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# **Sustainable Financing of Sustainable Agriculture**

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# Community Banks & Agricultural Lending

- Community Banks under \$50 billion in total assets accounted for **85 percent** of overall farm loans (FDIC, 2019).
- Community Banks contributed to an estimated **40 percent** of total farm debt held by all banks (ERS, 2019).
- Community Banks encompassed **73 percent** of “agricultural banks” operating in the United States (ICBA/Federal Reserve, 2019).



# Some Promise for Sustainable Agriculture

- Popularity: Between 2012 and 2017, the number of sustainable farming operations increased by **40 percent** (USDA, 2017).
- Productivity: Organic farming required **2.5** times more labor but yielded **10** times more in profit (Aquinas College, 2015).
- Profitability: Organic produce is **22** to **35** percent more profitable than conventional produce (Washington State University, 2015).



# A Tale of Two Questions

- Primary question: what is the impact of adverse weather patterns (resulting from climate change) on community banks' Ag lending?
- Secondary question: what is the impact of climate change mitigation efforts i.e. sustainable agriculture on community banks' Ag lending?
- These questions are crucial to community banks as they continue to serve the Agricultural Sector as it adapts to a changing climate.



# Research Design

- $AgLending_{it} = \beta_1 DisDecs_{st} + \beta_2 AgRGrants_{st} + \gamma BankSF_{ist} + \mu MarketSF_{ist} + \delta FixedEffects + \epsilon$ 
  - $AgLending_{it}$  : \$ Community Bank Agricultural Loans
  - $\beta_1 DisDecs_{st}$  : # Disaster Declarations per State
  - $\beta_2 AgRGrants_{st}$  : \$ Sustainable Agricultural Research Grants per State
  - $\gamma BankSF_{ist}$  : Bank-Specific Factors - Age, Risk (Tier 1 Capital), Net Loans & Leases, Securities, Peer Group, Locations, and Efficiency
  - $\mu MarketSF_{ist}$  : Market-Specific Factors - Competition (HHI Index), GDP, Population Density, Unemployment Rate, and Temperature

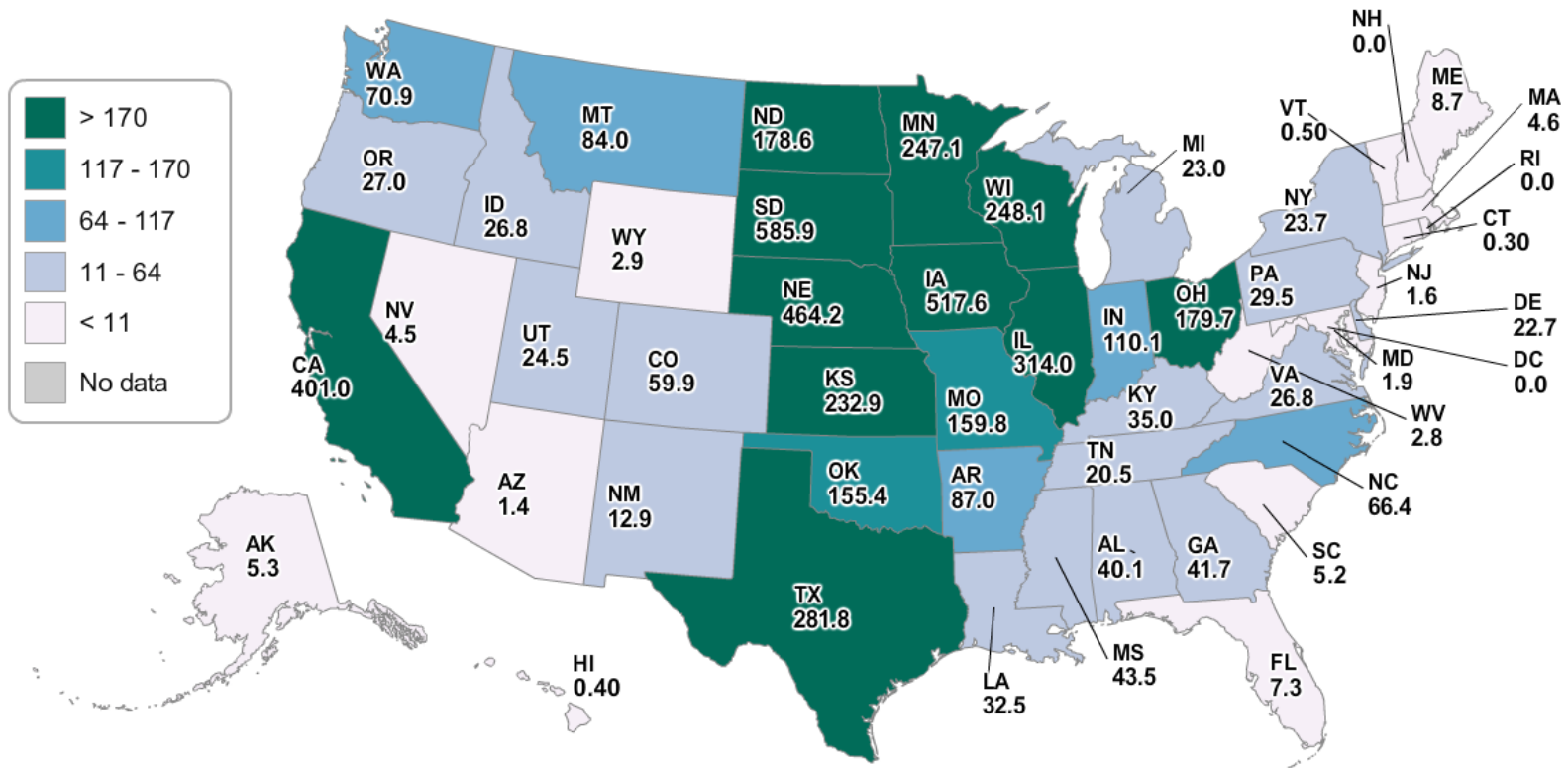


# Research Results

	Disaster	Short-Term (1 Quarter)	Mid-Term (2 Quarters)	Long-Term (4 Quarters)	Full Sample
AgLending	(1)	(2)	(3)	(4)	(5)
<b>DisDecs</b>	0.059 (0.009)	0.085 (0.012)	0.077 (0.022)	0.080 (0.020)	0.063 (0.021)
<b>AgRGrants</b>	0.045 (0.002)	0.051 (0.008)	0.059 (0.009)	0.056 (0.009)	0.049 (0.003)
<b>PeerGroup</b>	0.087 (0.012)	0.092 (0.018)	0.095 (0.021)	0.103 (0.011)	0.0839 (0.048)
State & Time FE	YES	YES	YES	YES	NO
Observations	21,840	21,840	21,840	21,840	30,773
Within R-Squared	0.652	0.599	0.710	0.634	0.429



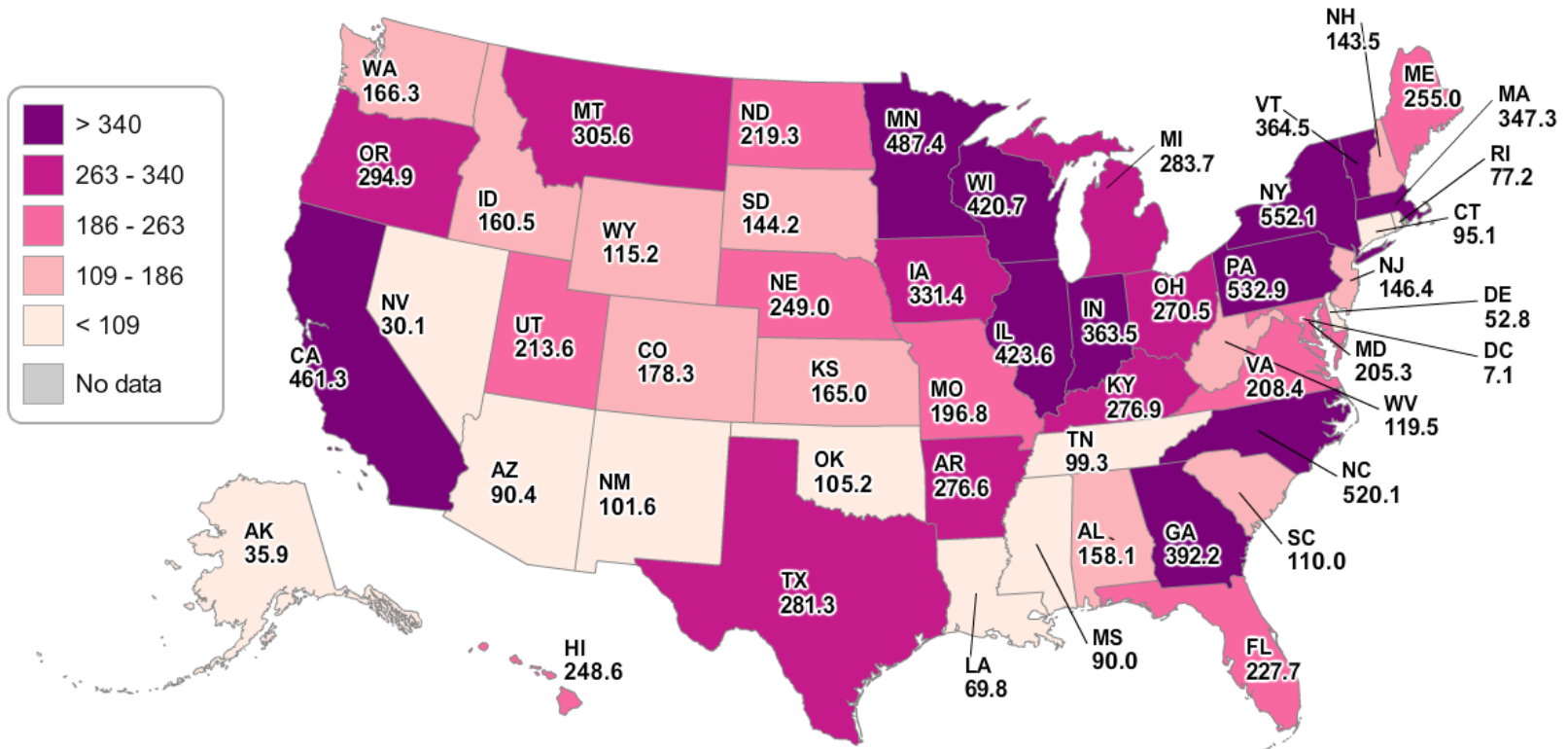
# Ag Lending 4 Quarters Post-Disaster in 2018



\*Values in \$ millions.



# Sustainability Efforts 4 Quarters Post-Disaster in 2018

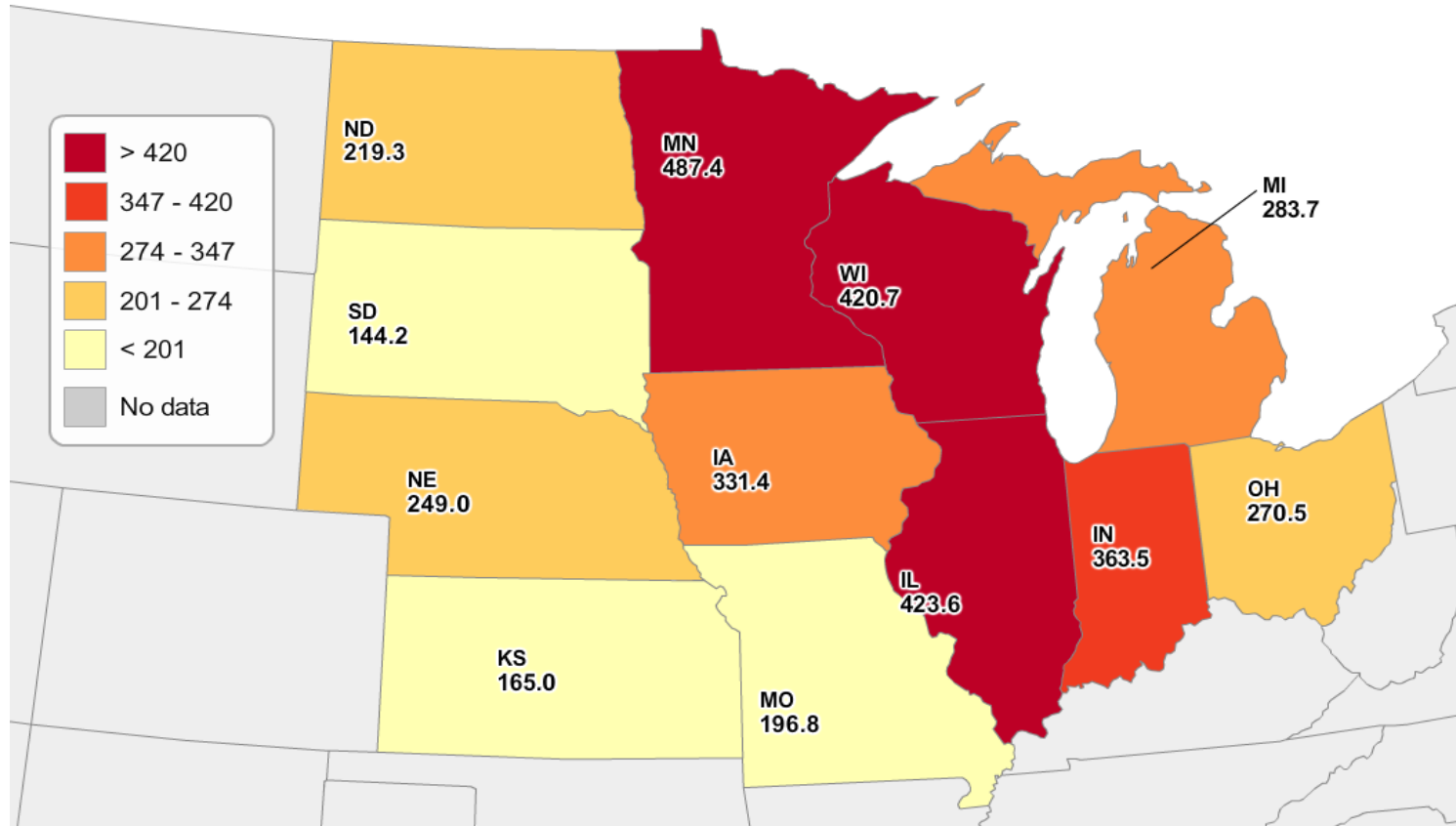


\*Values in \$ millions.





# Importance to the Midwest



\*Values in \$ millions.



# A Synergetic Relationship

- Community banks are consistent in their Ag lending. Their financial support increases to serve the Agriculture-related needs of their borrowers during adverse weather patterns.
- Sustainability research provides additional opportunities for banks to partner with farmers as they develop and implement new strategies that are good for their farms and great for their bottom lines!



# ***Thank You!***

*Neither snow nor rain nor heat nor gloom of  
night stays these community bankers from  
writing their appointed Agricultural loans!*

