# Outlook for Irrigated and Non-Irrigated Cash Rents in Kansas

2022 Ag Lenders Conference

GREGG IBENDAHL

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# Purpose of publications

NOT an endorsement for what a tenant should actually pay a landlord

Instead, they are provided to give a starting point in lease negotiations

What is a "fair" or "equitable" lease?

- Any lease that a tenant and landlord willingly agree to in which they have both utilized the best information they have available to them in making a decision, is considered here to be a "fair" and/or "equitable" lease.

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# Why produce these publications

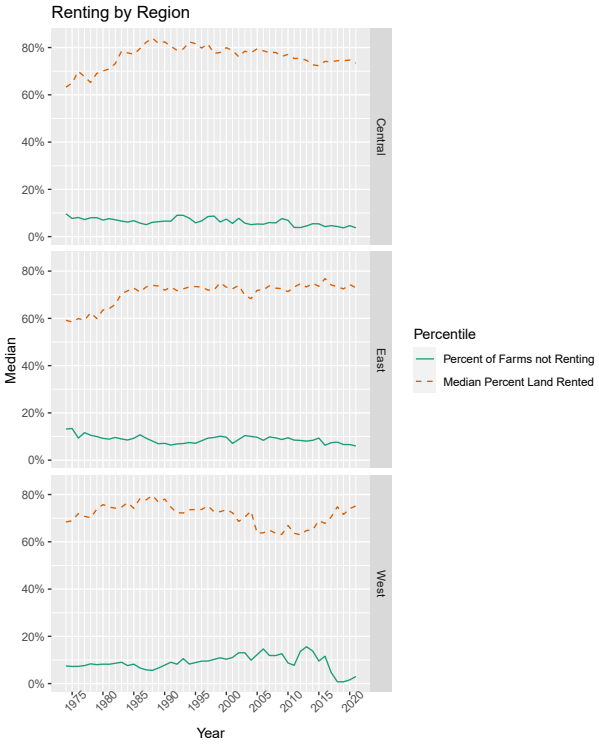
Nearly every farm leases some land

Local rental rates may not reflect the ability of the land to support going market rental rates

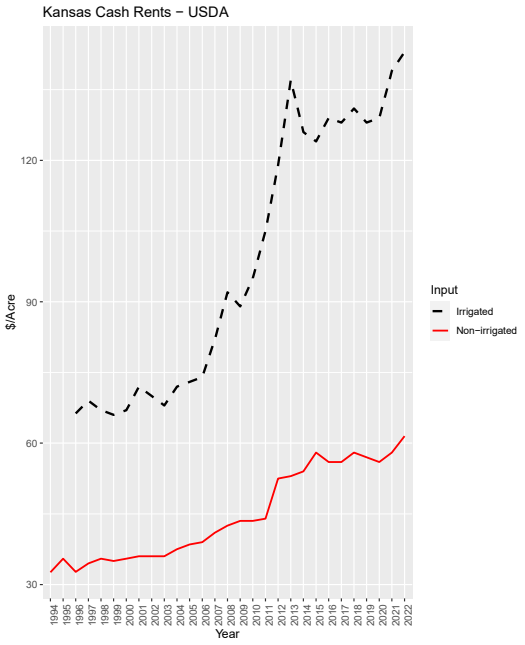
Issues from surveys of county rental rates

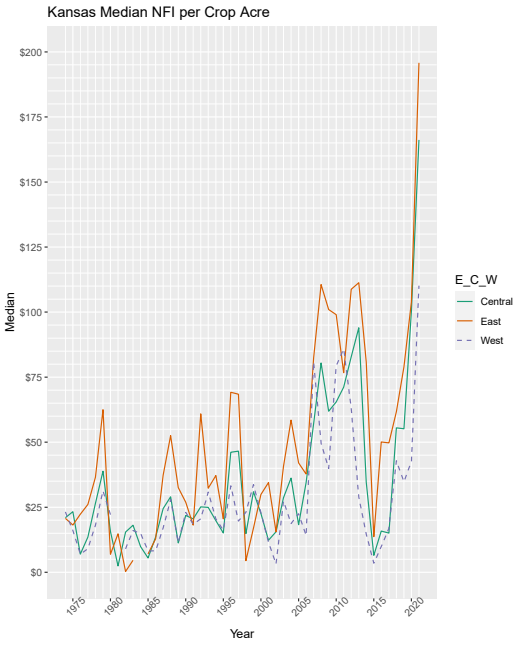
- Information may be outdated – time from survey until reported
- Truthfulness in survey responses
- Surveys could reflect multi-year leases from previous year

A lack of information about lease rates that incorporate land productivity into the rate calculation




# Why survey data may not be the best




1. Survey reflects both old and new leases
2. Survey reflects conditions at least a year in the past
3. Tendency to underreport rates
4. Not reflective of actual profitability

# Why leasing is important to farmers

Farmland will never cashflow
- Land is non-depreciable
- Typically, half of a farm's real net returns occur as land appreciation

Because land will not cashflow, land income will not cover principle and interest payments
- Rented landed is thus needed to help cover cashflow needs from purchased land.



# Our approach

Tenant's residual method
- County yield history
- Recent grain prices
- KFMA farm expenses

Covers all expenses
- Cash or direct cost of production
- Includes fixed costs on machinery
- Includes unpaid operator labor
- Includes overhead and management fees

FULL ECONOMIC COSTS

# Details of tenant's residual approach

Income – yields, prices, and government payments

- Yields – NASS no longer provides separate irrigated and non-irrigated yields
  - FSA does have this info and also number of crop acres in a county
  - Use of last 5 years of data
- Prices – Use of weighted average with more weight being given to most recent years

Expenses

- Use of KFMA data
- Developed at the enterprise level to account for different crop mixes each year
- Only corn, soybeans, wheat, and grain sorghum used
- Developed at the farm level but then aggregated up to the Crop Reporting District level
  - This might account for some of the differences you see on the graphs



# Other details

75% of unpaid operator labor is included

- This allows for farm activities not related to crop production

2% management fee based on gross revenue

- This includes management and also the interest charge for any owned machinery equity on the farm.

Weights used for the estimates

- 2022 – 30%
- 2021 – 25%
- 2020 – 20%
- 2019 – 15%
- 2018 – 10%
- Shifting of yearly weighting to put more emphasis on more recent years

# Other details

Adjustment to NASS reported cash rent
- Helps to smooth the estimate
- Averaging the NASS estimate into the tenant's residual calculation
  - 60% weighting to NASS – was 50% last year
  - Capping the difference from NASS at 40%
  - This provides a smoothing effect

Adjustment for land use intensity
- Needed to account for fallow and double cropping

Incorporating a range of values
- 25$^{th}$ and 75$^{th}$ percentile



# Factors affecting future NFI (and thus rents)

# Boom to bust?

| | Net Farm Income | | | |
|---|---|---|---|---|
| | 2020 | 2021 | 2022(p) | Est 2023 |
| NFI | $ 190,966 | $ 355,467 | $ 97,124 | $ (45,888) |
| % Change | | 86% | -73% | -147% |



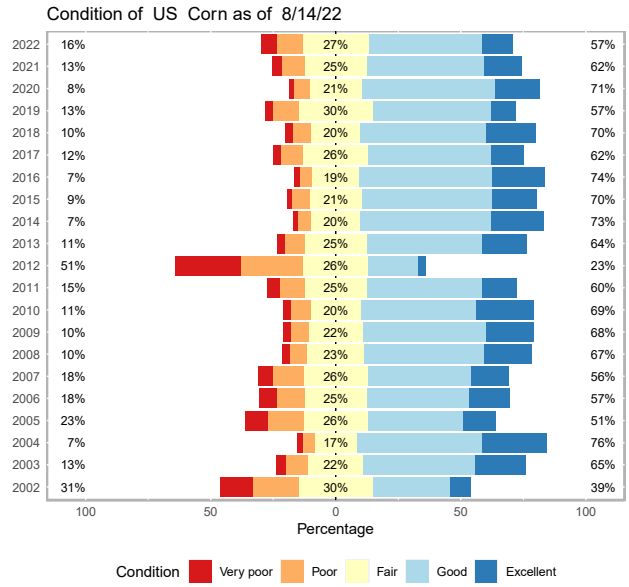
# Weather is a big factor this year

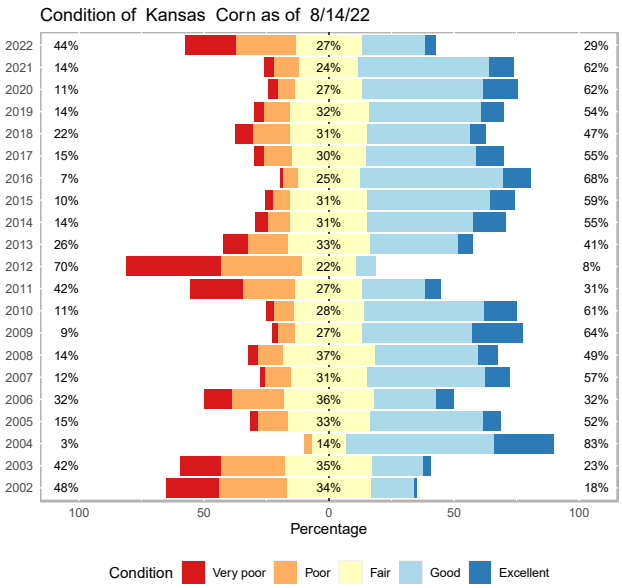
Fairly typical nation-wide corn and soybean production

Kansas corn production will be well below normal

Soybeans below average too but not as bad as corn

Wheat yields of 39 bu/ac is 15% below the trend line yield of 45.6 bu/ac






# Predicted Corn Yields

Many states will have average or above average yields

- Illinois, Iowa, Michigan, Minnesota

Kansas though will see a large drop in corn yields

- 139 bu/ac state average last year
- 113 bu/ac this year (19% lower)
- Range from 107 to 120 bu/ac

Corn Yields per Acre by State - 8/14/22

Bushels per harvested acre

| State | Last year | 2022 prediction Lower CI | Predicted | Upper CI | R squared |
|---|---|---|---|---|---|
| Colorado | 129.0 | 124.0 | 130.8 | 137.6 | −0.02 |
| Illinois | 202.0 | 201.1 | 205.5 | 209.9 | 0.67 |
| Indiana | 195.0 | 176.9 | 180.4 | 183.9 | 0.72 |
| Iowa | 205.0 | 198.8 | 202.5 | 206.3 | 0.60 |
| Kansas | 139.0 | 106.6 | 113.3 | 120.0 | 0.54 |
| Kentucky | 192.0 | 141.0 | 146.6 | 152.3 | 0.82 |
| Michigan | 174.0 | 169.3 | 172.1 | 174.9 | 0.53 |
| Minnesota | 178.0 | 191.6 | 195.5 | 199.4 | 0.52 |
| Missouri | 160.0 | 147.6 | 151.5 | 155.3 | 0.80 |
| Nebraska | 194.0 | 174.7 | 179.4 | 184.2 | 0.58 |
| North_Carolina | 149.0 | 111.5 | 115.0 | 118.6 | 0.83 |
| North_Dakota | 105.0 | 142.4 | 147.6 | 152.7 | 0.33 |
| Ohio | 193.0 | 176.2 | 179.4 | 182.7 | 0.73 |
| Pennsylvania | 169.0 | 150.8 | 154.0 | 157.2 | 0.74 |
| South_Dakota | 135.0 | 147.9 | 152.1 | 156.4 | 0.56 |
| Tennessee | 170.0 | 132.5 | 139.0 | 145.5 | 0.82 |
| Texas | 128.0 | 110.0 | 116.0 | 121.9 | 0.55 |
| Wisconsin | 180.0 | 178.8 | 182.3 | 185.9 | 0.51 |

# Predicted Corn Production

U.S. corn production is expected to be 6% below last year

Kansas – 29% drop in corn production
- Range from 36% to 22% lower

Total Corn Production by State - 8/14/22

1,000,000 bushels

| State | Last year | 2022 prediction Lower CI | Predicted | Upper CI |
|---|---|---|---|---|
| Colorado | 148 | 146 | 159 | 171 |
| Illinois | 2,192 | 2,074 | 2,137 | 2,200 |
| Indiana | 1,028 | 861 | 887 | 913 |
| Iowa | 2,552 | 2,404 | 2,466 | 2,529 |
| Kansas | 751 | 481 | 532 | 586 |
| Kentucky | 276 | 191 | 201 | 212 |
| Michigan | 346 | 305 | 318 | 330 |
| Minnesota | 1,396 | 1,465 | 1,517 | 1,570 |
| Missouri | 549 | 492 | 515 | 538 |
| Nebraska | 1,855 | 1,575 | 1,644 | 1,714 |
| North_Carolina | 135 | 88 | 94 | 100 |
| North_Dakota | 381 | 346 | 385 | 426 |
| Ohio | 645 | 541 | 563 | 584 |
| Pennsylvania | 167 | 134 | 140 | 147 |
| South_Dakota | 740 | 740 | 789 | 840 |
| Tennessee | 163 | 118 | 129 | 142 |
| Texas | 237 | 192 | 212 | 233 |
| Wisconsin | 547 | 514 | 539 | 565 |
| Total | — | 14,107 | 12,668 | 13,227 | 13,799 |

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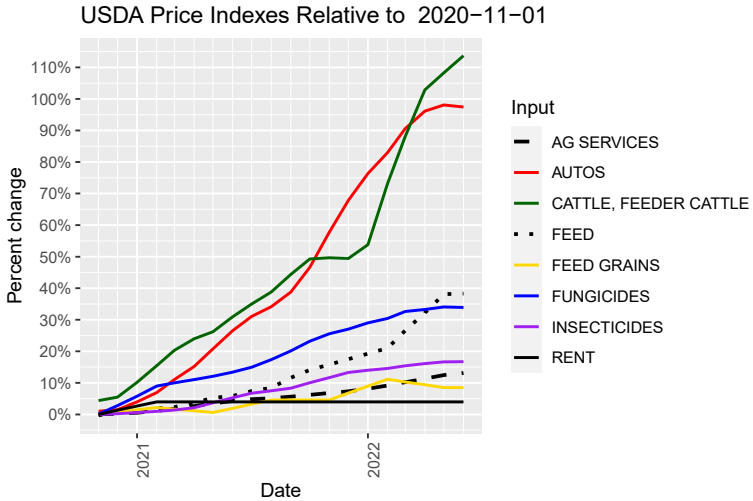
# What about expenses?

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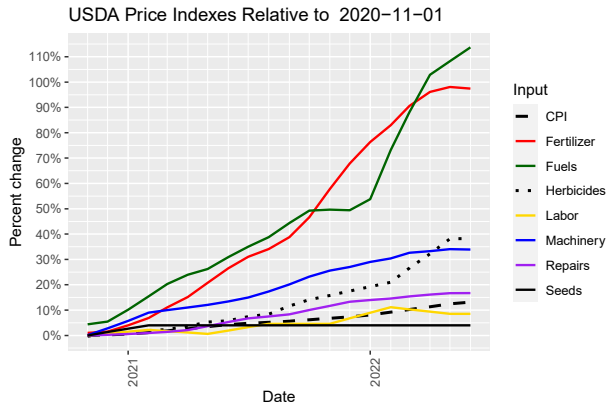
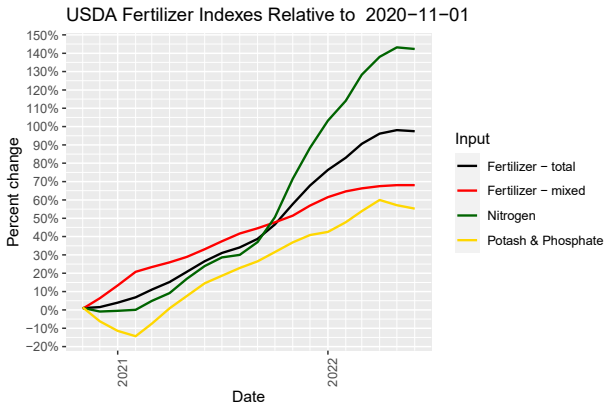
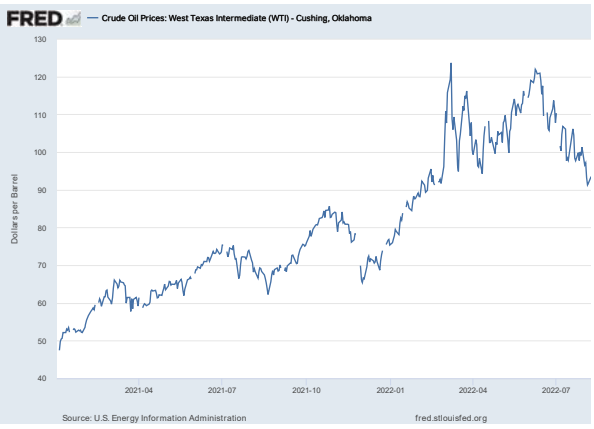
# USDA expense indexes (cont.)

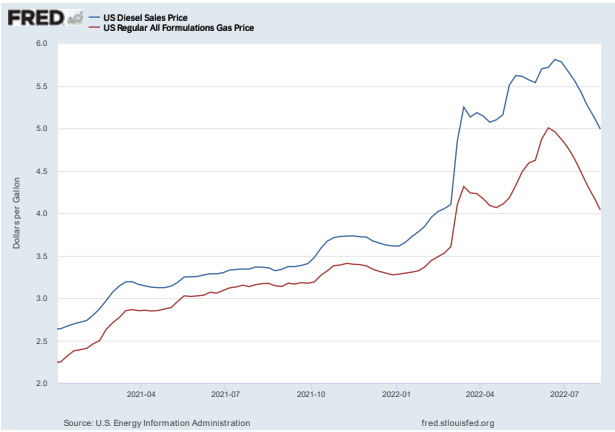





# Gas and Diesel and Oil



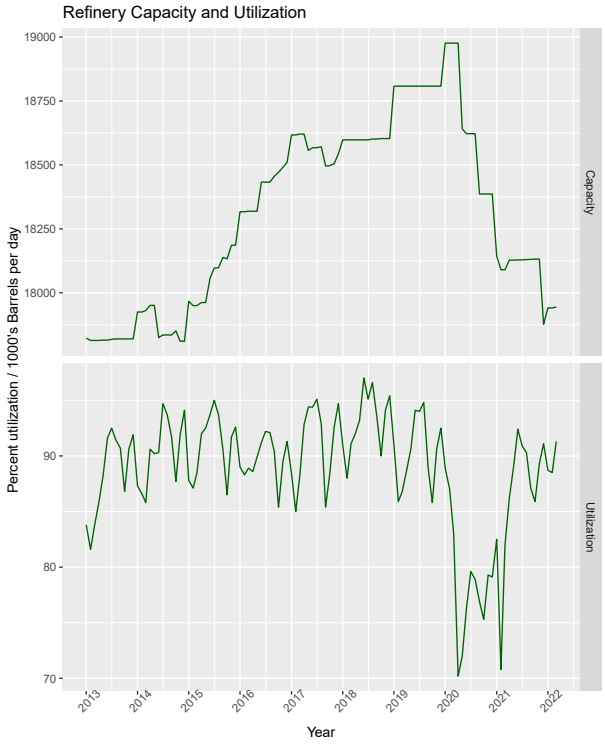



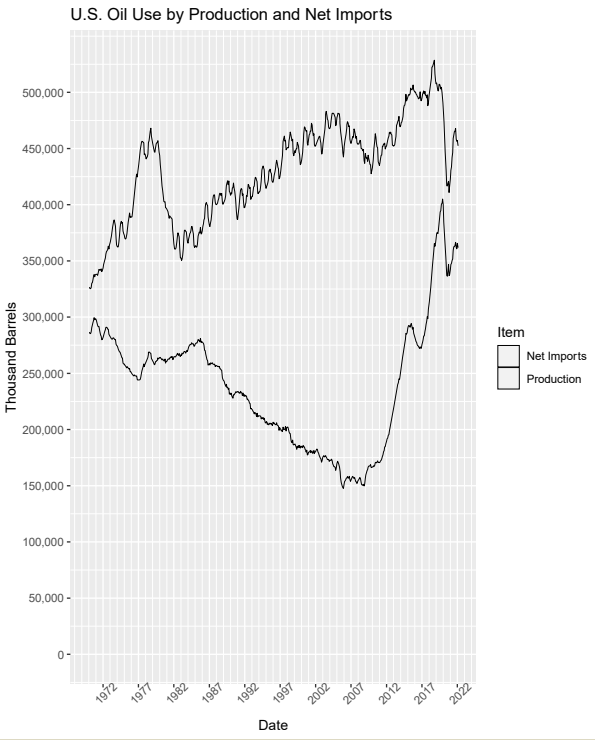
# Refinery capacity and utilization

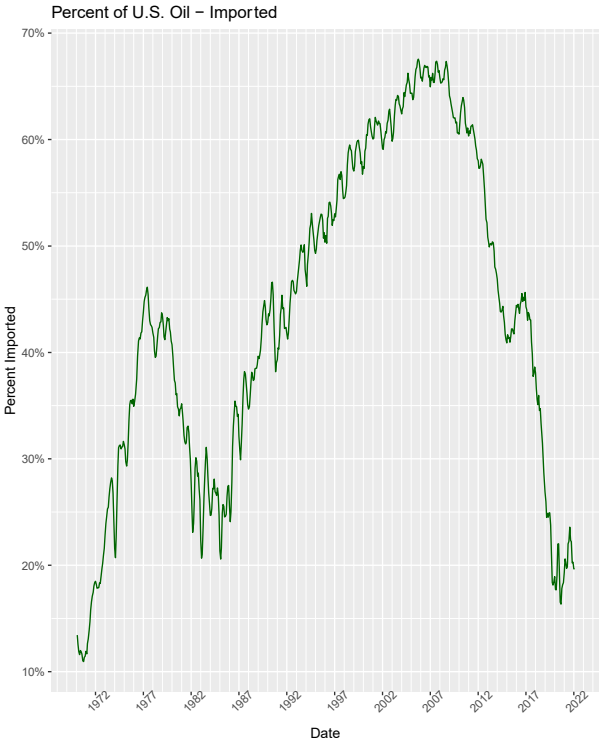
U.S. has the capability to produce nearly all the oil we need

Refinery system is a bottleneck

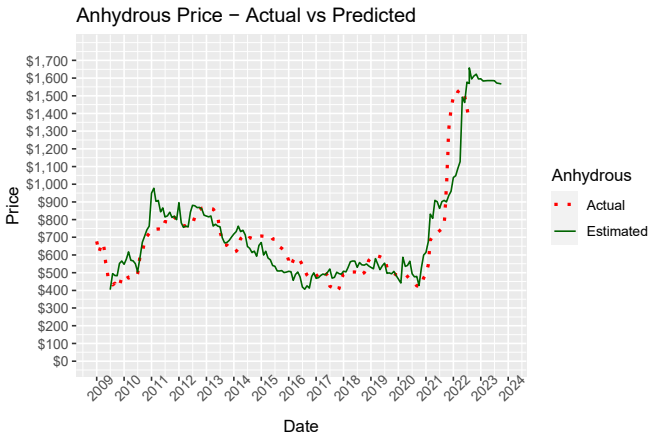
- Last new refinery built back in the 1970s
- Baling wire and duct tape

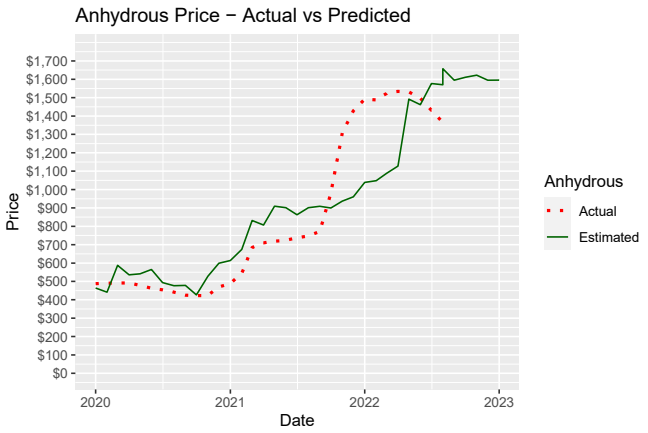


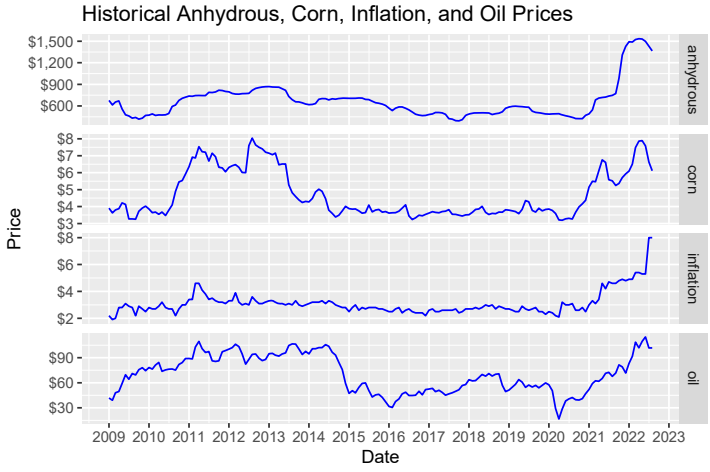
# Fertilizer






# What make a good fertilizer model?




*Anhydrous ammonia ($/ton) =*

*- 165*

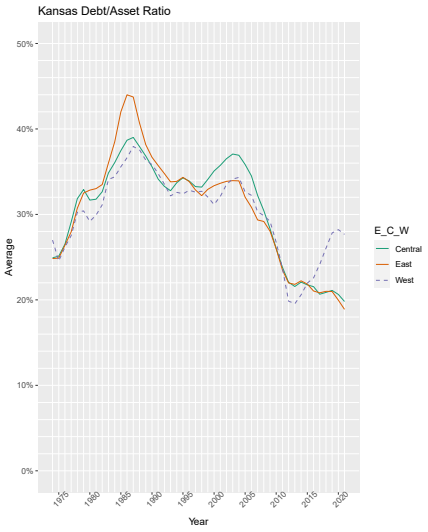
*+ 33.5 * corn ($/bu)*

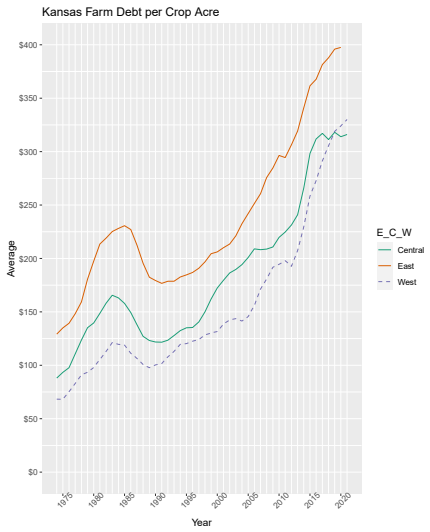
*+ 2.38 * oil_6 mo lag ($/ barrel)*

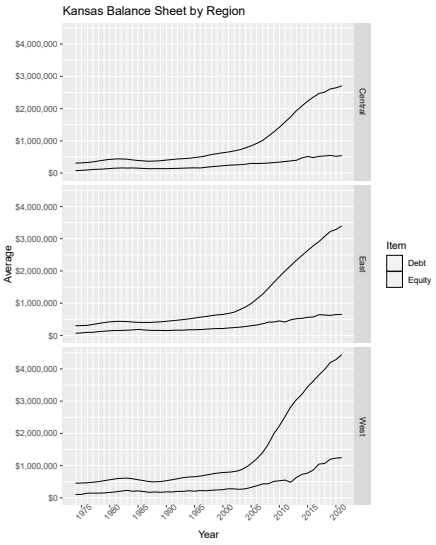
*+ 159 * inflation expectations_2 mo lead*

*Based on $95 oil, 8% inflation, and current corn prices – Anhydrous is unlikely to go below $1200*

# How are farmers faring?



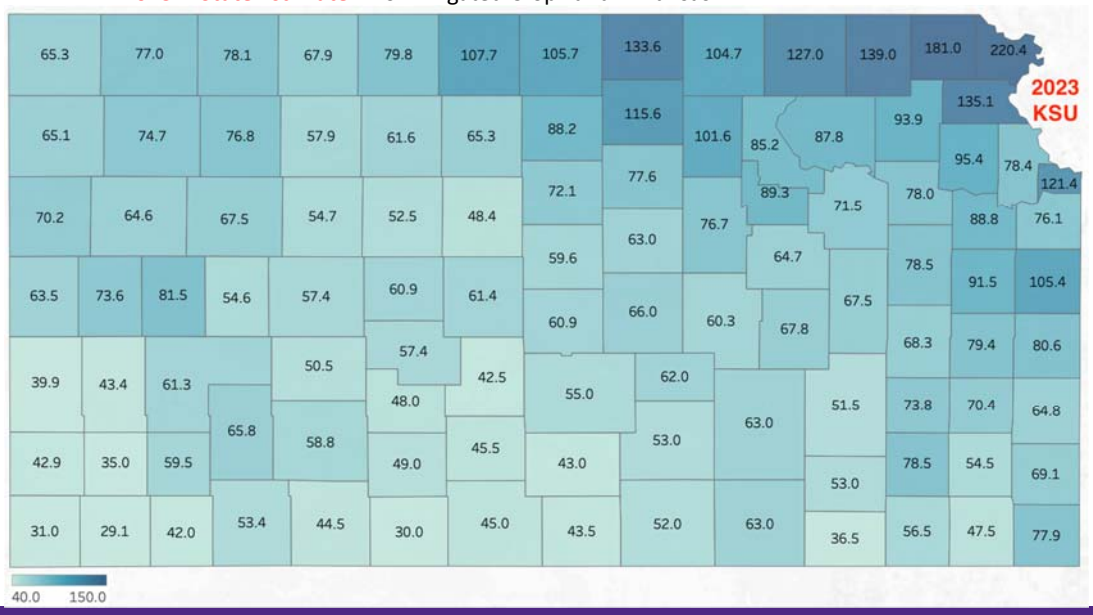





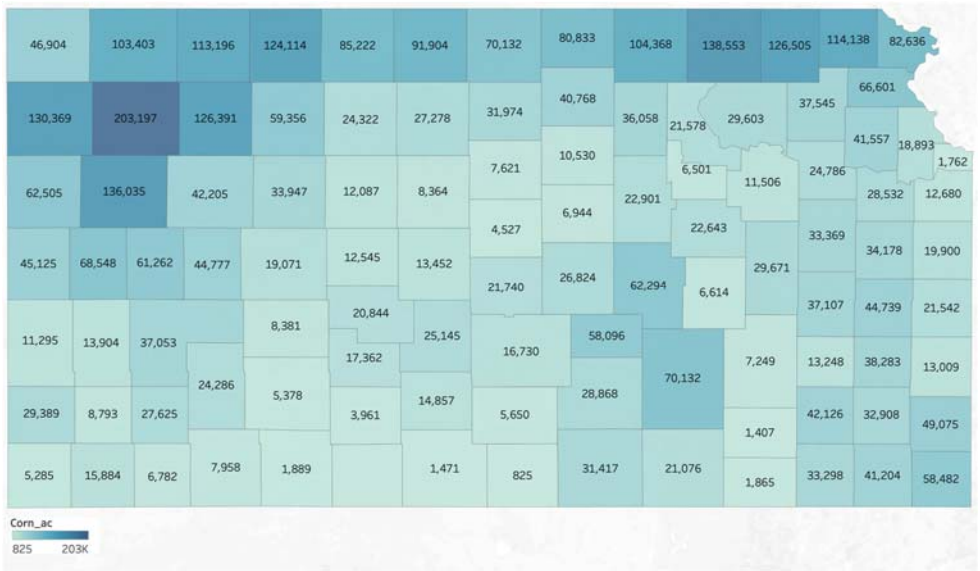

**2022 NASS Survey** - Non-Irrigated Crop Land in Kansas

**2023 K-State Estimate** - Non-Irrigated Crop Land in Kansas

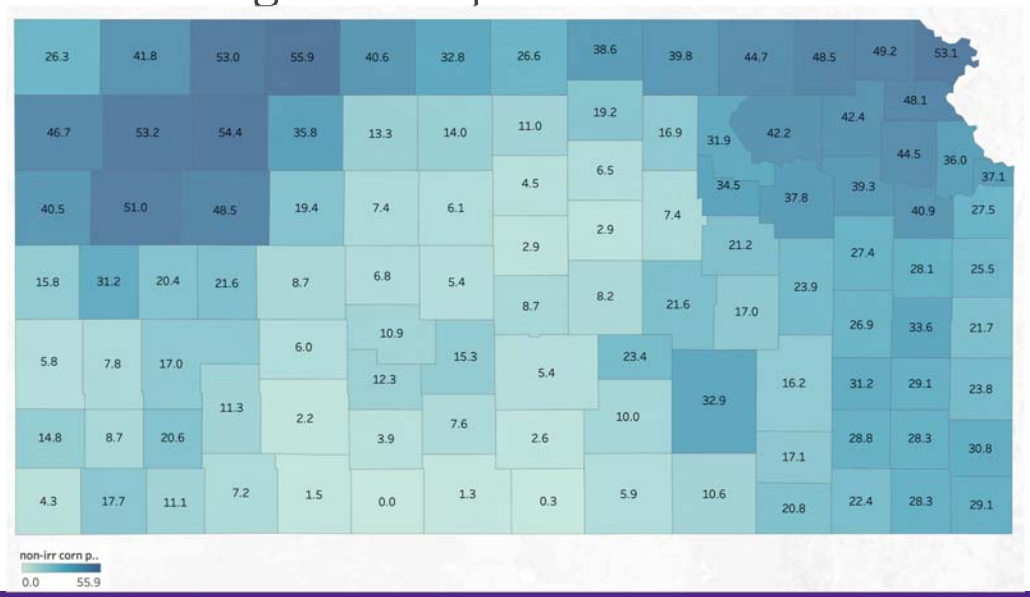





# Non-irrigated corn acres



# Non-irrigated crop acres - % Corn

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| Region | County | 2021 NASS | 2022 KSU | 2022 NASS | 2023 KSU | 25th Percentile | 75th Percentile |
|---|---|---|---|---|---|---|---|
| **Northwest** | Cheyenne | 47 | 64 | 50 | **65** | 41 | 93 |
| | Decatur | 54 | 76 | 57 | **78** | 49 | 111 |
| | Graham | 40 | 40 | 42 | **58** | 36 | 82 |
| | Norton | 47 | 70 | 49 | **68** | 42 | 97 |
| | Rawlins | 57 | 76 | 60 | **77** | 48 | 109 |
| | Sheridan | 50 | 66 | 55 | **77** | 48 | 109 |
| | Sherman | 58 | 65 | 58 | **65** | 41 | 93 |
| | Thomas | 58 | 72 | 60 | **75** | 47 | 106 |
| **West Central** | Gove | 50 | 63 | 52 | **68** | 43 | 92 |
| | Greeley | 35 | 50 | 0 | **63** | 41 | 86 |
| | Lane | 36 | 53 | 39 | **55** | 35 | 74 |
| | Logan | 44 | 60 | 50 | **65** | 41 | 88 |
| | Ness | 36 | 48 | 46 | **57** | 37 | 78 |
| | Scott | 48 | 71 | 61 | **81** | 52 | 111 |
| | Trego | 0 | 48 | 40 | **55** | 35 | 74 |
| | Wallace | 0 | 74 | 0 | **70** | 45 | 95 |
| | Wichita | 45 | 68 | 57 | **74** | 47 | 100 |
| **Southwest** | Clark | 31 | 46 | 33 | **44** | 32 | 54 |
| | Finney | 41 | 62 | 45 | **61** | 44 | 75 |
| | Ford | 38 | 56 | 42 | **59** | 42 | 72 |
| | Grant | 31 | 47 | 28 | **35** | 25 | 43 |
| | Gray | 47 | 71 | 47 | **66** | 47 | 80 |
| | Hamilton | 32 | 35 | 34 | **40** | 29 | 49 |
| | Haskell | 36 | 53 | 43 | **60** | 43 | 72 |
| | Hodgeman | 32 | 48 | 37 | **51** | 36 | 62 |
| | Kearny | 31 | 46 | 31 | **43** | 31 | 53 |
| | Meade | 39 | 59 | 39 | **53** | 38 | 65 |
| | Morton | 38 | 38 | 31 | **31** | 22 | 38 |
| | Seward | 29 | 43 | 30 | **42** | 30 | 51 |
| | Stanton | 32 | 47 | 38 | **43** | 31 | 52 |
| | Stevens | 23 | 34 | 29 | **29** | 21 | 35 |

| Region | County | 2021 NASS | 2022 KSU | 2022 NASS | 2023 KSU | 25th Percentile | 75th Percentile |
|---|---|---|---|---|---|---|---|
| **Northeast** | Atchison | 107 | 116 | 118 | **135** | 104 | 173 |
| | Brown | 166 | 166 | 181 | **181** | 140 | 232 |
| | Doniphan | 178 | 215 | 189 | **220** | 170 | 282 |
| | Jackson | 82 | 82 | 87 | **94** | 73 | 120 |
| | Jefferson | 74 | 87 | 72 | **95** | 74 | 122 |
| | Leavenworth | 68 | 70 | 68 | **78** | 61 | 101 |
| | Marshall | 115 | 115 | 127 | **127** | 98 | 163 |
| | Nemaha | 142 | 142 | 139 | **139** | 107 | 178 |
| | Pottawatomie | 71 | 75 | 76 | **88** | 68 | 113 |
| | Riley | 76 | 76 | 82 | **85** | 66 | 109 |
| | Wyandotte | 0 | 103 | 0 | **121** | 94 | 156 |
| **East Central** | Anderson | 59 | 86 | 59 | **79** | 63 | 95 |
| | Chase | 63 | 66 | 55 | **68** | 54 | 81 |
| | Coffey | 60 | 63 | 62 | **68** | 54 | 81 |
| | Douglas | 74 | 83 | 77 | **89** | 71 | 106 |
| | Franklin | 74 | 94 | 74 | **91** | 73 | 109 |
| | Geary | 70 | 80 | 76 | **89** | 71 | 106 |
| | Johnson | 58 | 77 | 56 | **76** | 61 | 91 |
| | Linn | 76 | 80 | 70 | **81** | 64 | 96 |
| | Lyon | 63 | 63 | 68 | **68** | 54 | 80 |
| | Miami | 91 | 103 | 91 | **105** | 84 | 126 |
| | Morris | 51 | 56 | 57 | **65** | 51 | 77 |
| | Osage | 54 | 76 | 65 | **79** | 62 | 94 |
| | Shawnee | 54 | 70 | 66 | **78** | 62 | 93 |
| | Wabaunsee | 54 | 60 | 62 | **72** | 57 | 85 |
| **Southeast** | Allen | 49 | 74 | 56 | **70** | 51 | 93 |
| | Bourbon | 45 | 61 | 52 | **65** | 47 | 86 |
| | Butler | 45 | 68 | 45 | **63** | 46 | 84 |
| | Chautauqua | 43 | 43 | 37 | **37** | 27 | 48 |
| | Cherokee | 71 | 80 | 64 | **78** | 57 | 103 |
| | Cowley | 55 | 55 | 63 | **63** | 46 | 84 |
| | Crawford | 61 | 68 | 66 | **69** | 50 | 92 |
| | Elk | 47 | 47 | 53 | **53** | 39 | 70 |
| | Greenwood | 52 | 52 | 52 | **52** | 38 | 68 |
| | Labette | 50 | 50 | 48 | **48** | 35 | 63 |
| | Montgomery | 49 | 49 | 57 | **57** | 41 | 75 |
| | Neosho | 51 | 57 | 47 | **54** | 40 | 72 |
| | Wilson | 70 | 70 | 78 | **79** | 57 | 104 |
| | Woodson | 56 | 74 | 54 | **74** | 54 | 98 |

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# Crop Reporting Districts

| | | KSU | NASS |
|---|---|---|---|
| EAST | Northeast | 124 | 114 |
| | East Central | 79 | 67 |
| | Southeast | 61 | 55 |
| CENTRAL | North Central | 95 | 73 |
| | Central | 62 | 53 |
| | South Central | 48 | 45 |
| WEST | Northwest | 70 | 54 |
| | West Central | 65 | 38 |
| | Southwest | 47 | 36 |



# Irrigation details

Based on growing corn only

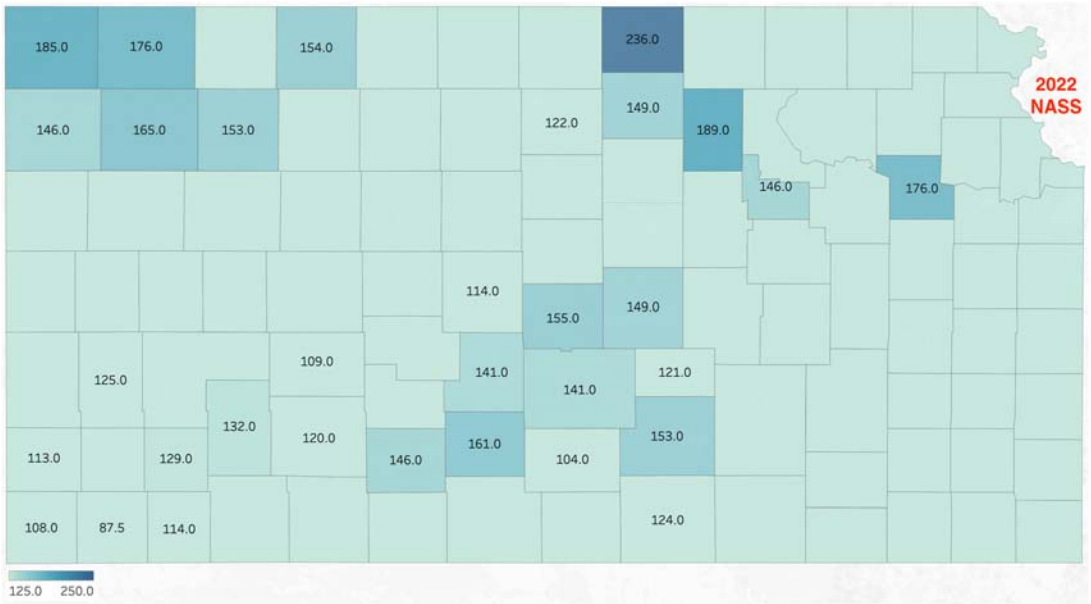
Center pivot irrigation

Landlord owns all irrigation equipment

- Adjustment if tenant owns part

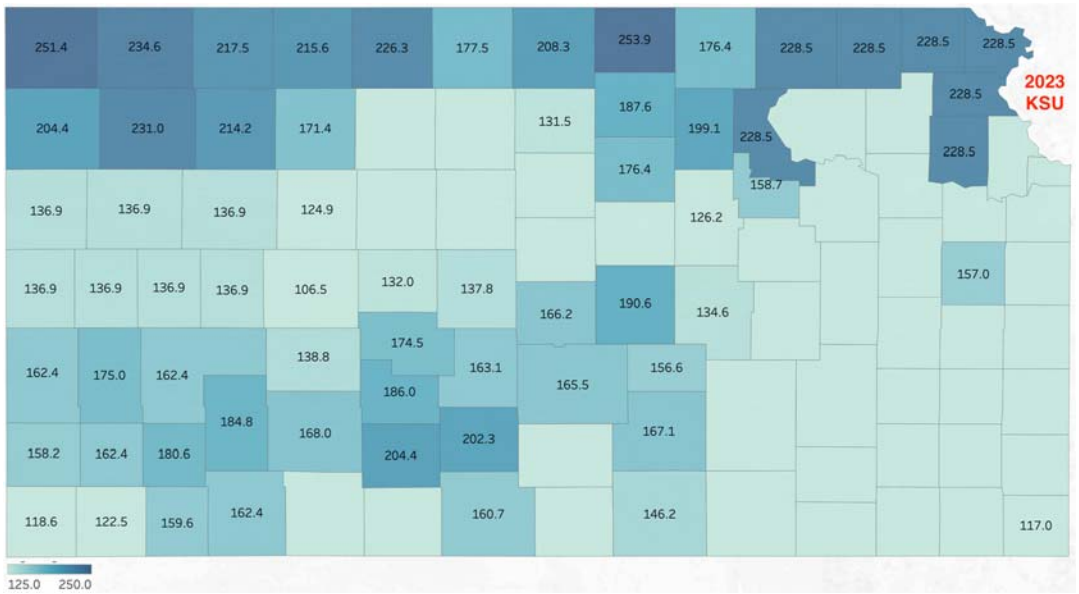
| | Western KS | Central KS |
|---|---|---|
| Center Pivot | $ 70.38 | $ 70.38 |
| Power unit | $ 26.29 | $ 14.84 |
| Well, pump, and gearhead | $ 90.40 | $ 60.46 |

**2022 NASS Survey** - Irrigated Crop Land in Kansas






**2023 K-State Estimate** - Irrigated Crop Land in Kansas



| Region | County | 2021 NASS | 2022 KSU | 2022 NASS | 2023 KSU | 25th Percentile | 75th Percentile |
|---|---|---|---|---|---|---|---|
| Northwest | Cheyenne | 144 | 216 | 185 | **251** | 157 | 357 |
| | Decatur | 148 | 220 | | **217** | 136 | 309 |
| | Graham | 93 | 133 | | **171** | 107 | 244 |
| | Norton | | 221 | 154 | **216** | 135 | 306 |
| | Rawlins | 144 | 216 | 176 | **235** | 147 | 333 |
| | Sheridan | 147 | 221 | 153 | **214** | 134 | 304 |
| | Sherman | 174 | 234 | 146 | **204** | 128 | 291 |
| | Thomas | 191 | 260 | 165 | **231** | 145 | 328 |
| West Central | Gove | 124 | 179 | | **137** | 88 | 186 |
| | Greeley | | 147 | | **137** | 88 | 186 |
| | Lane | | 147 | | **137** | 88 | 186 |
| | Logan | | 147 | | **137** | 88 | 186 |
| | Ness | | | | **106** | 68 | 145 |
| | Scott | 72 | 107 | | **137** | 88 | 186 |
| | Trego | | | | **125** | 80 | 170 |
| | Wallace | | 147 | | **137** | 88 | 186 |
| | Wichita | | 147 | | **137** | 88 | 186 |
| Southwest | Clark | | | | | | |
| | Finney | 129 | 194 | | **162** | 116 | 198 |
| | Ford | 122 | 183 | 120 | **168** | 120 | 205 |
| | Grant | | 170 | | **162** | 116 | 198 |
| | Gray | 109 | 164 | 132 | **185** | 132 | 225 |
| | Hamilton | | 170 | | **162** | 116 | 198 |
| | Haskell | 106 | 159 | 129 | **181** | 129 | 220 |
| | Hodgeman | | 137 | 109 | **139** | 99 | 169 |
| | Kearny | 123 | 185 | 125 | **175** | 125 | 213 |
| | Meade | 138 | 207 | | **162** | 116 | 198 |
| | Morton | | 146 | 108 | **119** | 85 | 144 |
| | Seward | | 170 | 114 | **160** | 114 | 194 |
| | Stanton | | 170 | 113 | **158** | 113 | 193 |
| | Stevens | 92 | 137 | 88 | **123** | 88 | 149 |

| Region | County | 2021 NASS | 2022 KSU | 2022 NASS | 2023 KSU | 25th Percentile | 75th Percentile |
|---|---|---|---|---|---|---|---|
| North Central | Clay | 124 | 153 | 189 | **199** | 167 | 231 |
| | Cloud | 163 | 187 | 149 | **188** | 157 | 217 |
| | Jewell | | 179 | | **208** | 175 | 241 |
| | Mitchell | | 168 | 122 | **132** | 110 | 152 |
| | Osborne | | | | | | |
| | Ottawa | | 168 | | **176** | 148 | 204 |
| | Phillips | | 212 | | **226** | 190 | 262 |
| | Republic | 237 | 237 | 236 | **254** | 213 | 294 |
| | Rooks | | | | | | |
| | Smith | 195 | 195 | | **177** | 149 | 206 |
| | Washington | 173 | 173 | | **176** | 148 | 204 |
| Central | Barton | 84 | 109 | 114 | **138** | 110 | 169 |
| | Dickinson | | 129 | | **126** | 101 | 155 |
| | Ellis | | | | | | |
| | Ellsworth | | | | | | |
| | Lincoln | | | | | | |
| | Marion | | | | **135** | 108 | 165 |
| | McPherson | | 173 | 149 | **191** | 153 | 234 |
| | Rice | 129 | 137 | 155 | **166** | 133 | 204 |
| | Rush | | | | **132** | 106 | 162 |
| | Russell | | | | | | |
| | Saline | | | | | | |
| South Central | Barber | | 134 | | **161** | 132 | 201 |
| | Comanche | | | | | | |
| | Edwards | 122 | 183 | | **186** | 153 | 233 |
| | Harper | | | | | | |
| | Harvey | 159 | 159 | 121 | **157** | 129 | 196 |
| | Kingman | 104 | 130 | 104 | | | |
| | Kiowa | 147 | 221 | 146 | **204** | 168 | 256 |
| | Pawnee | 121 | 164 | | **174** | 143 | 218 |
| | Pratt | 134 | 191 | 161 | **202** | 166 | 253 |
| | Reno | 130 | 148 | 141 | **165** | 136 | 207 |
| | Sedgwick | 153 | 153 | 153 | **167** | 137 | 209 |
| | Stafford | 119 | 167 | 141 | **163** | 134 | 204 |
| | Sumner | | 134 | 124 | **146** | 120 | 183 |



# Thank you!

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