



CHRISTIANSON

Benchmarking

Benchmarking and Improving
Quality and Performance,
Using Evolving Analytics

Connie Lindstrom, Senior Biofuels Analyst
Distillers Grains Symposium, October 25-26, 2021

Creating clients for life

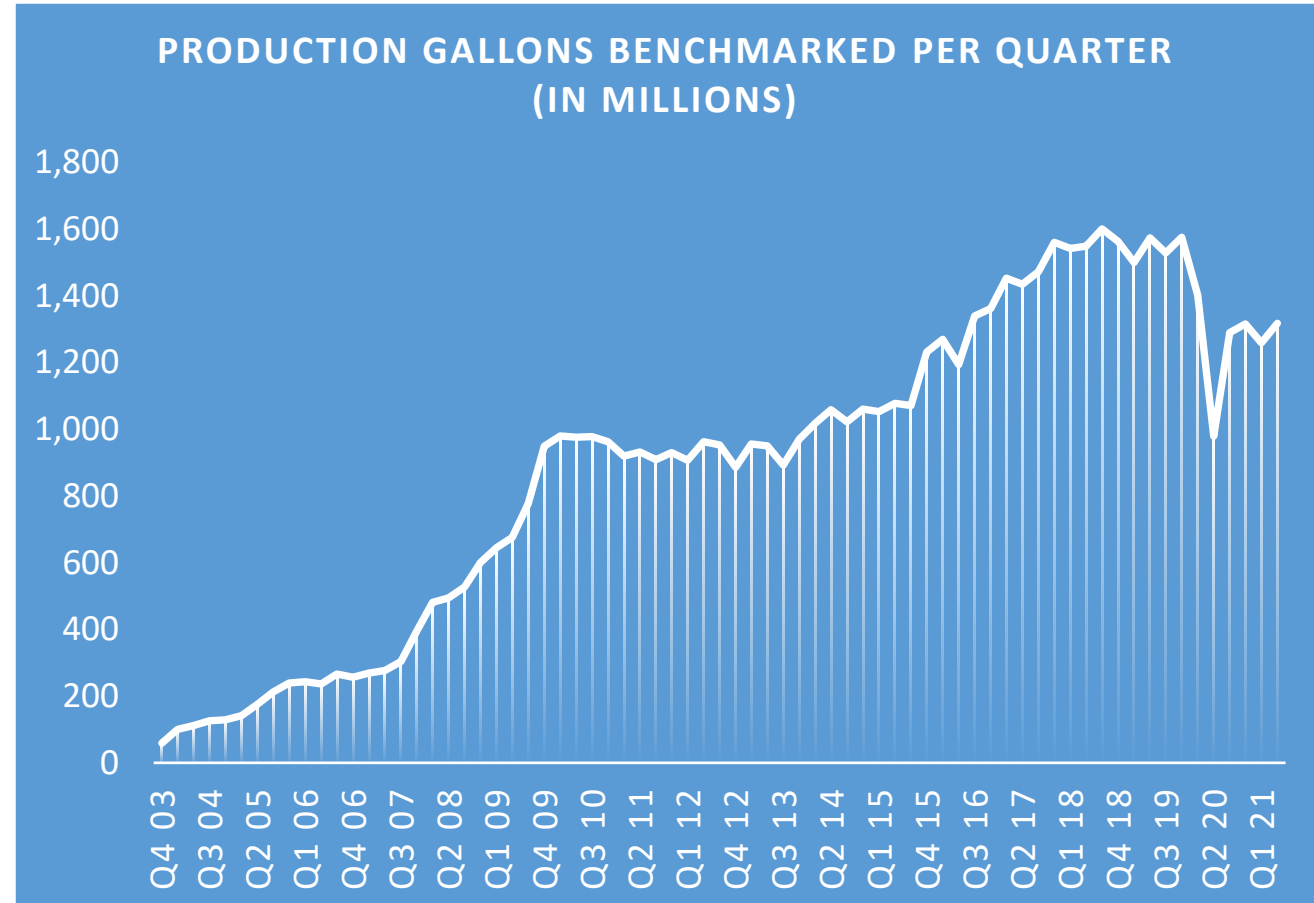
Co-Product Revenues and Efficiencies

Let's look at:

- Trends in revenue from co-product
- Breakdown by type
- Yields
- New Ways of Looking at Profit Drivers:
Leader Performance Analysis

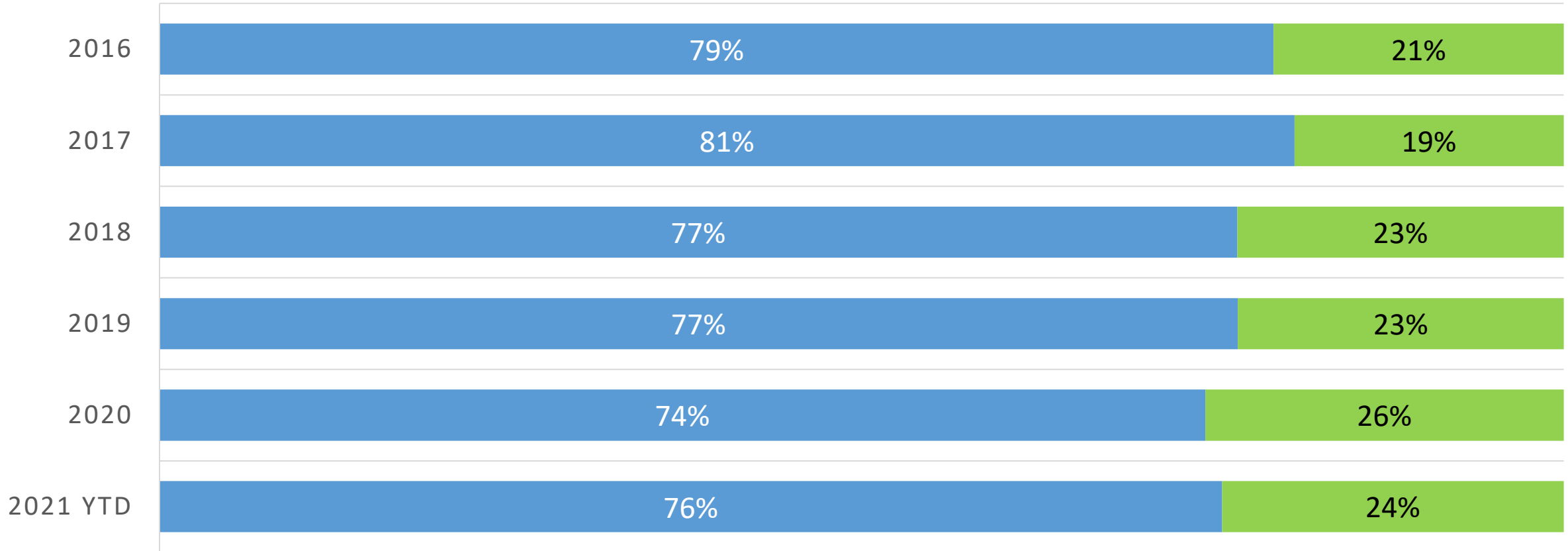
Where Do These Averages Come From?

- Christianson Biofuels Benchmarking data represents about a third of all US production gallons since 2004
- 100+ financial and operational metrics quarterly
- 2020: collected data on 4.99 Billion Gallons
- 2021 Jan-June: 2.58 Billion Gallons
- Representative sample of the ethanol industry

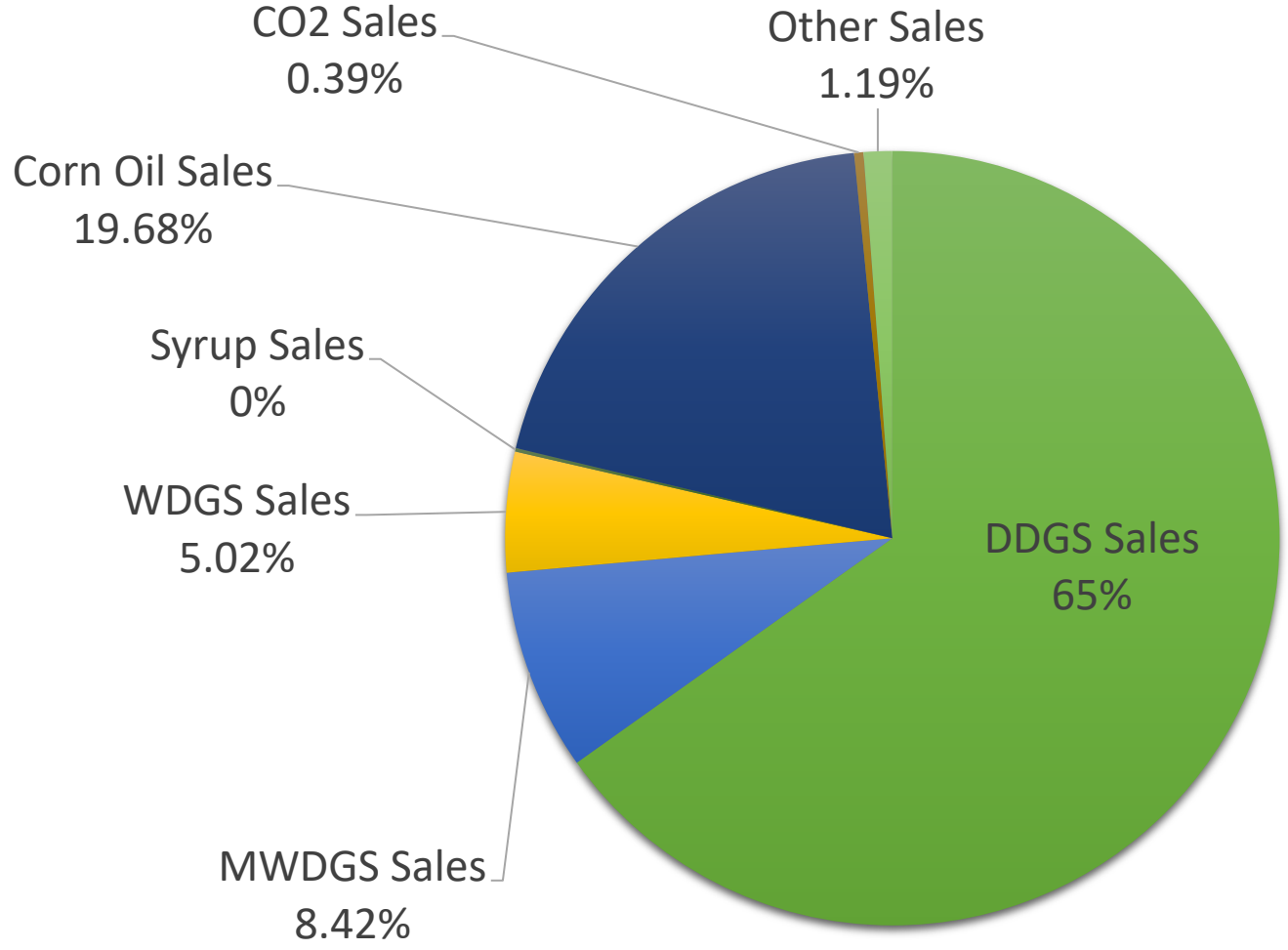


REVENUE FROM ETHANOL VS COPRODUCT SALES BY PERCENTAGE

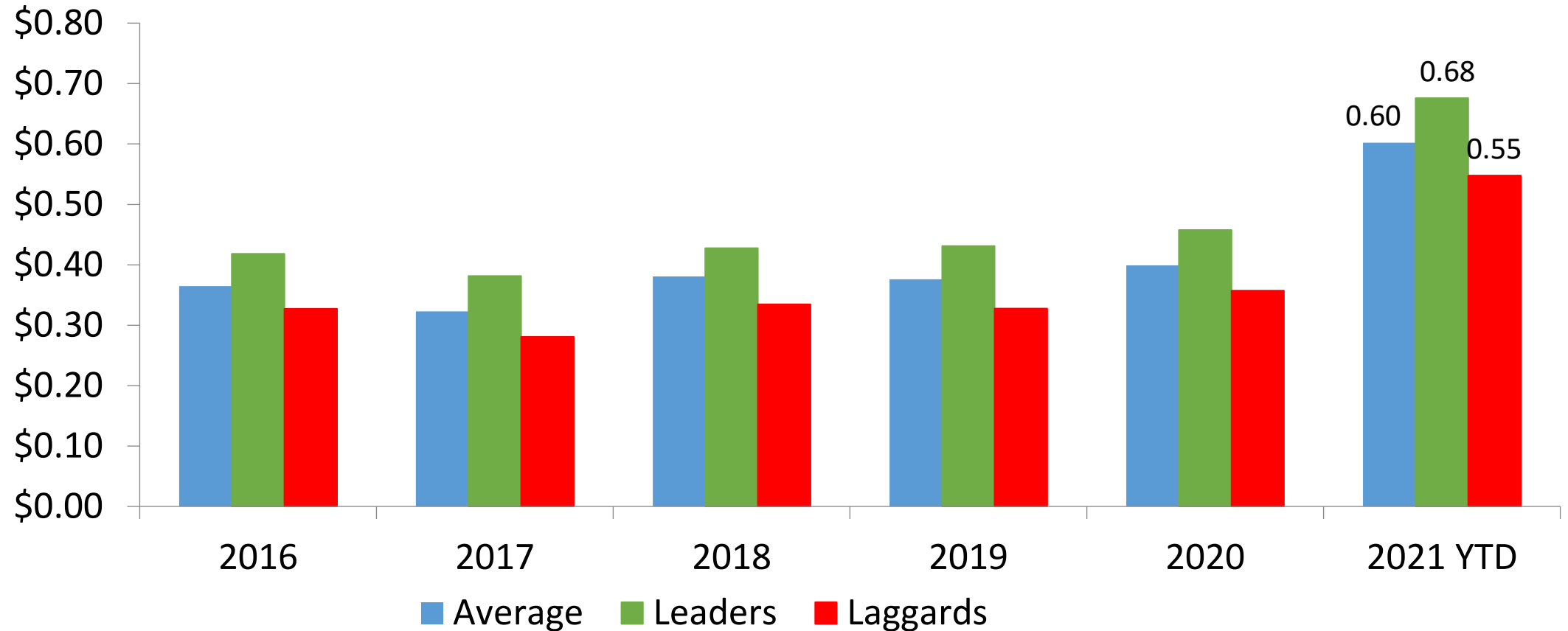
Ethanol Netback % Coproduct Netback %



**Contributions to Sales %-
US Average 2021 YTD**



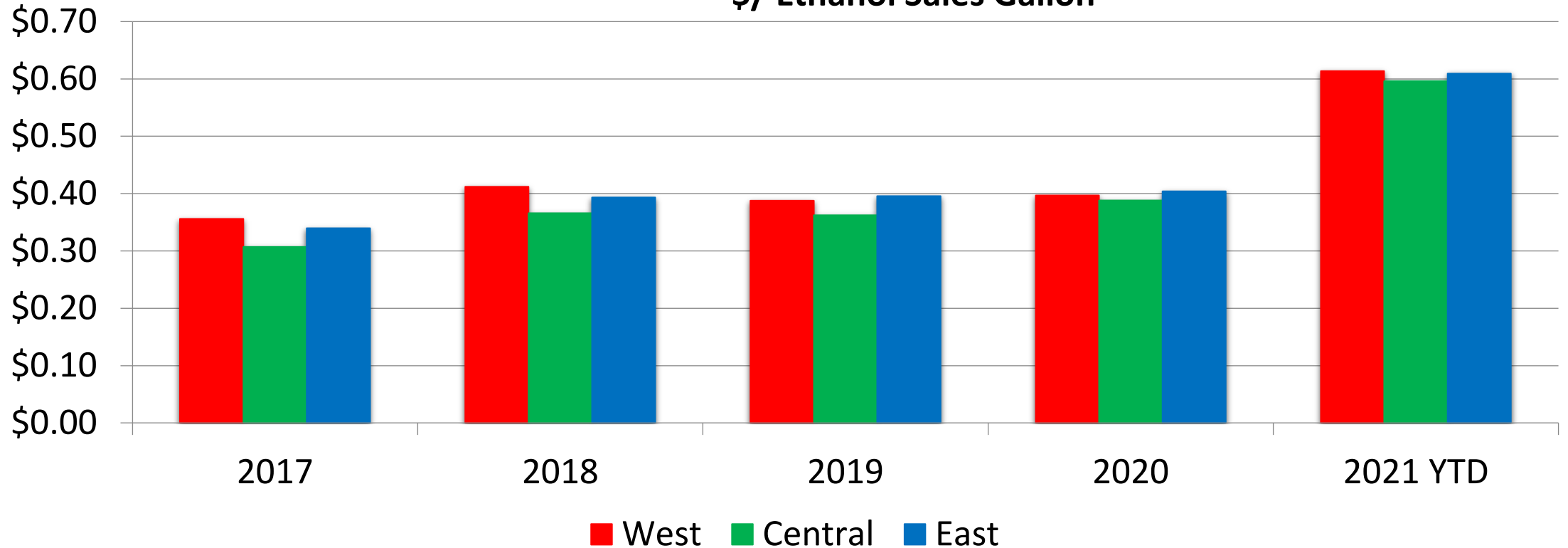
Co-Product Netback (\$/Ethanol Sales Gallon)



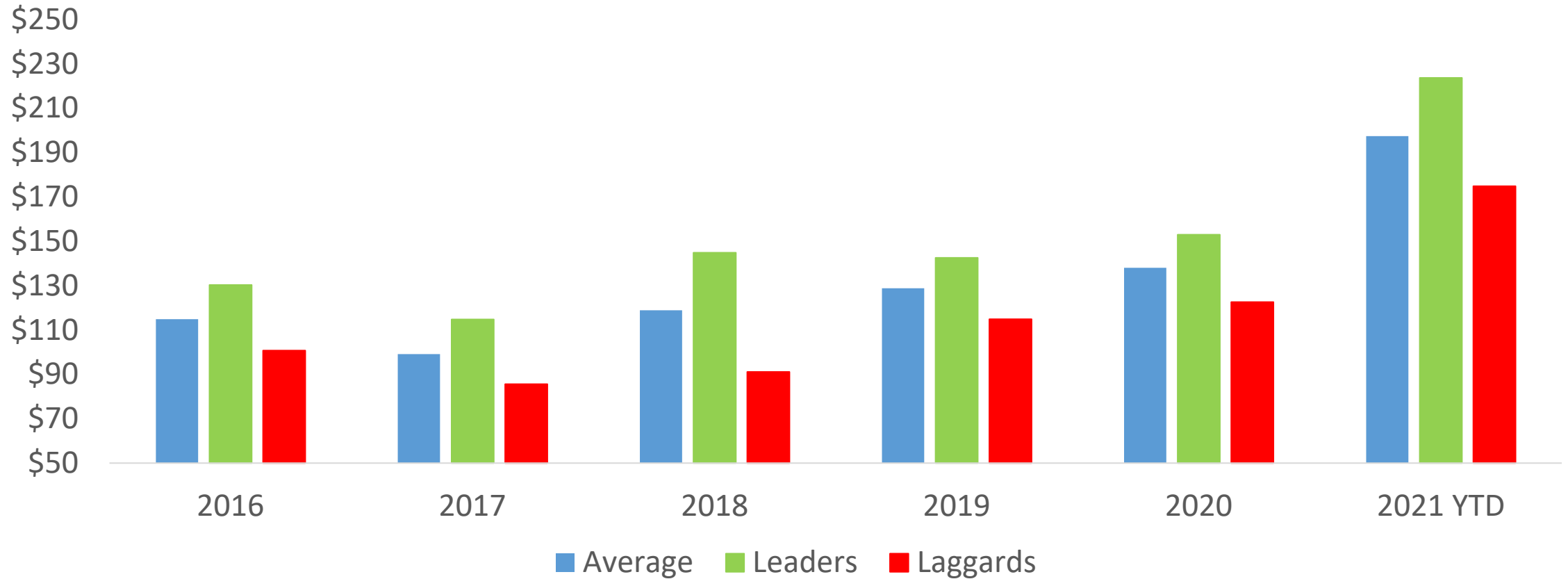
Co-Product Netback by Region



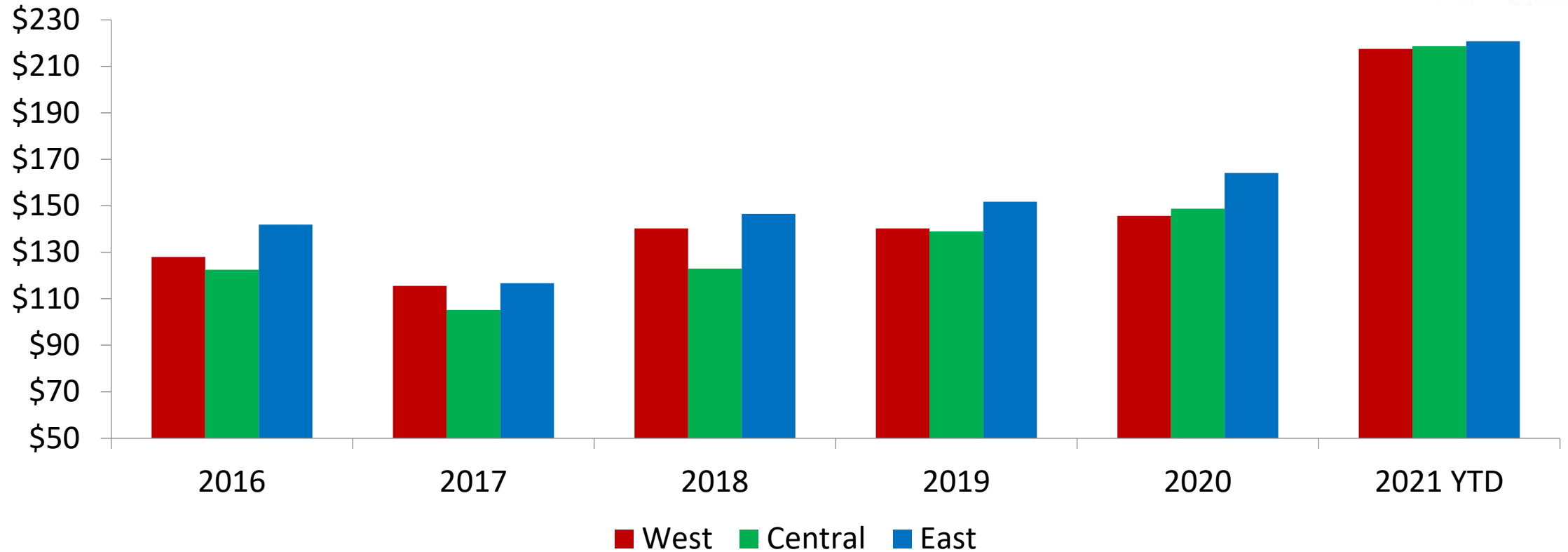
Annual Co-Product Netback by Region
\$/ Ethanol Sales Gallon



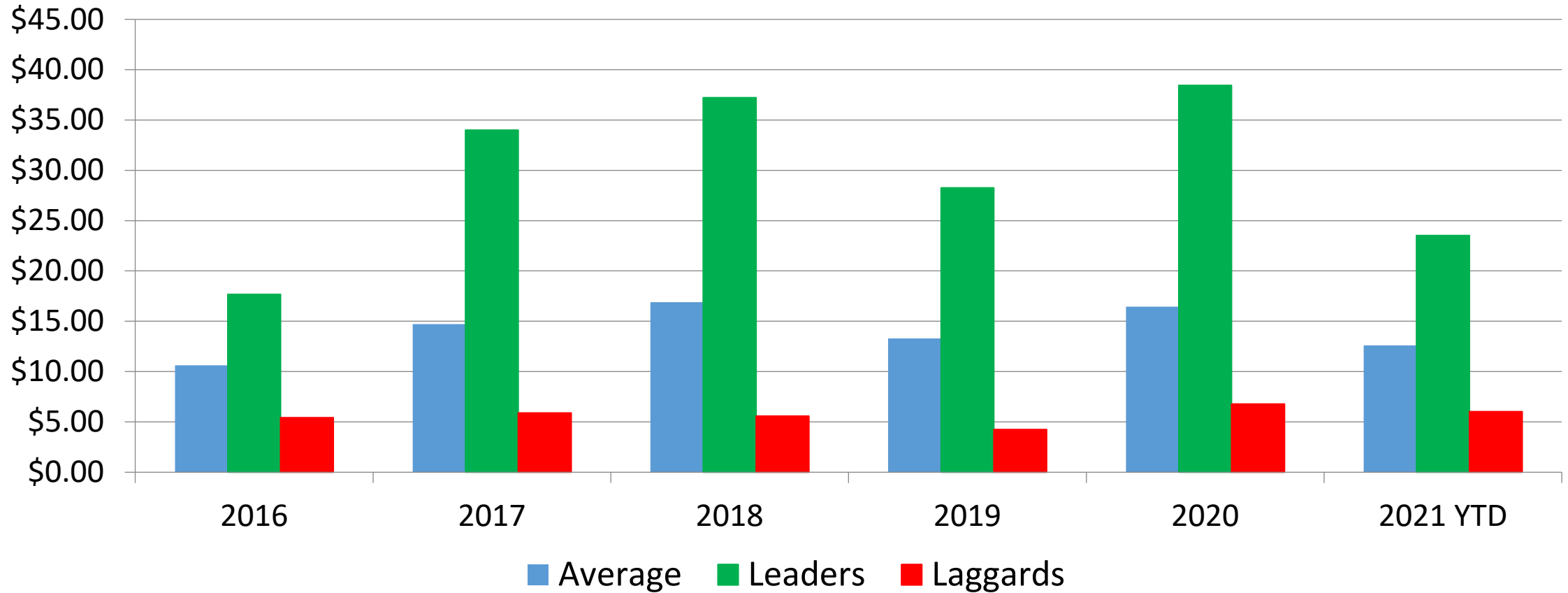
DDGS Equivalent Netback (\$/Sales Ton)



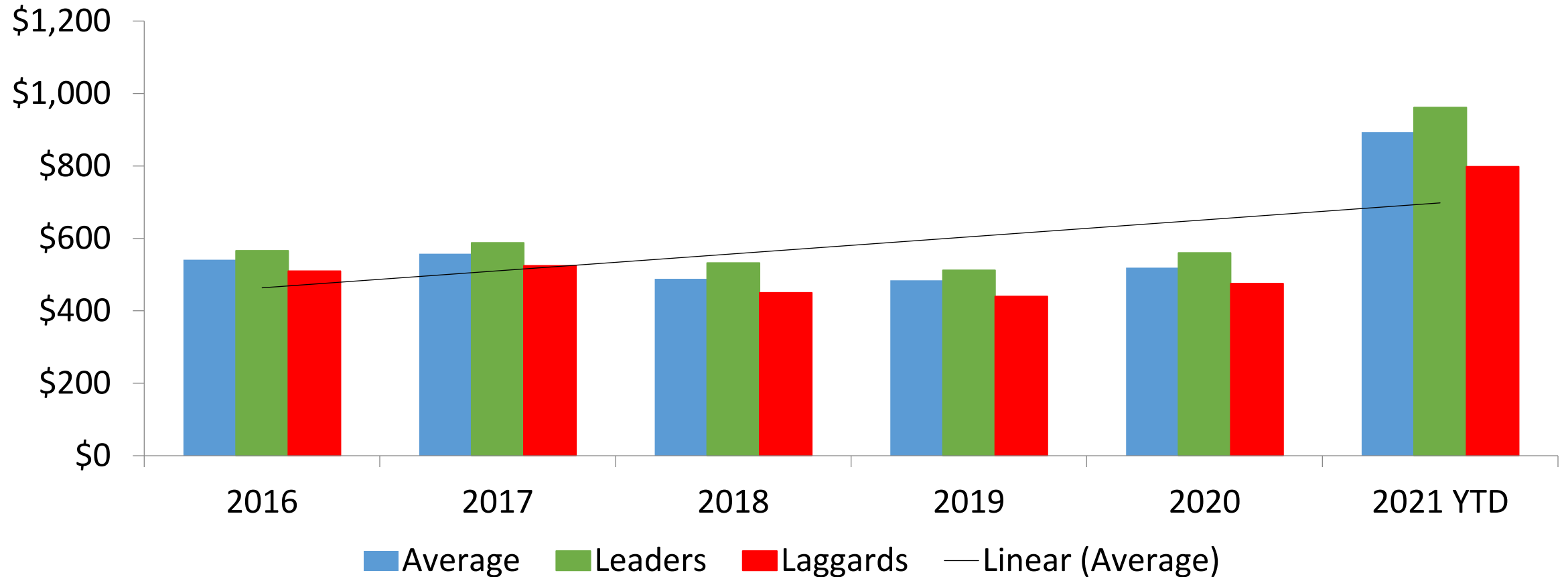
DDGS Equiv. Netback (\$/Sales Ton) by Region



CO2 Netback (\$/Sales Ton)

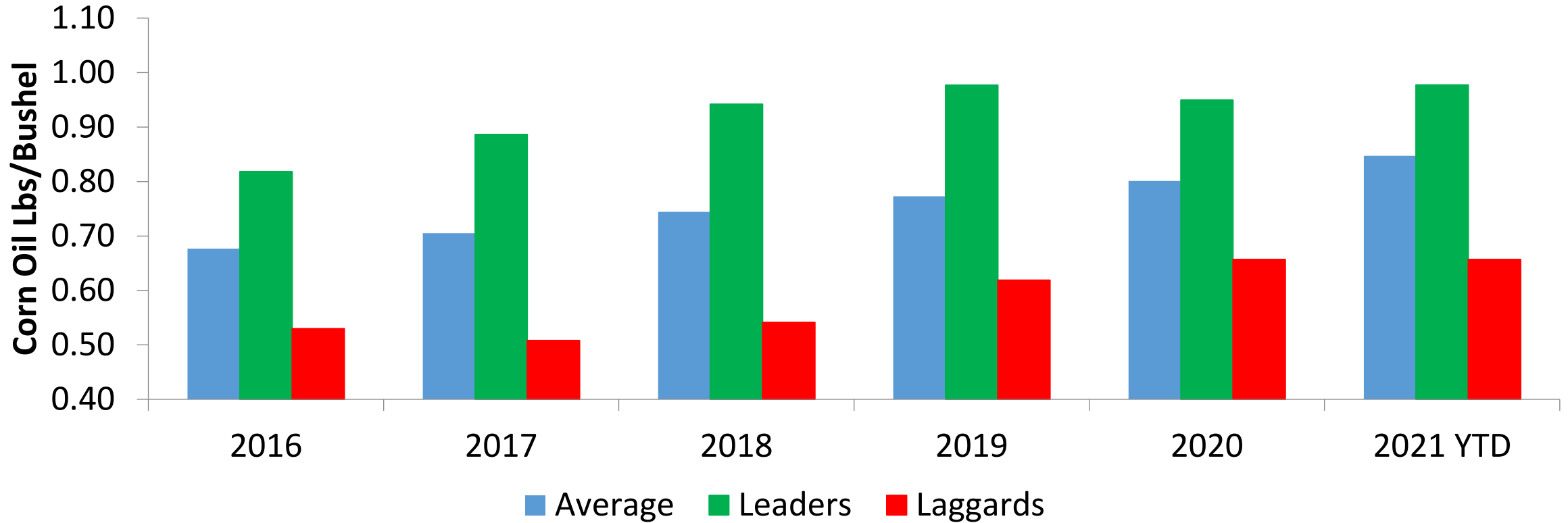


Corn Oil Netback (\$/Sales Ton)

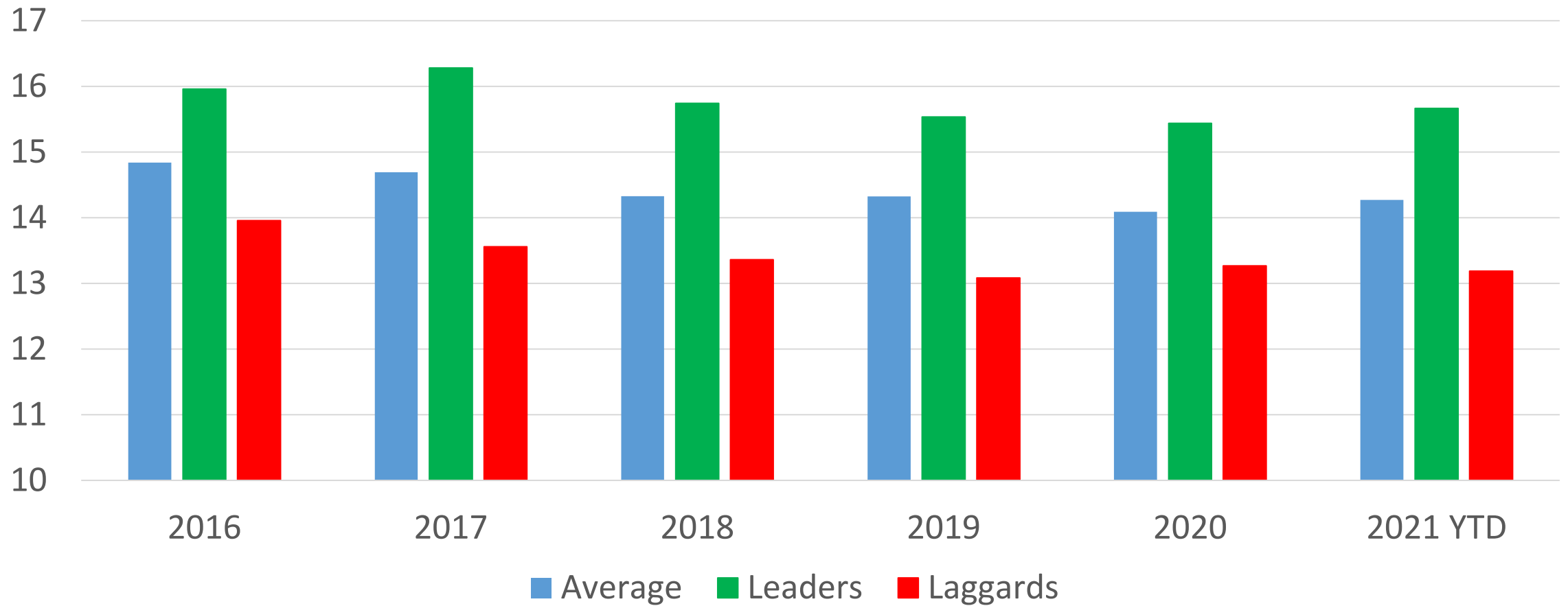


Corn Oil Yield (Pounds/Bushel)

Distillers Corn Oil Yield (lb/bu)

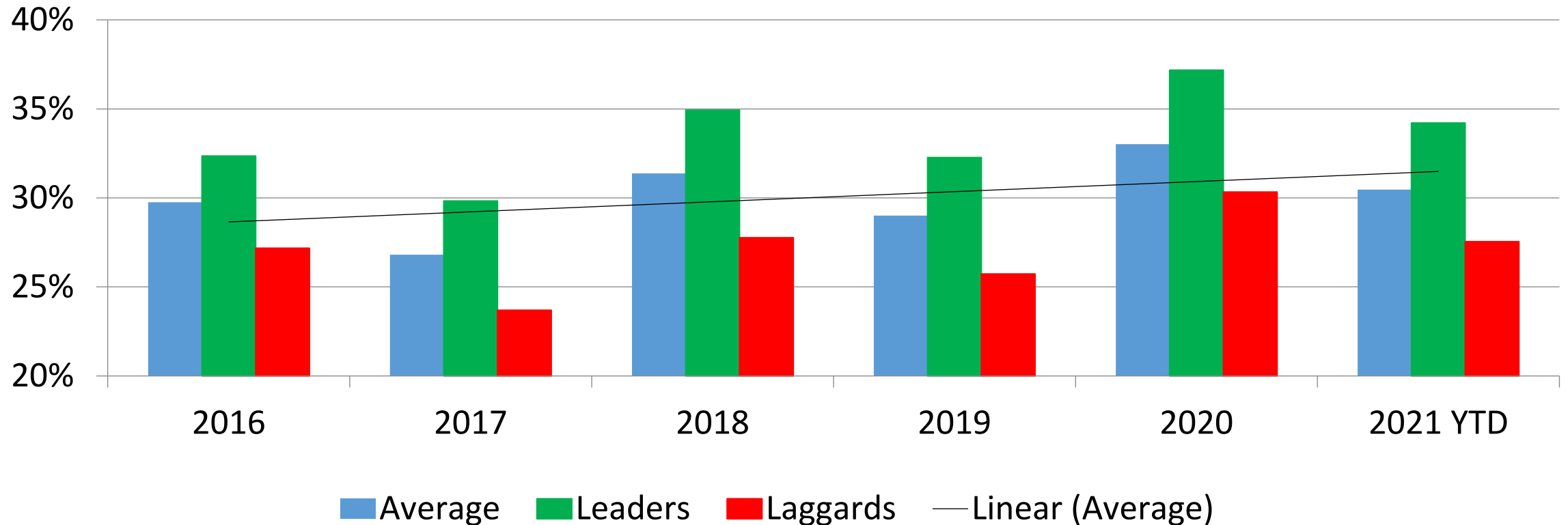


Distillers Equiv. Yield (Pounds/Bushel)



Corn Recapture Percentage

Co-Product Sales \$/Feedstock Purchase \$



Leader Analysis

What's an "industry leader"?

- Most often defined as a leader in profitability metric (EBITDA, Net Income, Grind Margin)
- Most often top 25% of:
 - All US plants
 - Annualized (top earnings over 12 months, not quarter by quarter)

Leader Analysis

How is looking at “leader performance” most useful?

- Observing trends
- SWOT analysis
- Capex decisions

Less helpful for:

- Optimizing line-item costs
- Short-term/one-time review

Leaders 2016 Versus Today: EBITDA

EBITDA	YE June 30, 2016	YE June 30, 2021
Industry Average	\$.15	\$.18
Top 25% (Leaders)	\$.22	\$.32
Difference	+.07	+.14

Leaders 2016 Versus Today: Revenue

Ethanol Netback/Gal	YE June 30, 2016	YE June 30, 2021
Industry Average	1.39	1.58
Top 25% (Leaders)	1.40	1.58
Difference	+.01	+.00

Leaders 2016 Versus Today: Revenue

Co-Product Netback/Gal	YE June 30, 2016	YE June 30, 2021
Industry Average	\$.39	\$.50
Top 25% (Leaders)	\$.39	\$.49
Difference	+.00	-\$.01

Leaders 2016 Versus Today: Costs

Feedstock Cost/Gal	YE June 30, 2016	YE June 30, 2021
Industry Average	\$1.29	\$1.61
Top 25% (Leaders)	\$1.27	\$1.49
Difference	-\$0.02	-\$0.12

Leaders 2016 Versus Today: Costs

Energy Cost/Gal	YE June 30, 2016	YE June 30, 2021
Industry Average	\$.11	\$.11
Top 25% (Leaders)	\$.11	\$.10
Difference	\$0	-\$0.01

So where's the difference?

- No big secret: efficiency is key
- Efficiency will increasingly drive ethanol prices, so the effect of efficiency gains is cumulative
- Diversification is increasingly important

Leaders 2016 Versus Today: Ethanol Yield

Denatured Gal/Bu	YE June 30, 2016	YE June 30, 2021
Industry Average	2.85	2.94
Top 25% (Leaders)	2.88	2.97
Difference	+.03	+.03

Leaders 2016 Versus Today: Corn Oil Yield

Lb/Bushel	YE June 30, 2016	YE June 30, 2021
Industry Average	.62	.84
Top 25% (Leaders)	.66	.84
Difference	+.04	+.00

Leaders 2016 Versus Today: Energy Usage

Btu/Gal	YE June 30, 2016	YE June 30, 2021
Industry Average	26,151	25,366
Top 25% (Leaders)	25,936	23,167
Difference	-215	-2,199

Leaders 2016 Versus Today: Electricity Use

kWh/Gal	YE June 30, 2016	YE June 30, 2021
Industry Average	.64	.61
Top 25% (Leaders)	.59	.53
Difference	-.05	-.08

Conclusions and Emerging Trends

Diversification and efficiency remain key in profitability and continue to grow in their impact on the bottom line.

- Highly dependent on market for product regionally, especially as products diversify (**targeted** to local markets, and seeking appropriate export channels)
- Consider **new ways** to measure profitability and forecast returns on capex investments, in times of uncertain ethanol demand
- Ethanol plants remain highly focused on public perception of all products: **clean, local, low-carbon.**



Thank You!

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