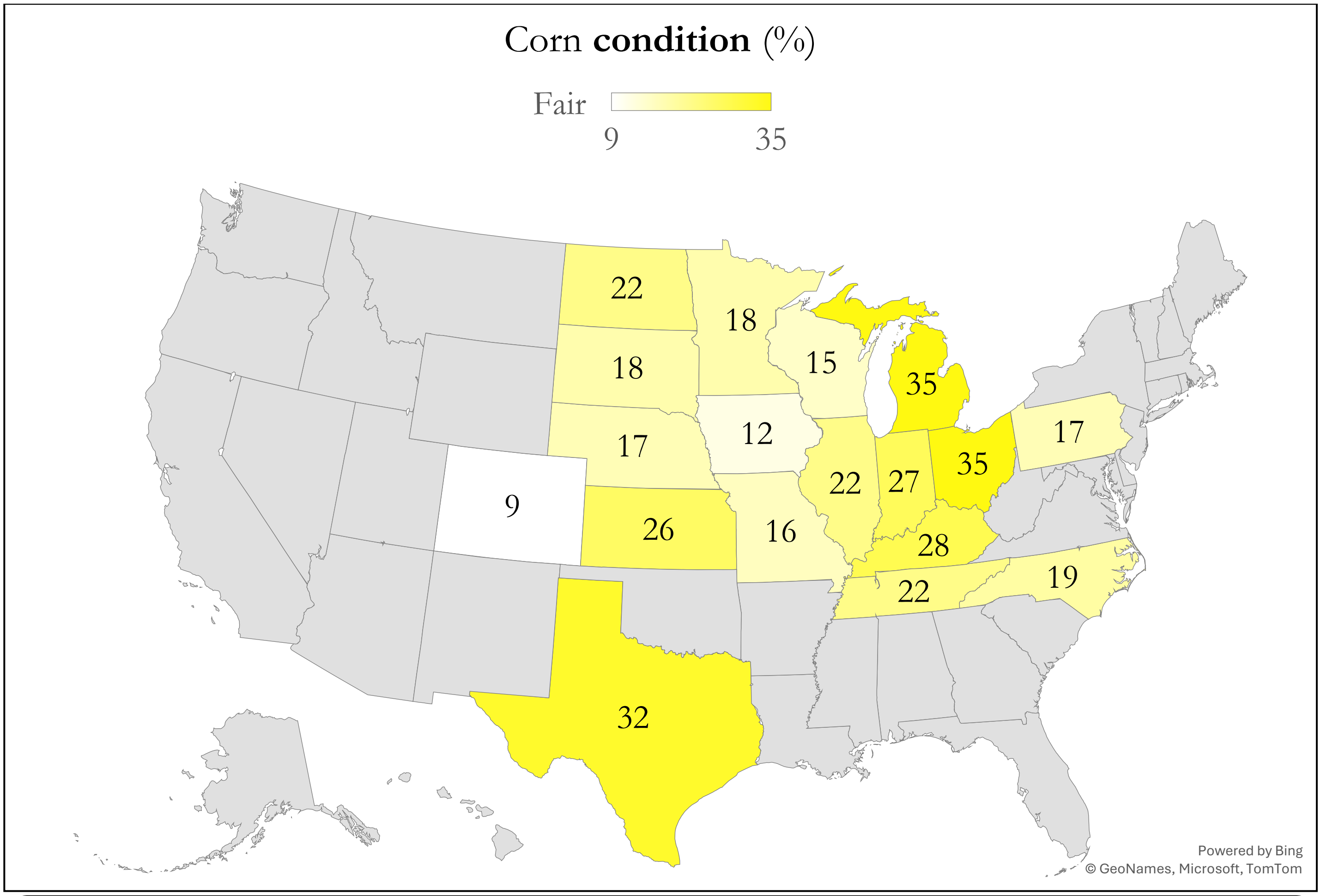

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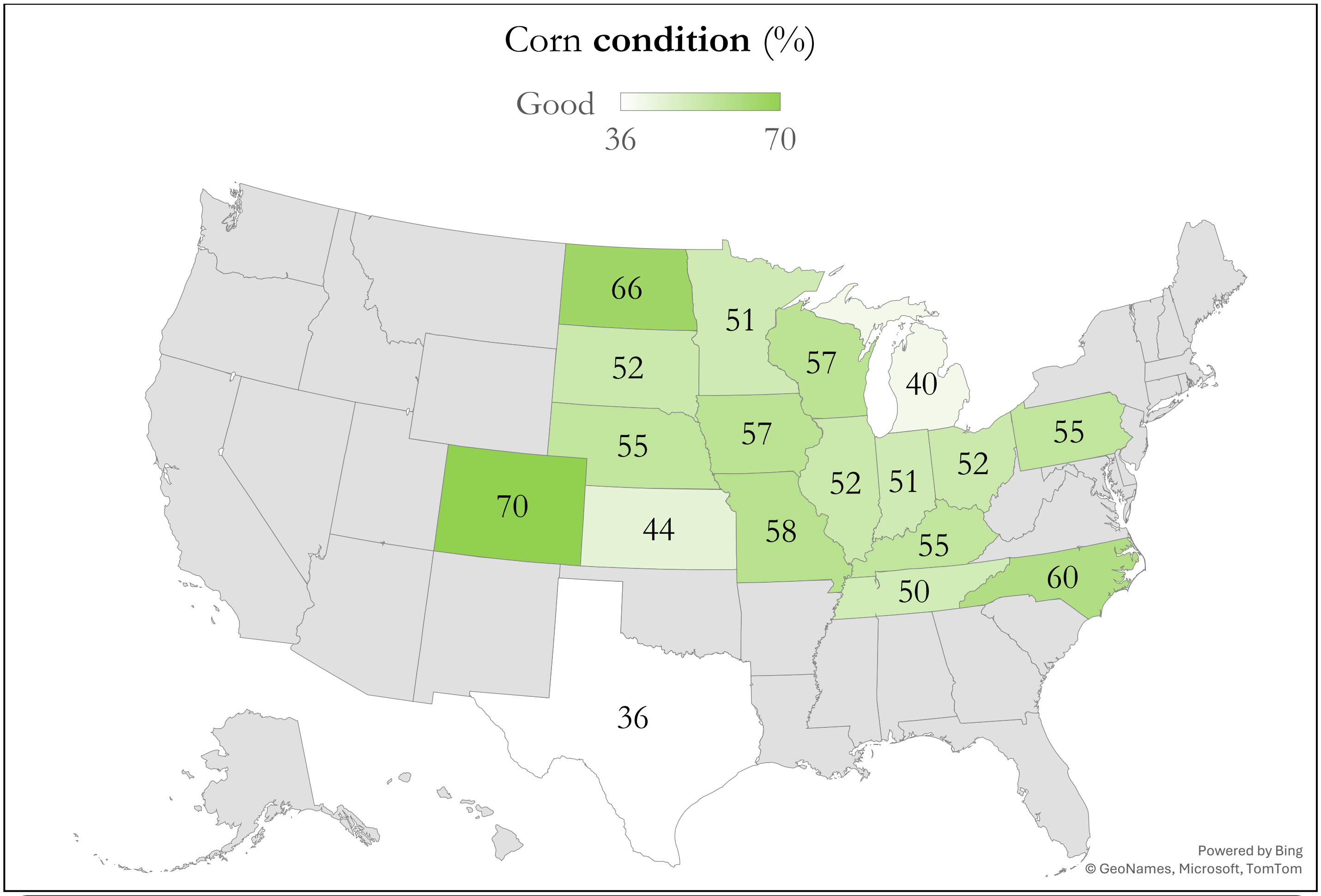

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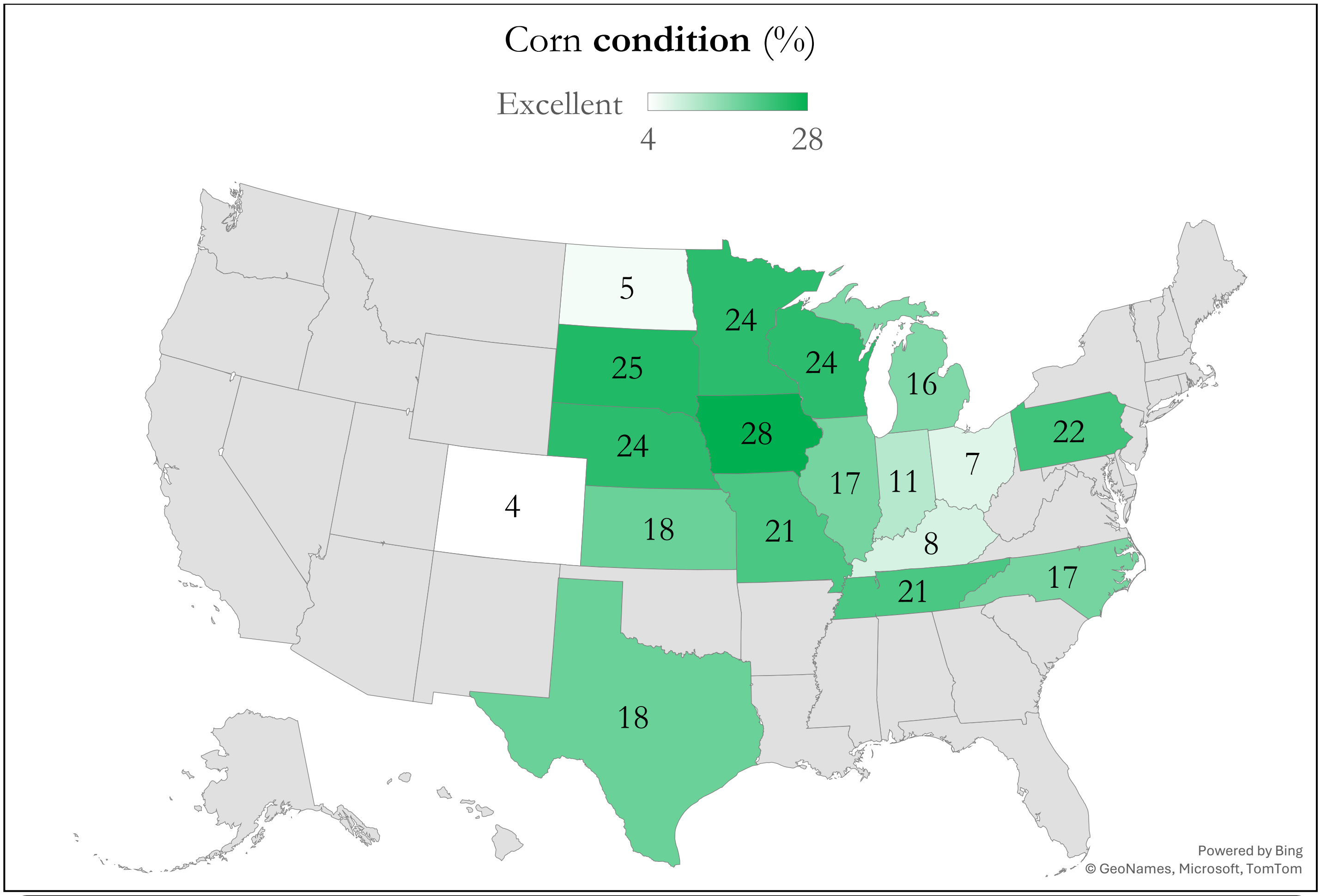

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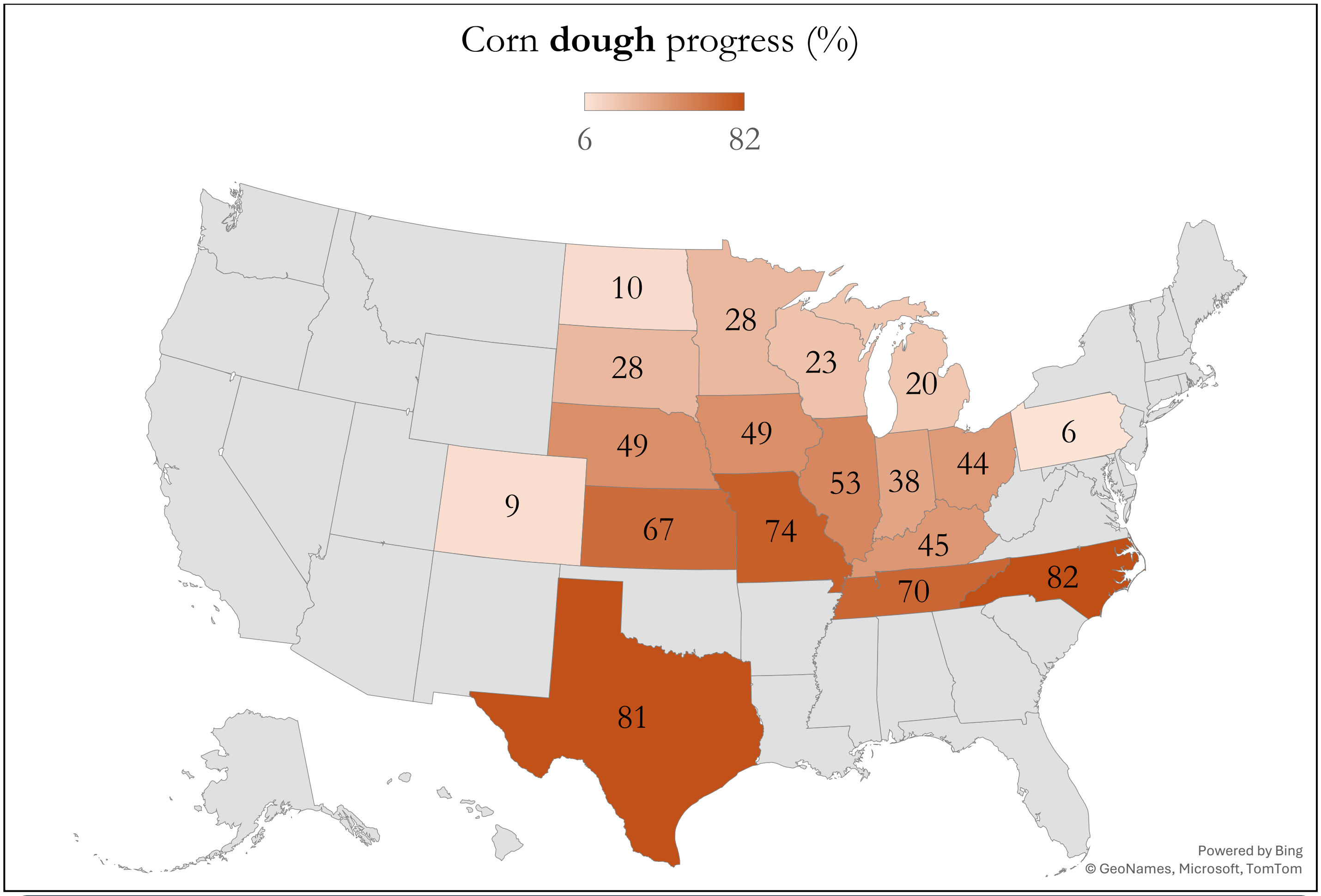

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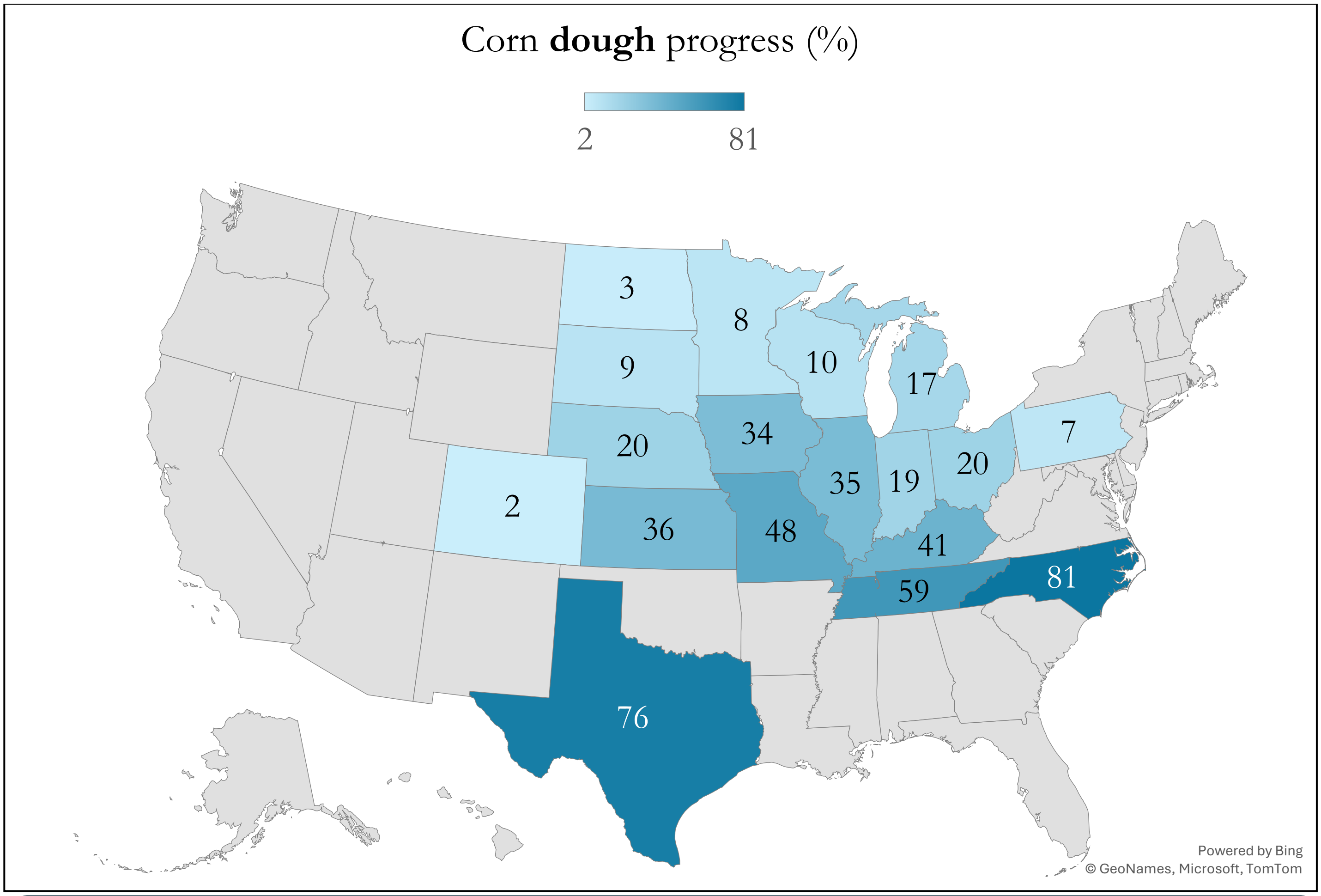

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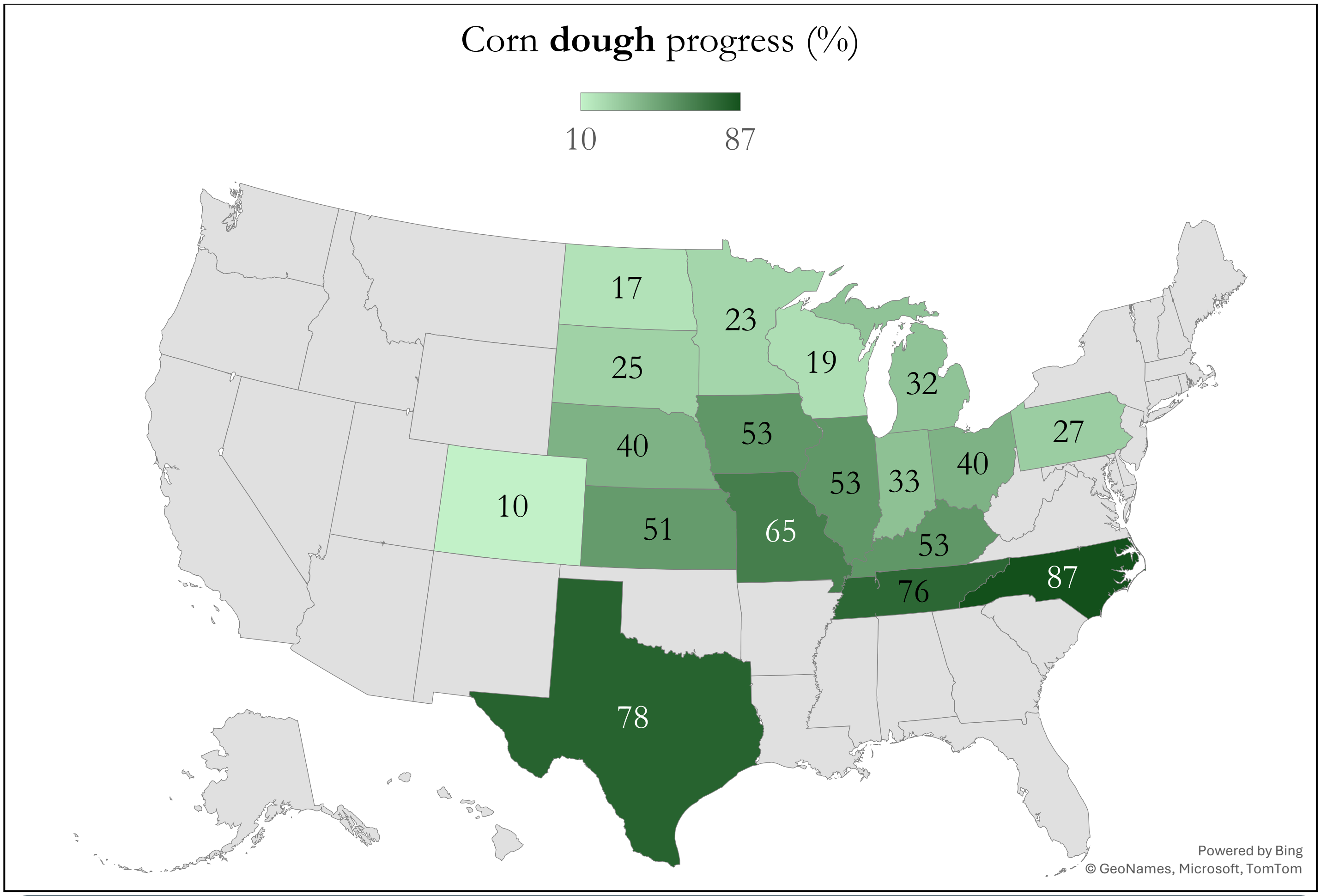

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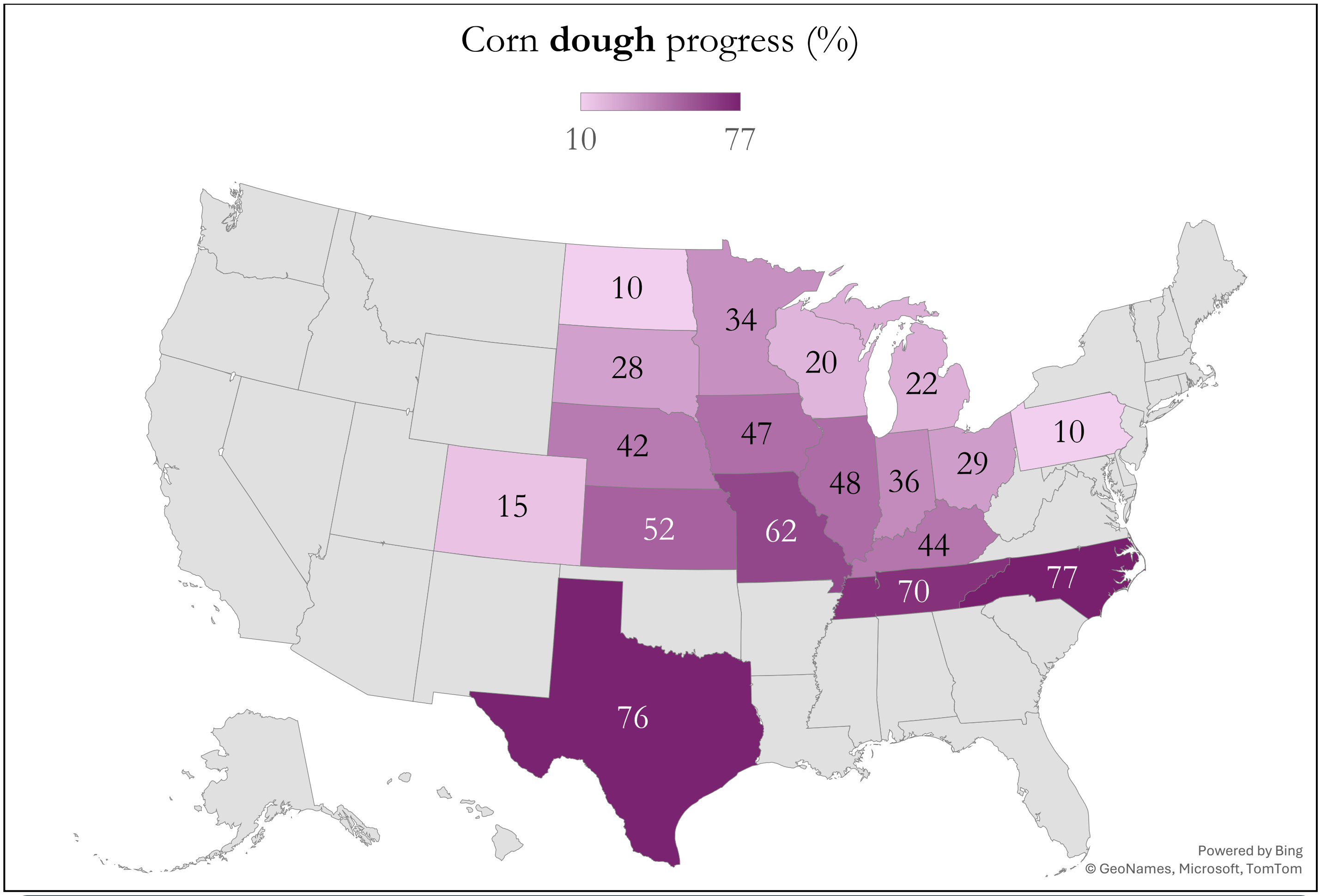

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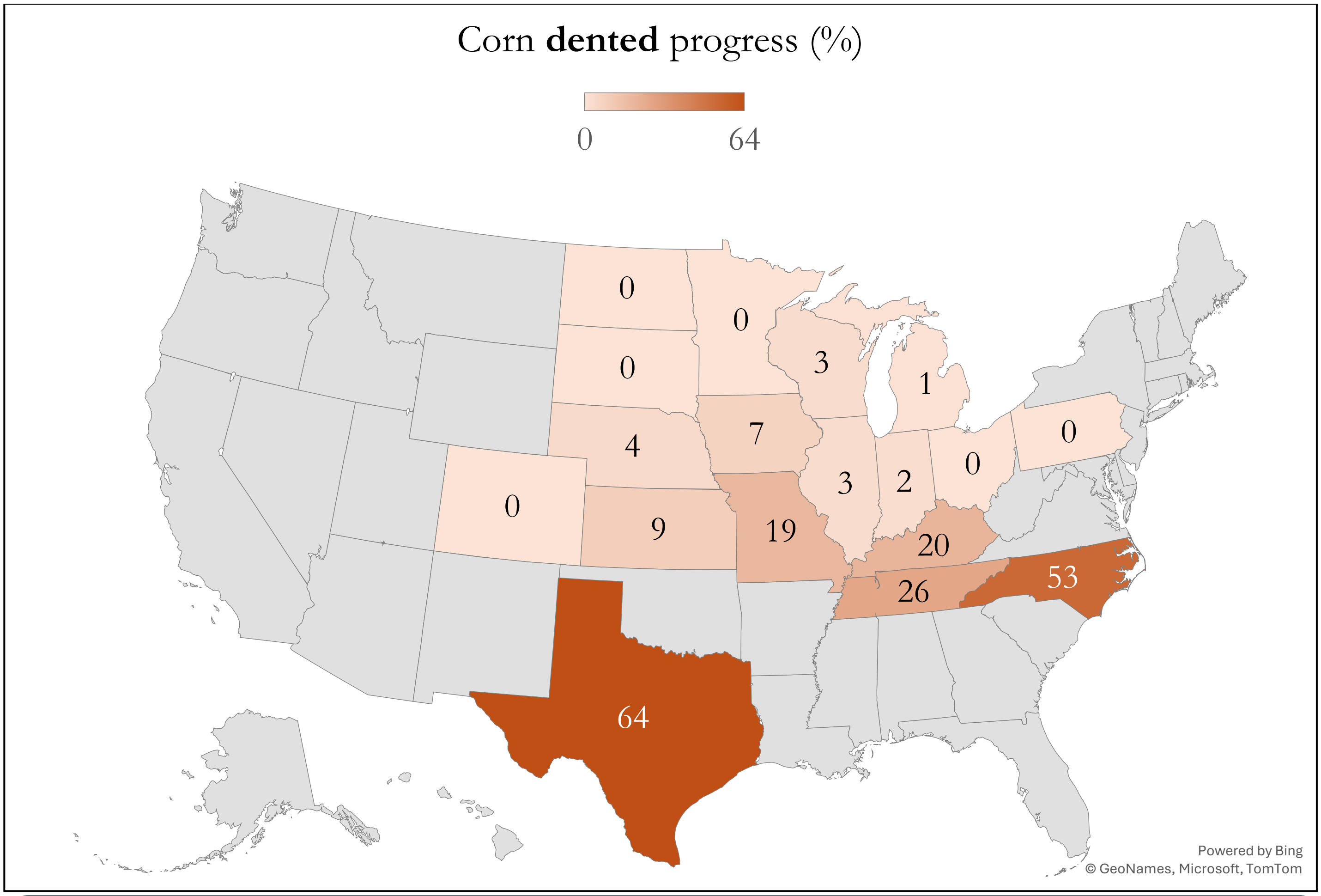

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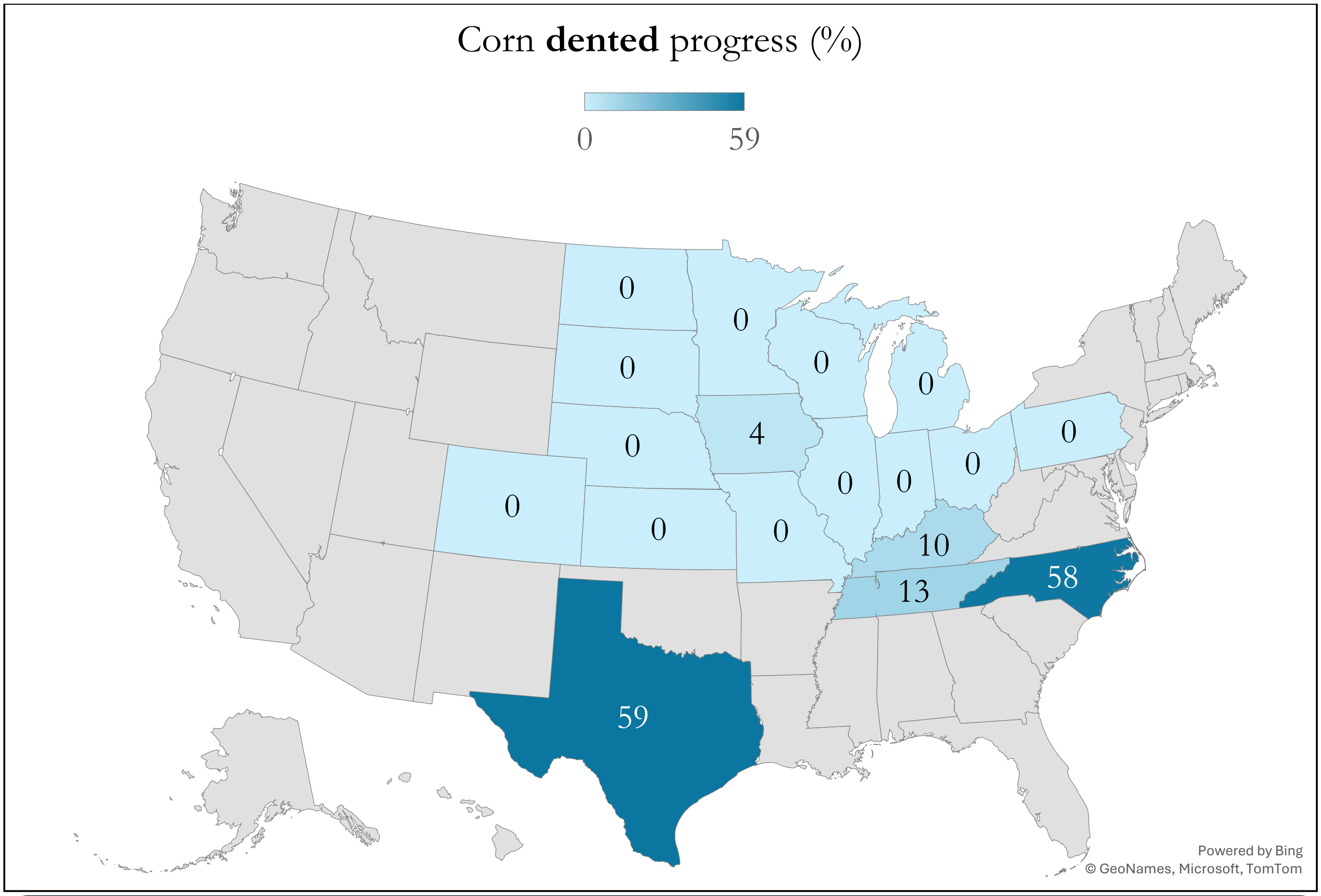

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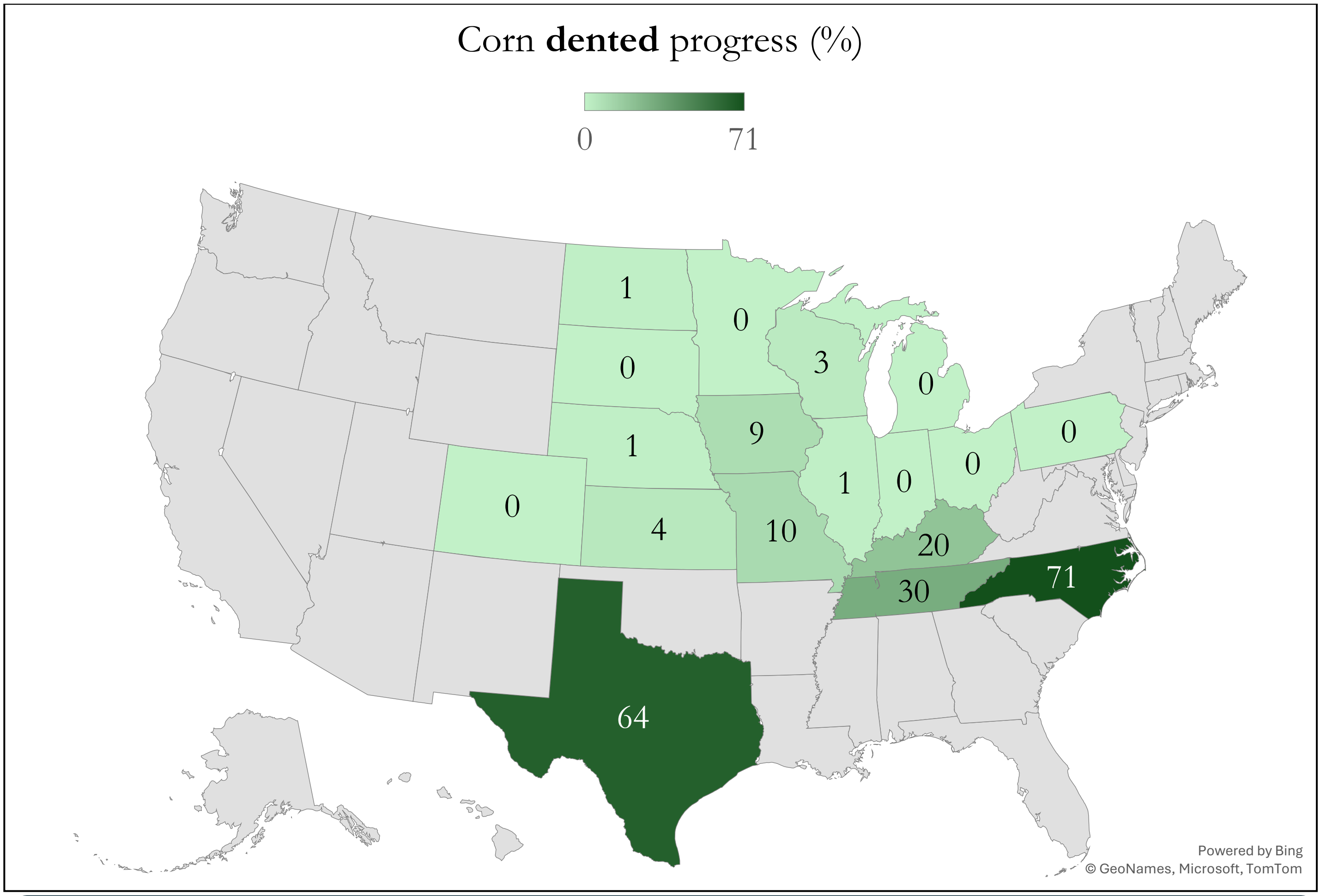

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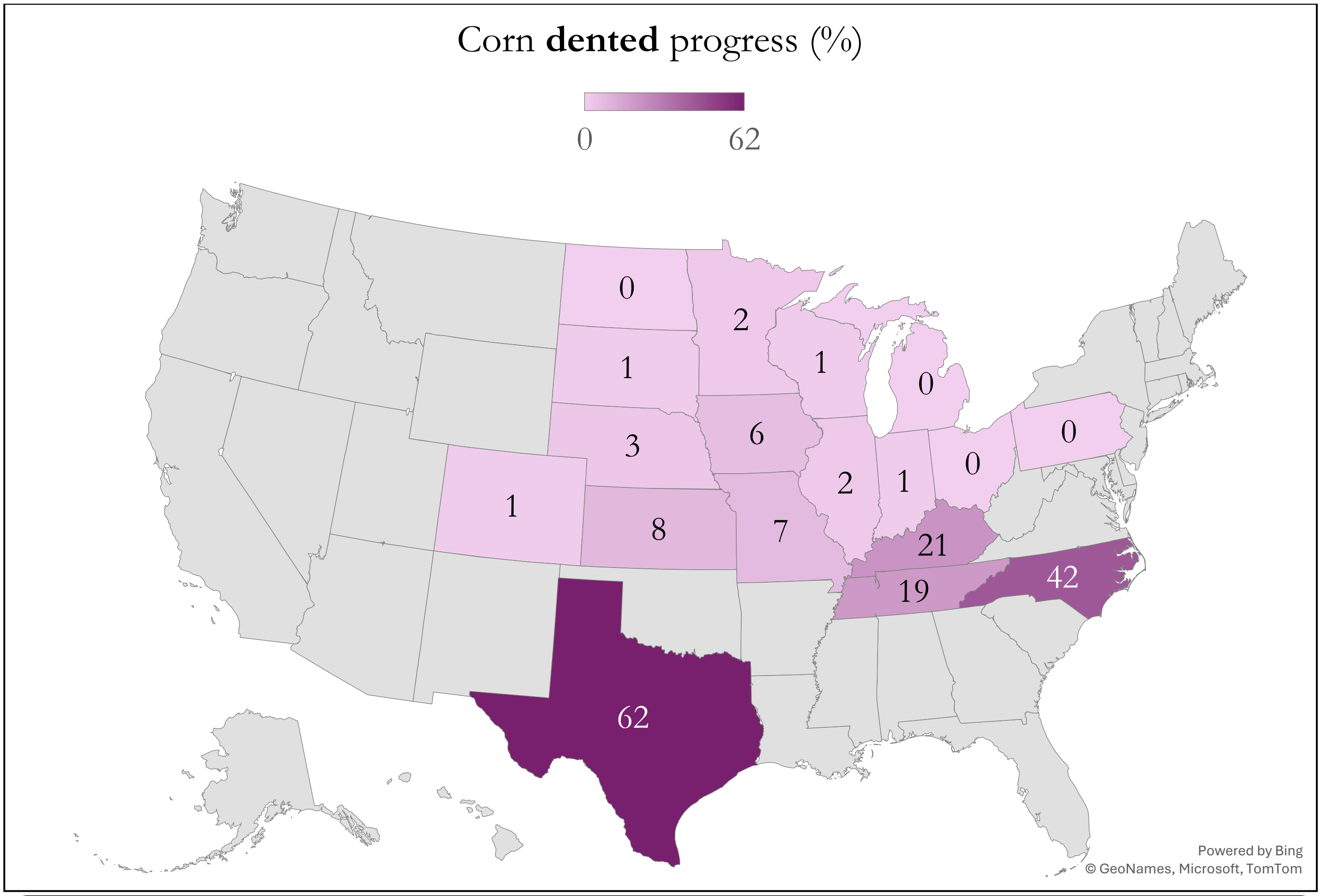

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