

NSSGA

NATIONAL STONE, SAND
& GRAVEL ASSOCIATION

Automation in Small Mines

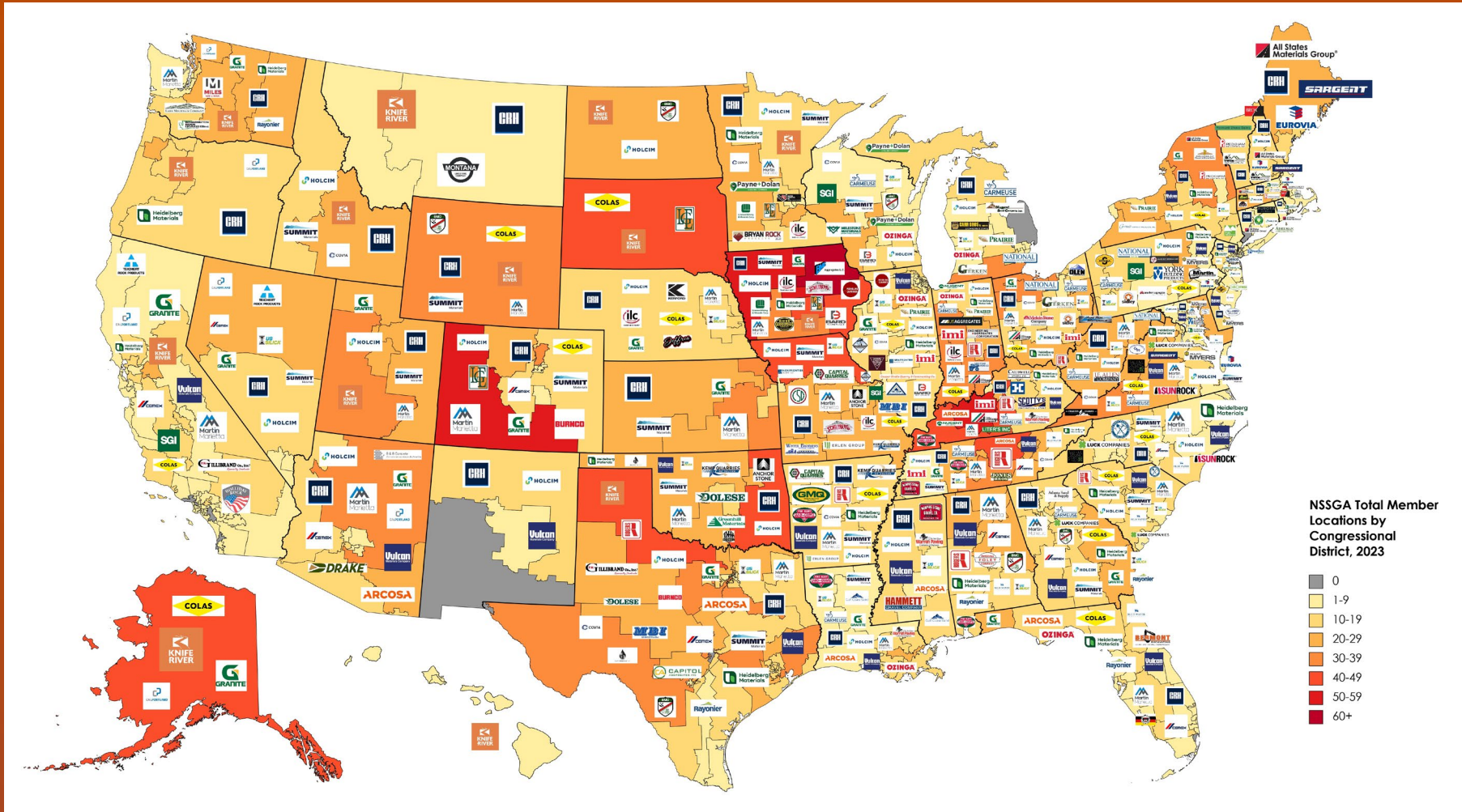
Libby Pritchard, MS

Occupational Health, Safety & Sustainability Director

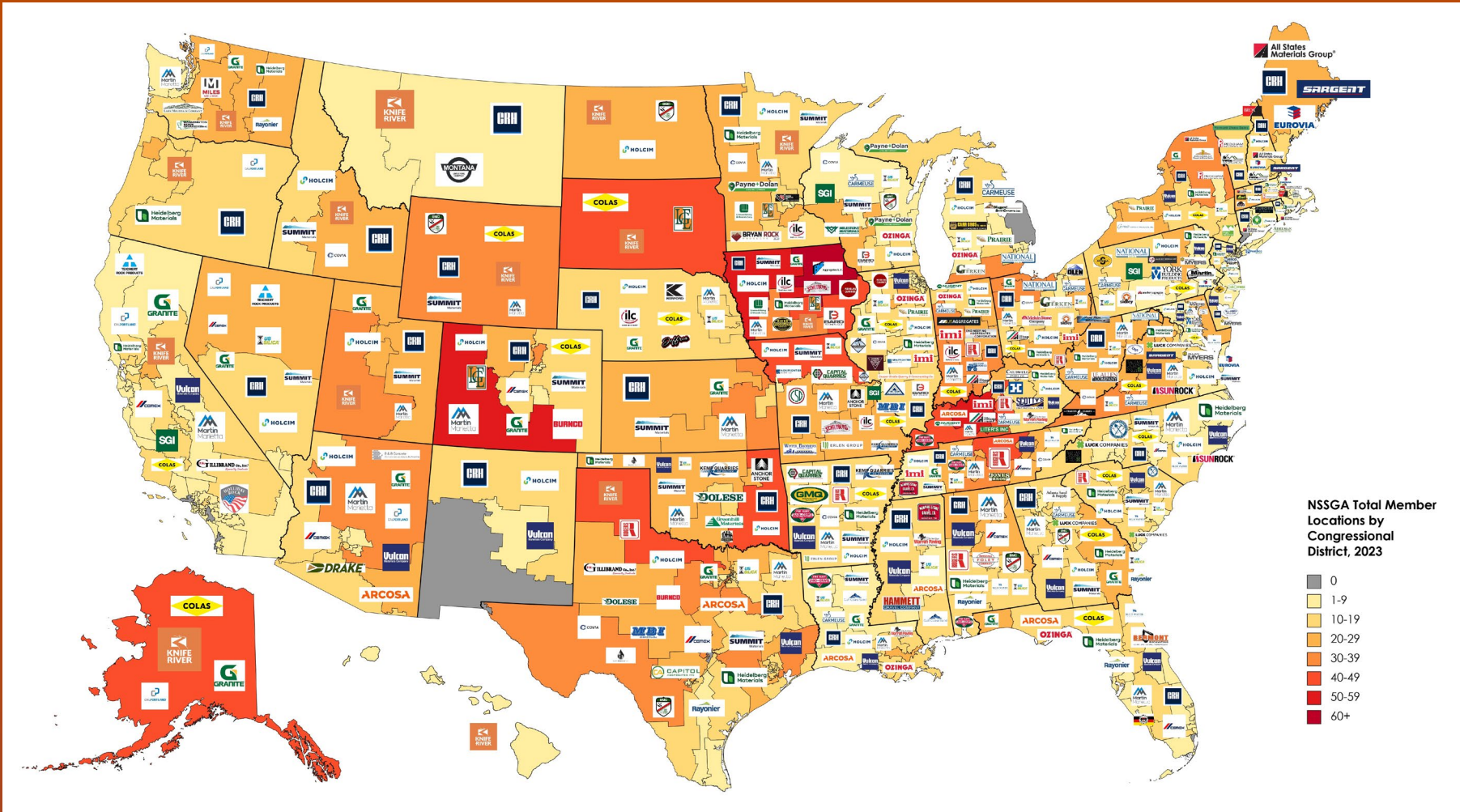
National Stone, Sand & Gravel Association

lpritchard@nssga.org

Some Background



Some Background



Small Producer Geometry

NSSGA[®]

NATIONAL STONE, SAND
& GRAVEL ASSOCIATION



Small Producer Geometry

NSSGA®

NATIONAL STONE, SAND
& GRAVEL ASSOCIATION



Small Producer Geometry

NSSGA[®]

NATIONAL STONE, SAND
& GRAVEL ASSOCIATION



What's a "small producer" anyway?

Small Producer Geometry



Small-small / Big-small / Small-medium

Small-small

- Family owned and operated
- Common operational automation of plants
 - Not all there; many are
- Ticketing
- Don't see the need
 - Trust
 - Don't fix what's not broken
- Timing, investment, speed of technology



Big-smalls

- Family owned and operated +
- Fully automated operations or getting there
 - Block and tackle
- Considering or have done some autonomous upgrades
 - Conveyors
 - Management systems
 - Training
- Interested in further automation (e.g., vehicles)



Small-mediums

- Multiple locations – state/regional
- Full automated operations
- Actively looking into further automation solutions
 - Remote-operated mobile equipment
 - Autonomous vehicles
 - Management systems



Some Observations

- Production & efficiency
- Type of mining/product
- Capital expenditures/improvements
 - Ability – needs vs. wants
 - Regulations
 - Implementation timing
- Knowledge, awareness
- Proof of concept



Big-ticket Concepts

- Replacing workers or worker shortages
 - Automation = relocation not replacement
- Need for retrofitting?

NSSGA

Final Thoughts and Next Steps

- Block and tackle (Efficiency, ROI)
- Why fix what's not broken?
- Familiarity & trust
- Next generation
- Costco vs. Whole Foods
- How many pictures is an experience worth?



NSSGA

NATIONAL STONE, SAND
& GRAVEL ASSOCIATION

Thank You!

Libby Pritchard, MS

Occupational Health, Safety & Sustainability Director

NSSGA

lpritchard@nssga.org