NEXT SHALE 2017

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Navigating the Future of Unconventional Resources

Development of the Permian Basin

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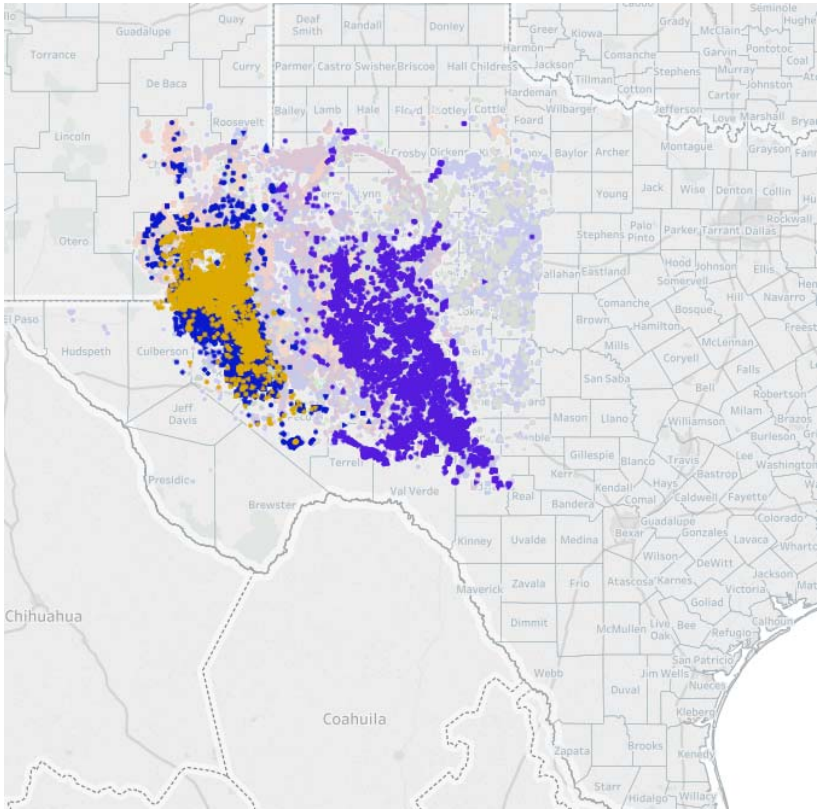
IHS Markit

NS17 - 181

Focus Area – Wolfcamp Midland

- Numerous plays in the Permian Basin
- Focusing on the story of the Wolfcamp Midland.
- Comparing to the Wolfcamp Delaware and Bone Spring

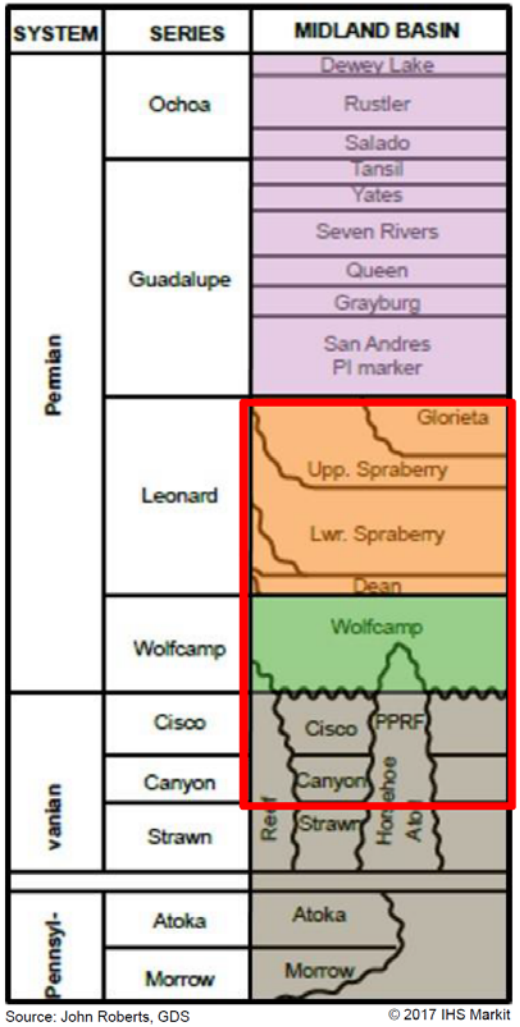


Formation Context

- Three primary formations
  - Wolfcamp
  - Dean
  - Spraberry

- The Wolfcamp Formation has an average gross thickness of 300-600 ft in the north and up to 2,000 ft in the south. It is found at varying depths across the basin, most commonly at 4,500-9,500 ft (total vertical depth [TVD]) in producing zones.

- Wolfcamp mostly comprised of organic rich shales with interbedded carbonates and clastics



Source: John Roberts, GDS

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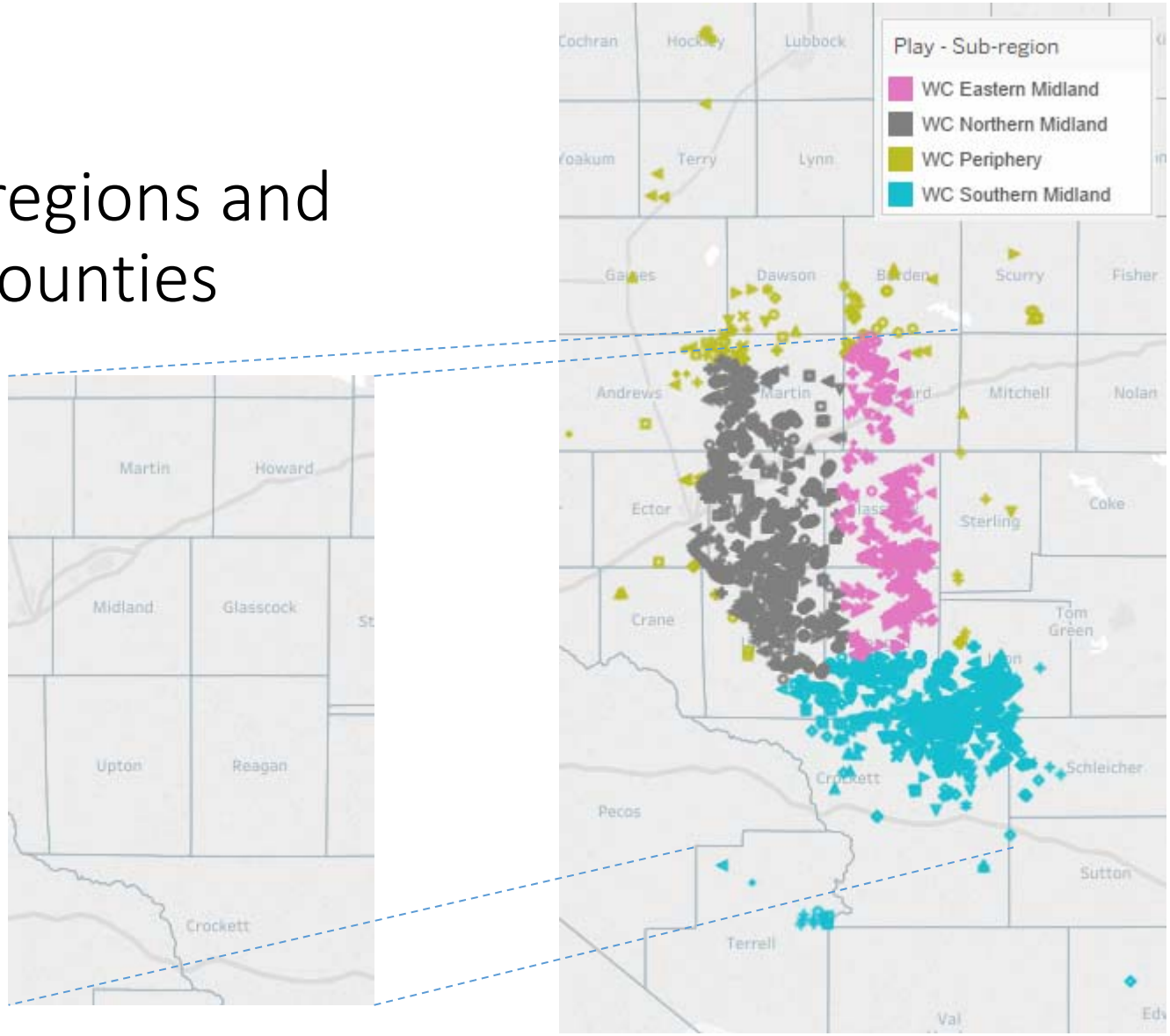
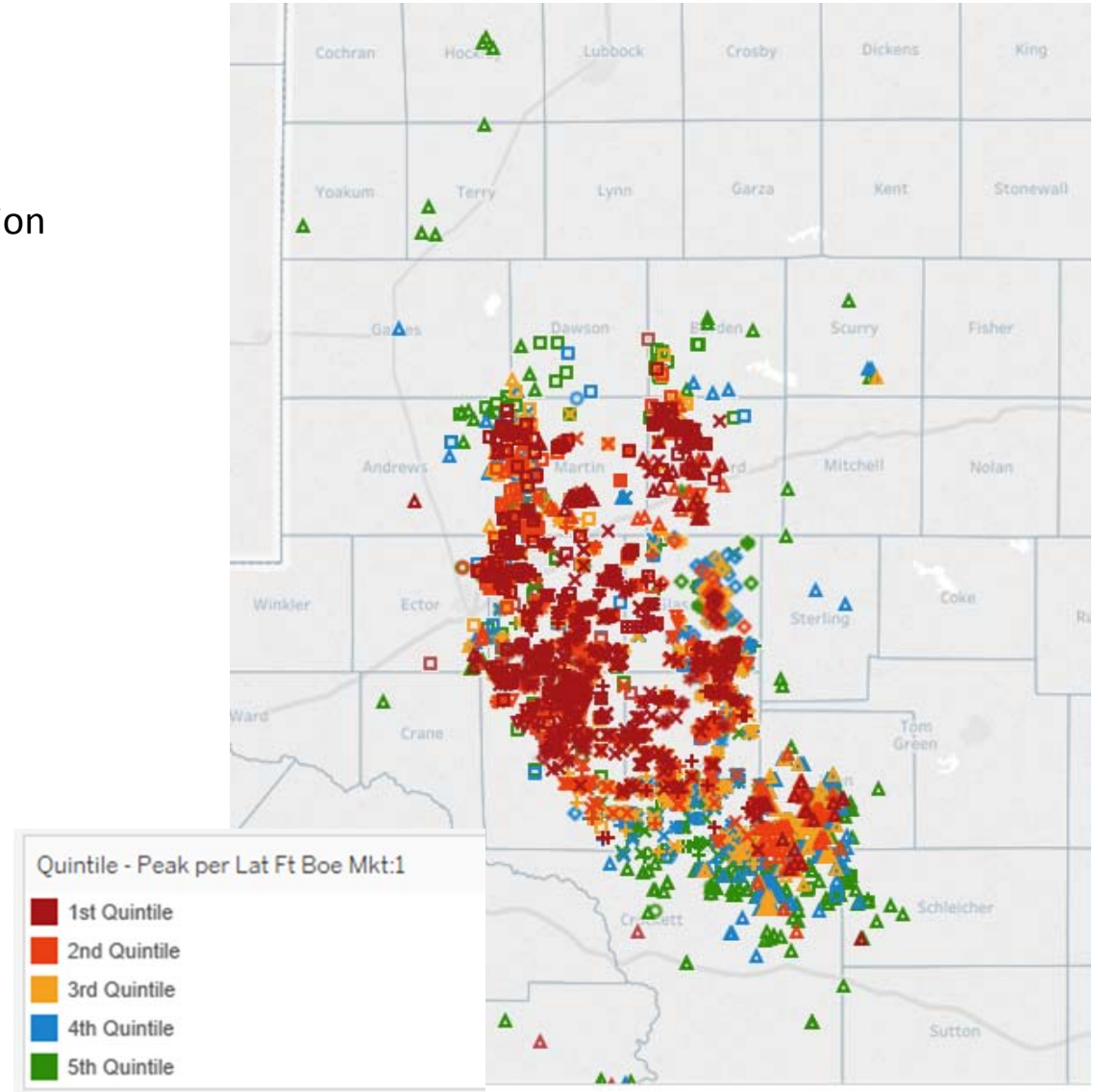
Sub-regions and key counties

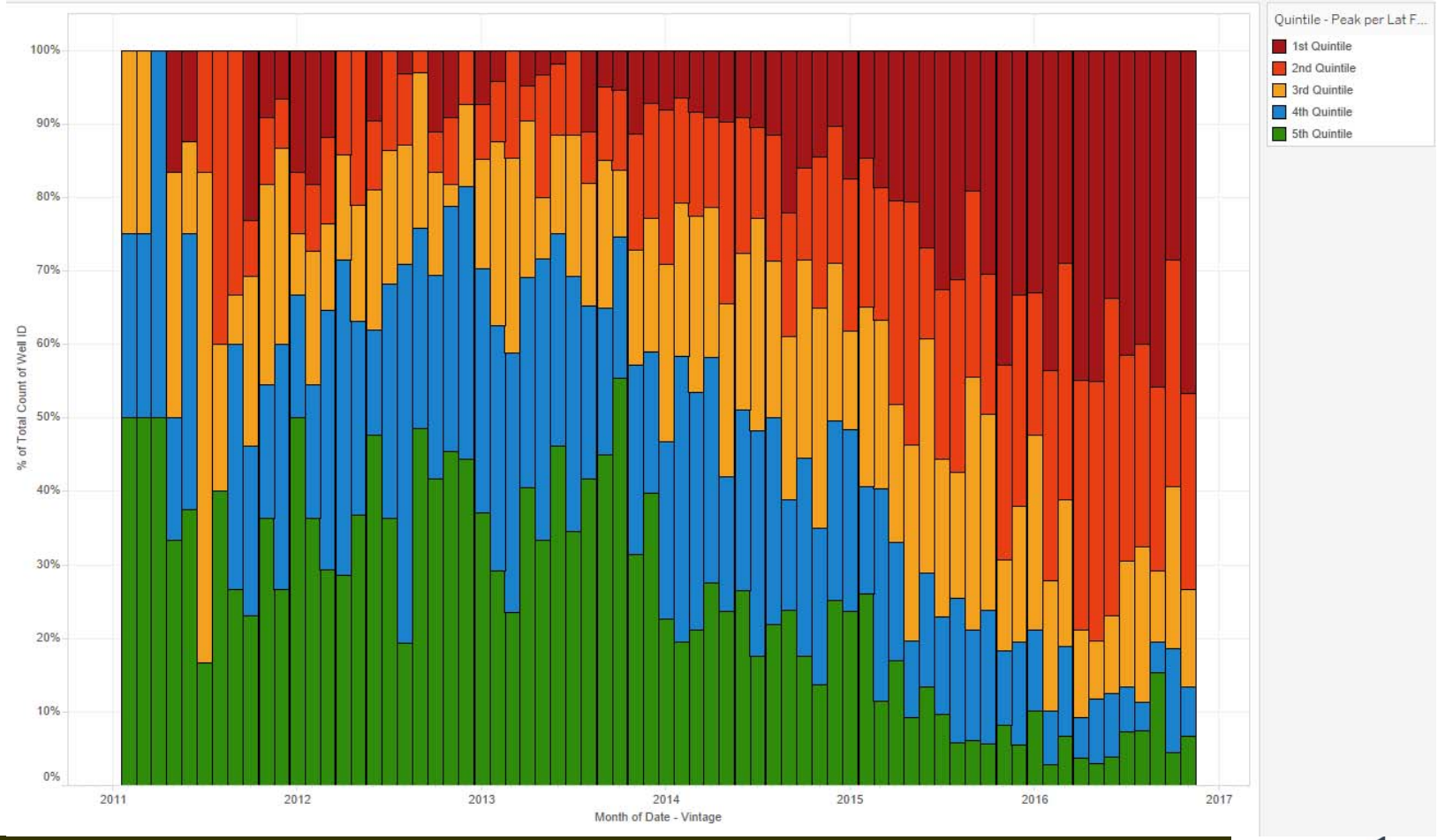


This play has seen large improvement due to a migration effect

Upton, Midland and Howard counties the most desirable



This play has undergone significant improvements due to both changes in well design and improvements in place independent of migration



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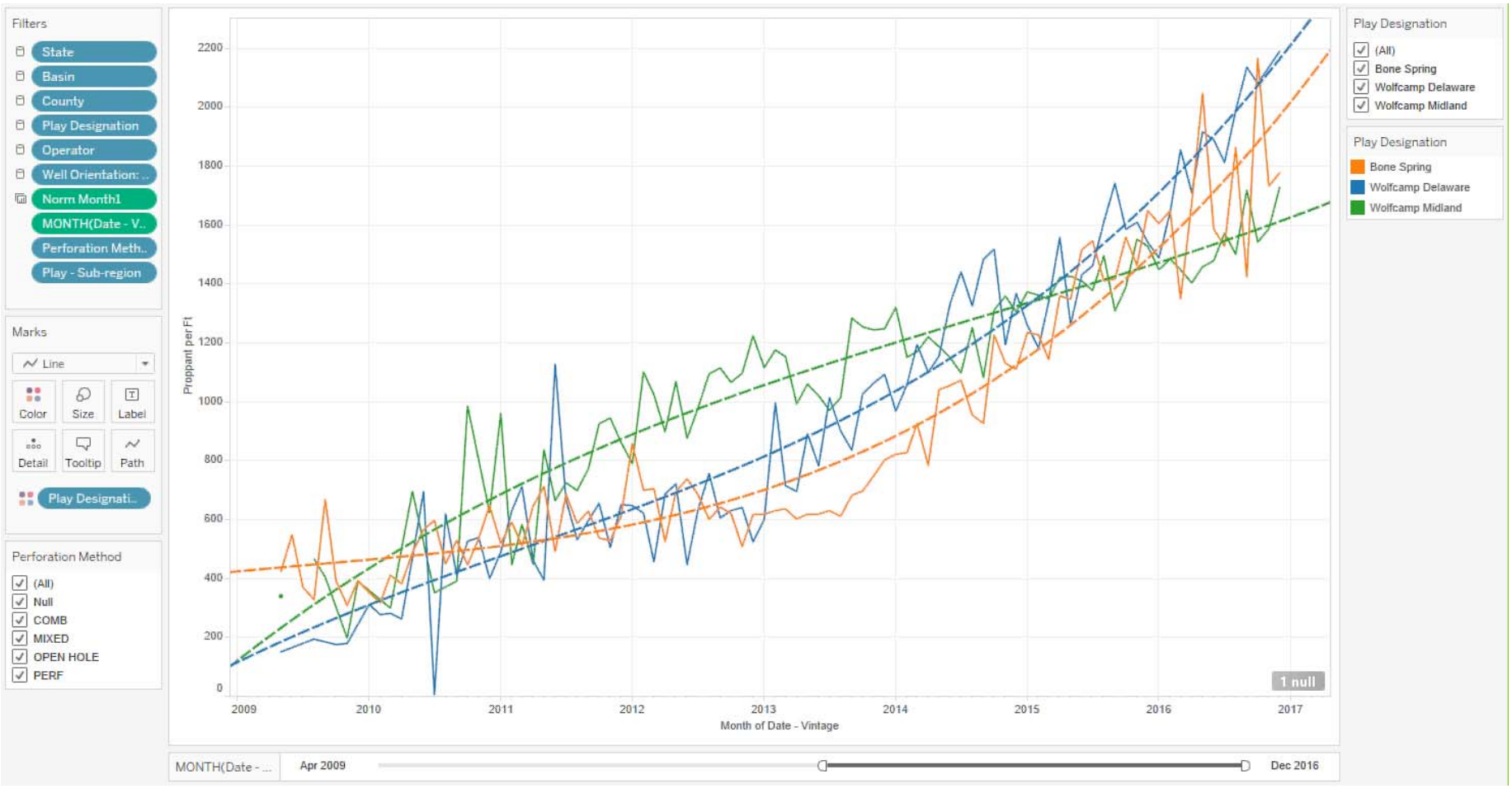
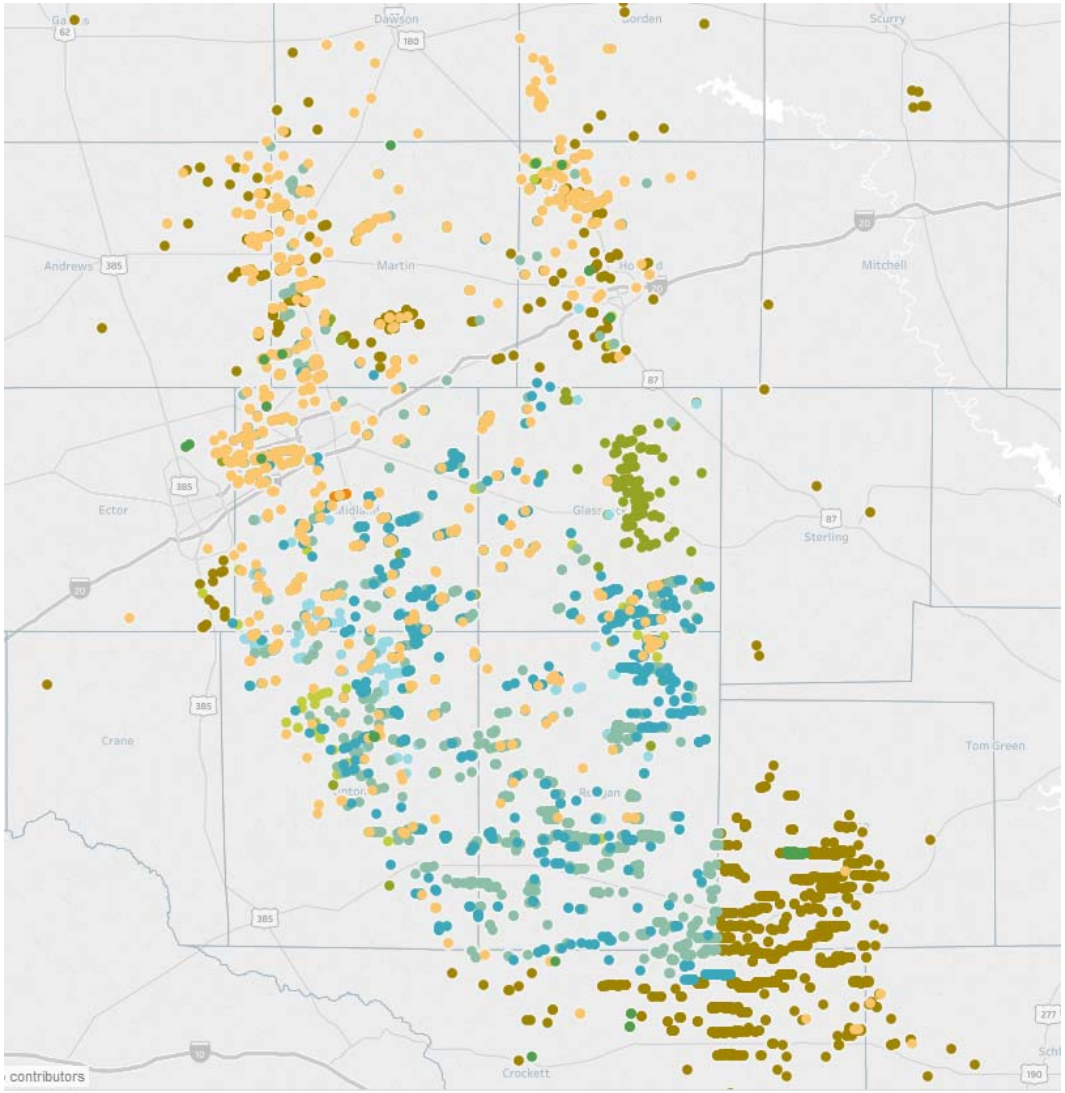
Frac intensity is rising but not as aggressive as has been seen in other Permian areas

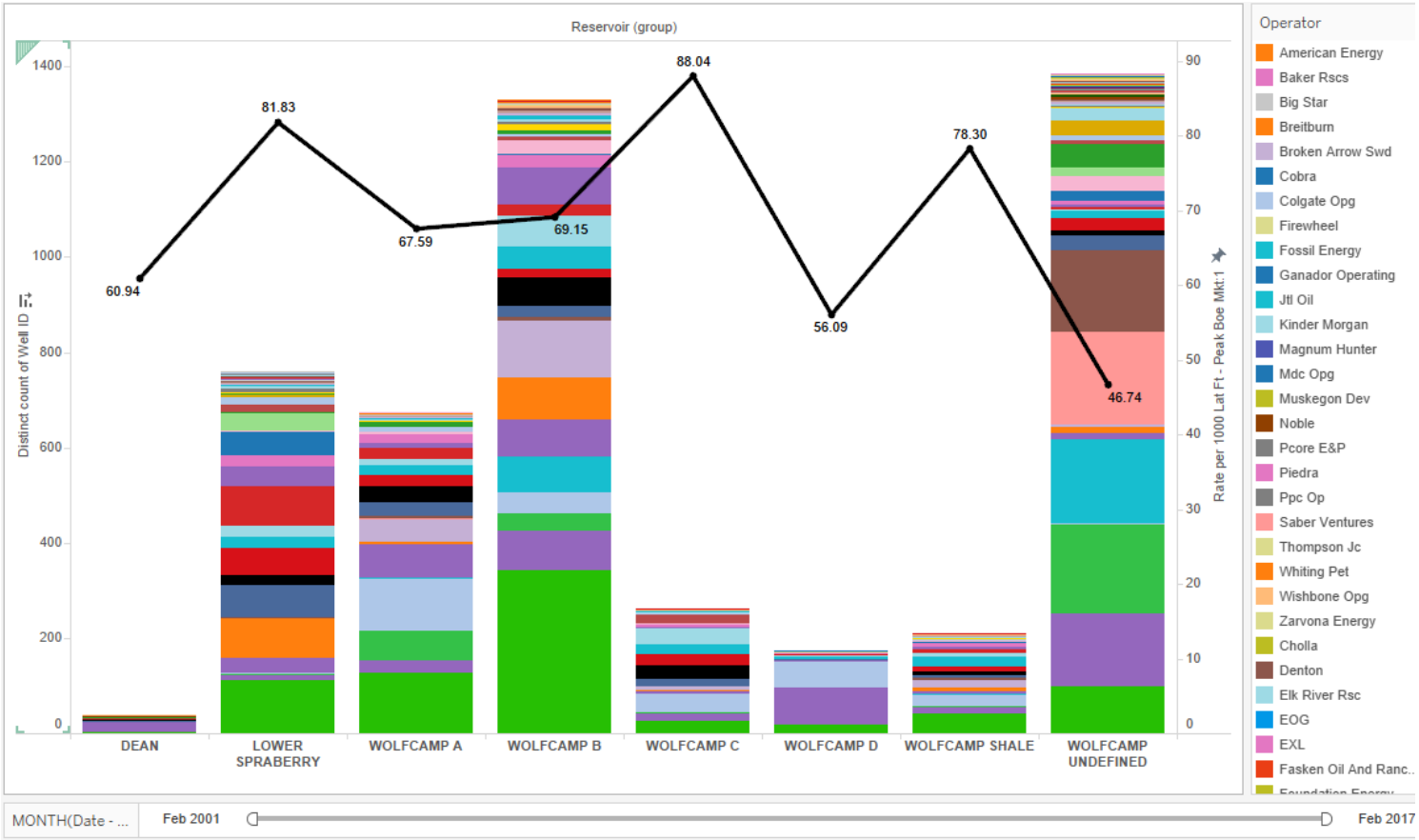


Different benches have had different areas of focus and areas which are seeing more than two good benches are limited.

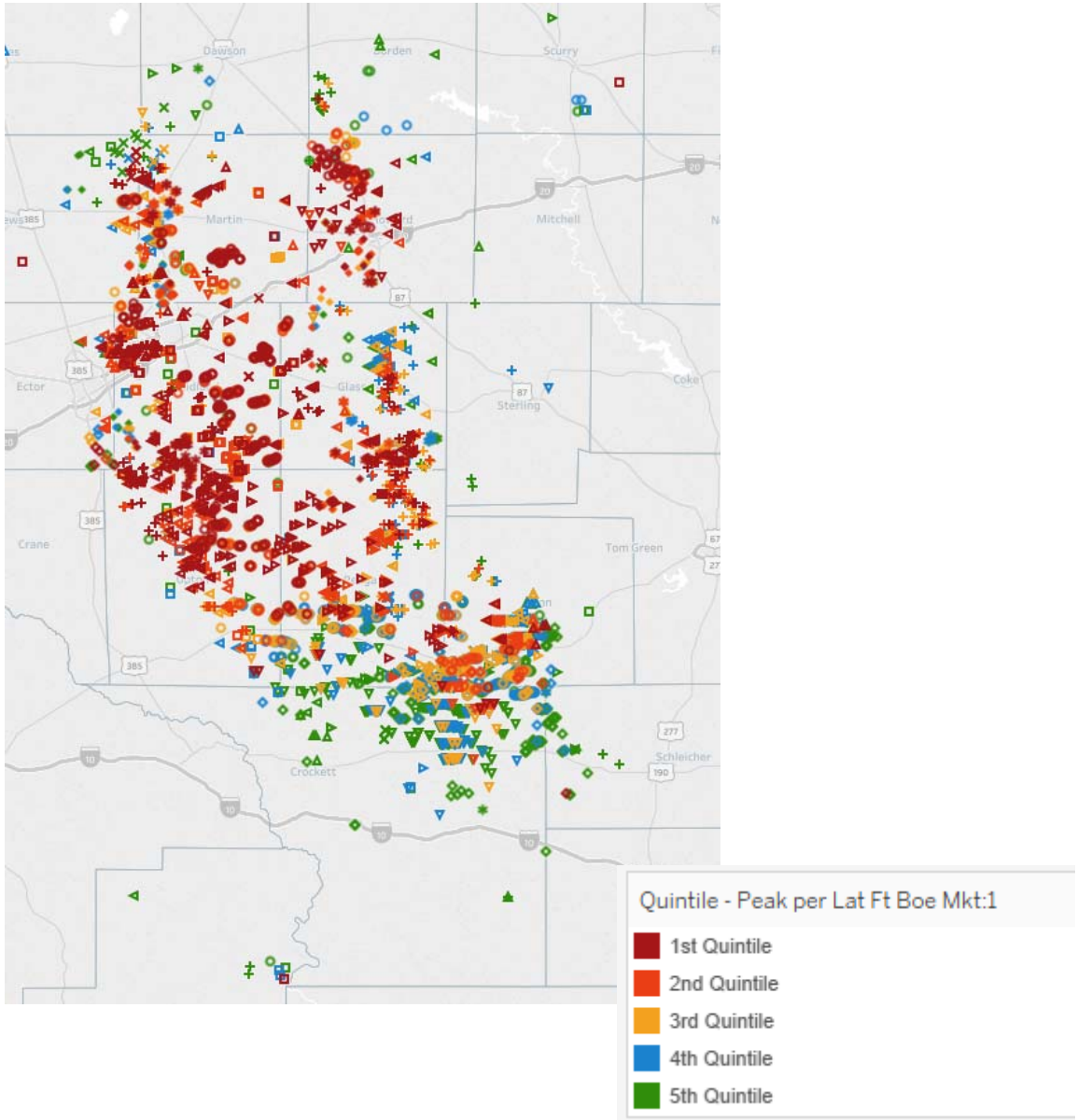


Reservoir (group)

- DEAN
- LOWER SPRABERRY
- UPPER SPRABERRY
- WOLFCAMP A
- WOLFCAMP B
- WOLFCAMP C
- WOLFCAMP D
- WOLFCAMP SHALE
- WOLFCAMP UNDEFINED



Different companies are testing different benches even in similar areas, optimization likely to last for another 2 years

Conclusions

- Improvement due to migration
- Advancements in well design and improvements in place (independent of migration)
- Moderate rise in fracture intensity
- Different benches have different areas of focus and areas with more than two good benches are limited
- Different companies are testing different benches even in similar areas, optimization likely to last for another 2 years