
January 12, 2021

North Dakota Revenue Outlook

IHS Markit

Presentation



Biennium forecast

Revenue Source	2017-19 Biennium Actual	2019-21 Biennium Forecast (Original)	2019-21 Biennium Forecast	2021-23 Biennium Forecast
Sales and use tax	1,786,479,717	1,868,262,000 4.6%	1,838,773,846 2.9%	1,897,250,392 3.2%
Motor vehicle excise tax	239,039,038	249,951,800 4.6%	244,393,106 2.2%	259,564,643 6.2%
Individual income tax				
Total individual income tax collections	961,072,888		1,037,157,241 7.9%	1,069,535,809 3.1%
Transfer to refund reserve accounts	(183,000,000)		(250,800,000)	(253,000,000)
Net individual income tax collections	778,072,888	803,305,000 3.2%	786,357,241 1.1%	816,535,809 3.8%
Corporate income tax				
Total corporate income tax collections	299,456,537		256,921,068 -14.2%	255,707,324 -0.5%
Transfer to refund reserve accounts	(58,000,000)		(60,000,000)	(68,000,000)
Net corporate income tax collections	241,456,537	132,268,000 -45.2%	196,921,068 -18.4%	187,707,324 -4.7%

* The percentages reflect the change from the prior biennium.

Fiscal year forecast

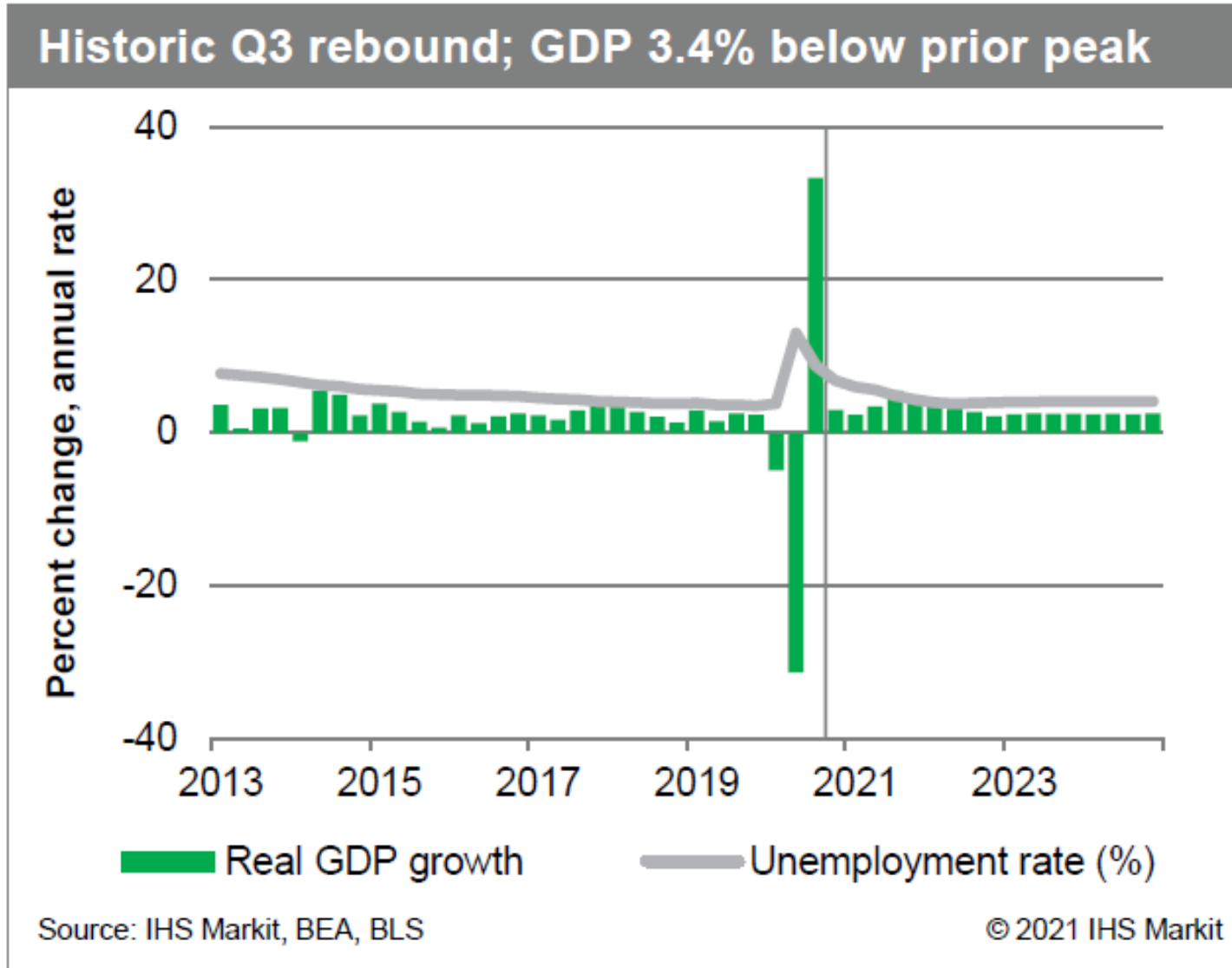
Revenue Source	2017-19 Biennium		2019-21 Biennium		2021-23 Biennium	
	Fiscal Year 2018 Actual	Fiscal Year 2019 Actual	Fiscal Year 2020 Actual	Fiscal Year 2021 Forecast	Fiscal Year 2022 Forecast	Fiscal Year 2023 Forecast
Sales and use tax	829,120,206 4.6%	957,359,511 15.5%	970,559,564 1.4%	868,214,282 -10.5%	919,526,661 5.9%	977,723,731 6.3%
Motor vehicle excise tax	114,342,237 -1.0%	124,696,801 9.1%	119,506,814 -4.2%	124,886,292 4.5%	127,015,425 1.7%	132,549,218 4.4%
Individual income tax						
Total individual income tax collections	459,254,125 7.9%	501,818,763 9.3%	467,896,604 -6.8%	569,260,637 21.7%	529,419,004 -7.0%	540,116,804 2.0%
Transfer to refund reserve accounts	(95,000,000)	(88,000,000)	(115,800,000)	(135,000,000)	(125,000,000)	(128,000,000)
Net individual income tax collections	364,254,125 16.5%	413,818,763 13.6%	352,096,604 -14.9%	434,260,637 23.3%	404,419,004 -6.9%	412,116,804 1.9%
Corporate income tax						
Total corporate income tax collections	129,874,848 25.9%	169,581,689 30.6%	112,654,676 -33.6%	144,266,392 28.1%	124,008,250 -14.0%	131,699,074 6.2%
Transfer to refund reserve accounts	(37,000,000)	(21,000,000)	(21,000,000)	(39,000,000)	(33,000,000)	(35,000,000)
Net corporate income tax collections	92,874,848 34.2%	148,581,689 60.0%	91,654,676 -38.3%	105,266,392 14.9%	91,008,250 -13.5%	96,699,074 6.3%

- The percentages reflect the change from the prior fiscal year.
- The big volatility in gross individual income tax collections in FY20, FY21 and FY22 reflects the filing and payment extension from April 2020 to July 2020.

It is estimated that the annual changes of gross income tax collection would be 3.2%, 0.3%, 2% in FY20, FY21 and FY22 respectively barring the impacts of the extension.

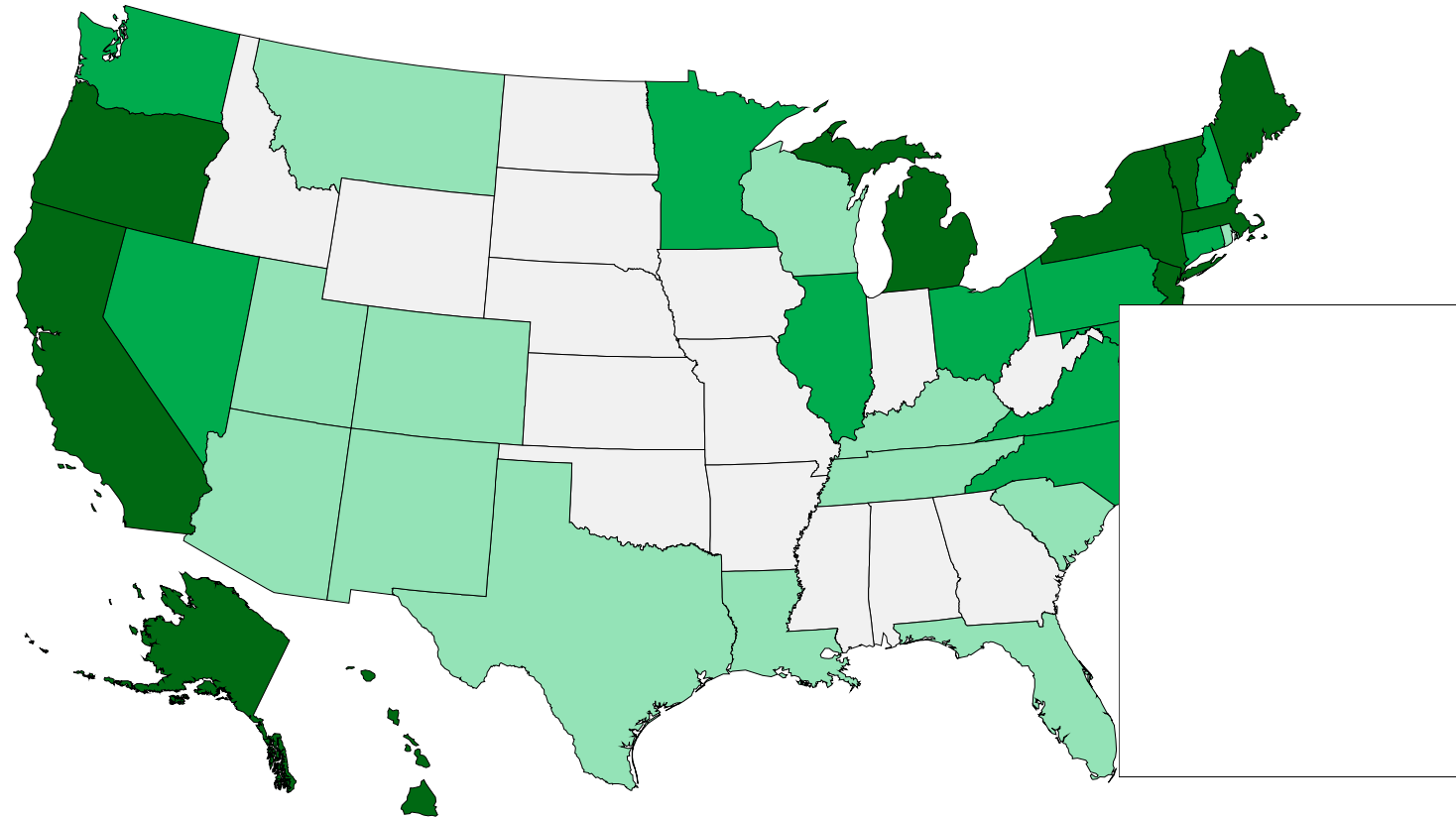
Worsening near-term pandemic and greater fiscal stimulus torque projections of GDP growth in 2021

- Unexpectedly weak data on trade and inventories through November and on consumer credit card spending in December encouraged us to revise down our estimate of growth in the fourth quarter of 2020 from 5.6% to 3.0%.
- Our updated forecast includes two new conflicting assumptions: a higher winter peak in COVID-19 infections, offset by more fiscal stimulus than assumed last month. This shifted the pattern of GDP growth in 2021. Measured year-over-year, the forecast has been revised down, from 4.3% to 4.0%. Measured 4th-quarter-to-4th-quarter, the forecast has been revised up, from 3.5% to 4.0%.
- Under our updated pandemic assumptions but without fiscal stimulus, GDP contracts at a 2% rate in the first quarter and Personal consumption expenditures contract 5% before both recover sharply over the second half of the year amid a successful inoculation campaign.
- Our forecast for GDP growth this year is identical to the December Blue Chip consensus of 4%. The US economy regains full employment in early 2022.



Northeastern states will likely register higher year-over-year growth in 2021 due to steeper declines in employment during spring 2020

Year-over-year employment growth, 2021Q3 vs. 2020Q2



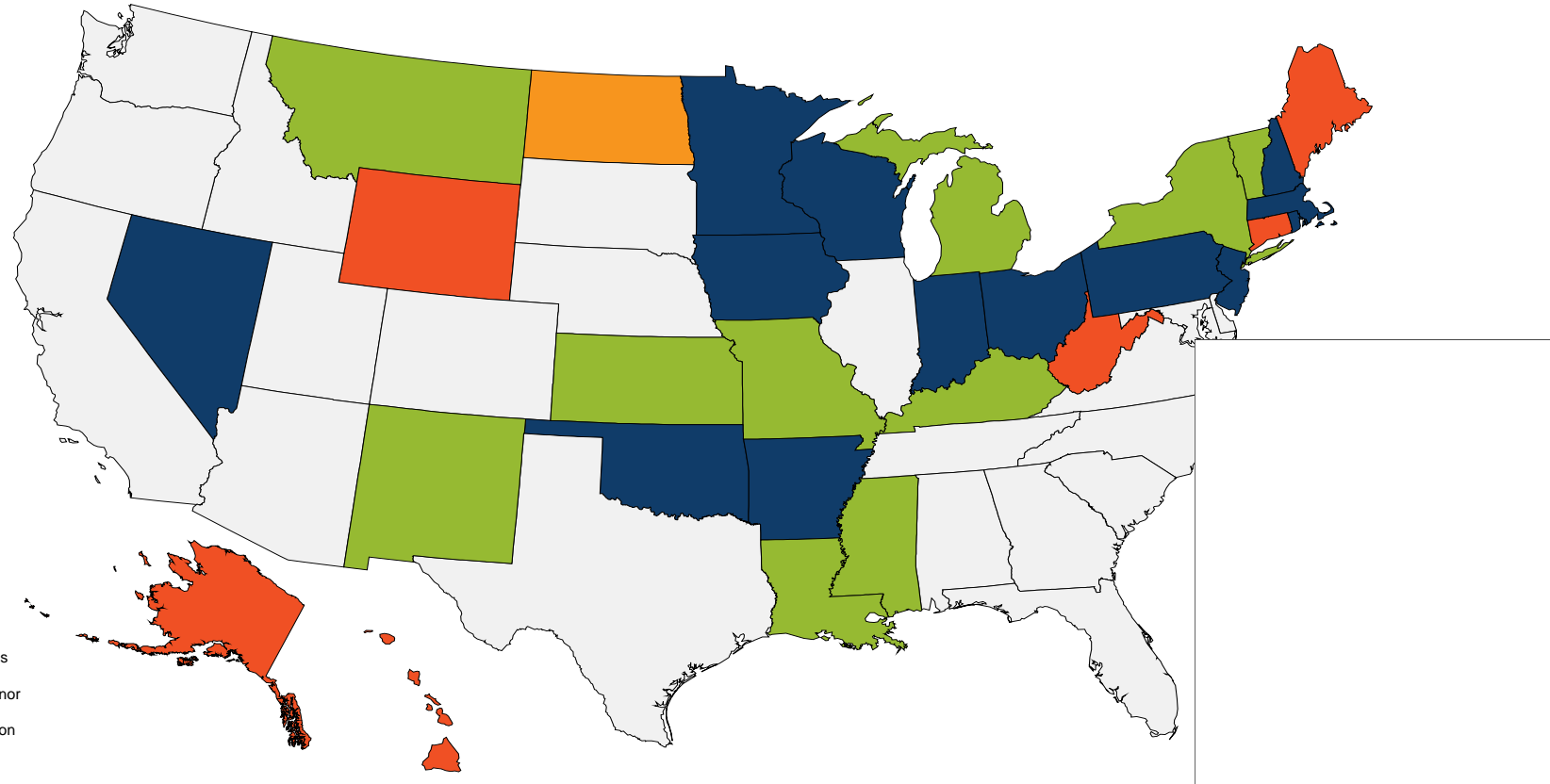
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Most states are not anticipated to return to their pre-recession peak employment until at least late 2022

Year of return to pre-recession peak employment



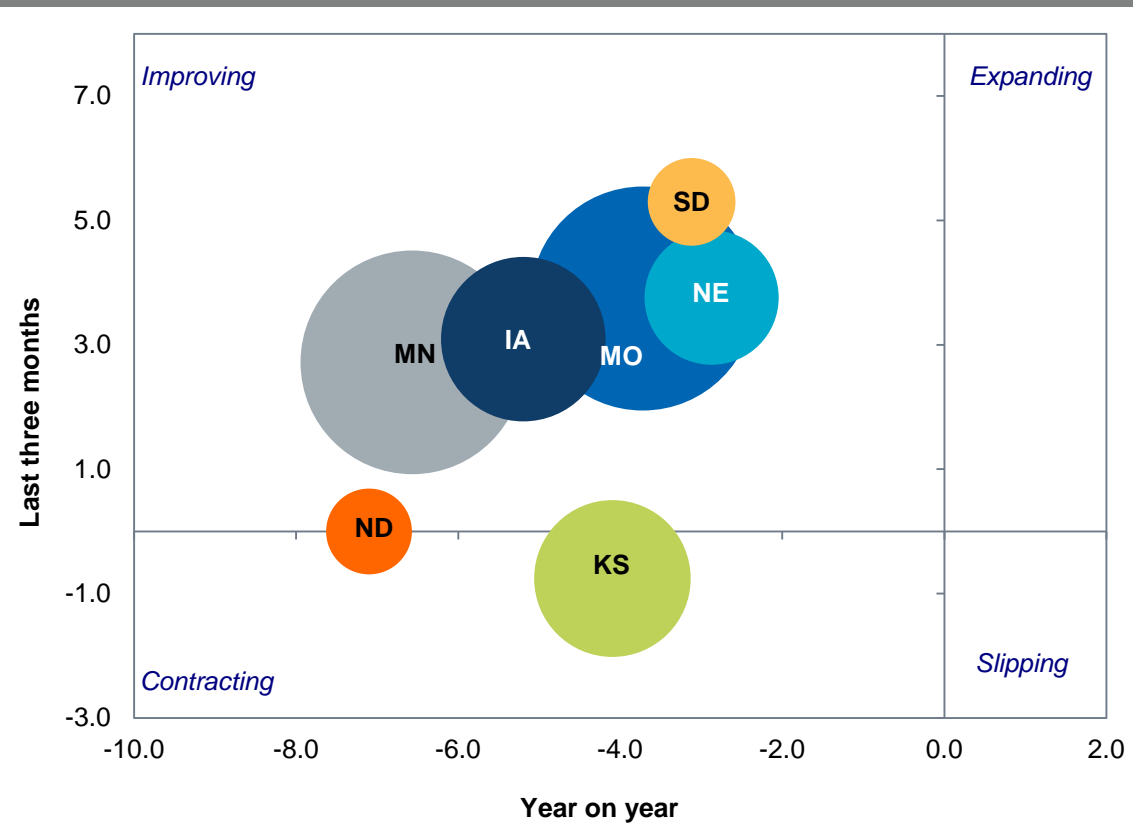
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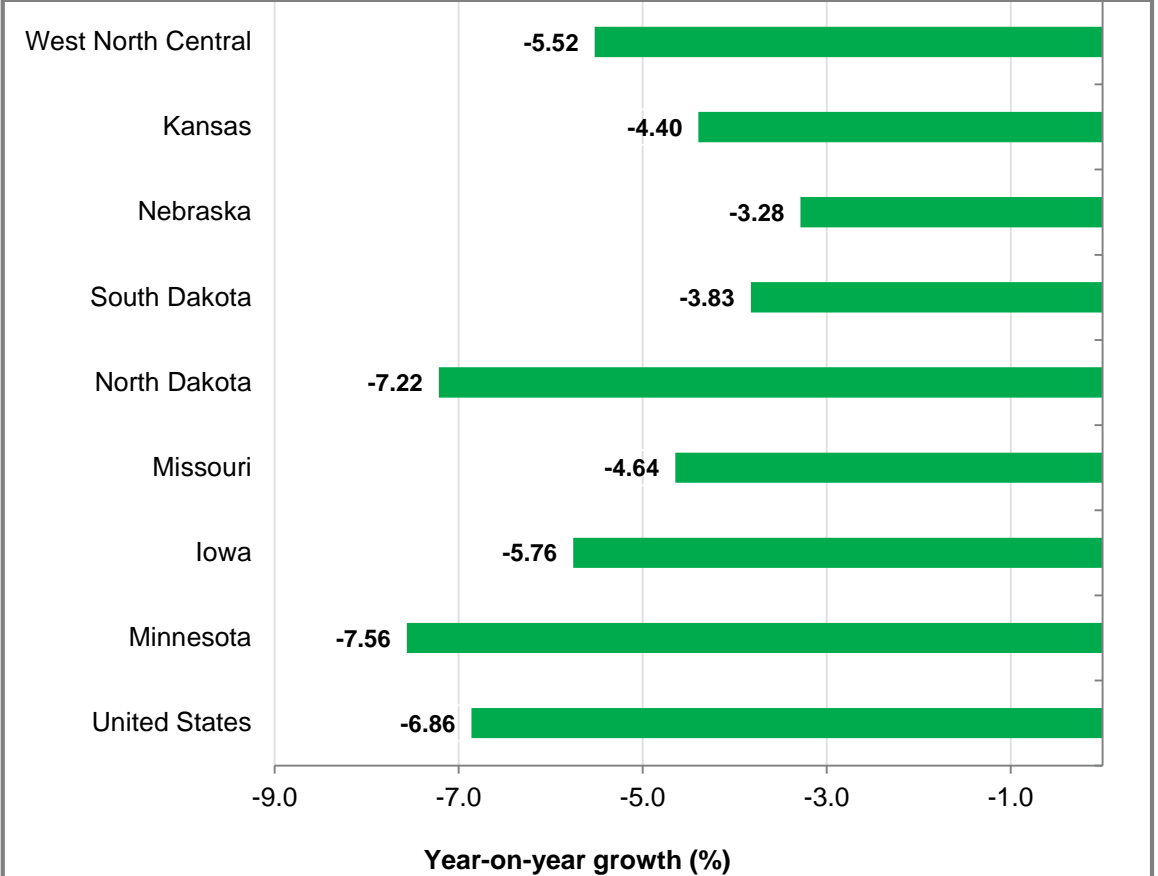
West North Central: Year-over-year losses in most states smaller compared with country but North Dakota is struggling

Employment momentum in November 2020, West North Central
(Percent change, annual rate)



Notes: Size of each data point represents state employment level for the most recent month.
Source: Bureau of Labor Statistics © 2020 IHS Markit

Employment growth in the third quarter of 2020, West North Central



Source: Bureau of Labor Statistics © 2020 IHS Markit

North Dakota Outlook

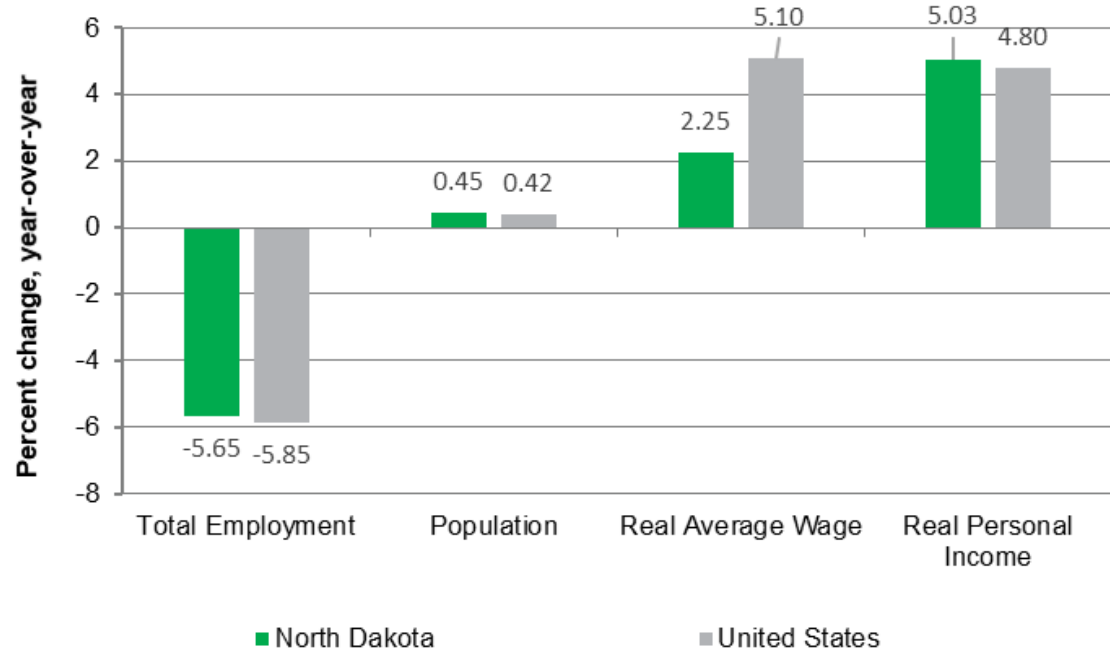
Short Term Outlook for North Dakota					
December 2020 Forecast					
	2019	2020	2021	2022	2023
Establishment Employment (Thousands)					
Total Non-Agricultural	439.2	414.4	416.1	424.1	430.1
Pct. Ch. Ann. Rate	1.0	-5.6	0.4	1.9	1.4
Manufacturing	26.4	25.0	24.6	24.8	25.1
Pct. Ch. Ann. Rate	1.7	-5.2	-1.7	0.8	1.2
Durables	17.7	16.3	15.7	15.8	16.1
Machinery	6.0	5.8	5.2	5.2	5.2
Nondurables	8.7	8.8	8.9	9.0	9.1
Food Manufacturing	4.9	4.9	5.0	5.0	5.0
Non-Manufacturing	412.8	389.4	391.5	399.3	405.0
Pct. Ch. Ann. Rate	0.9	-5.7	0.6	2.0	1.4
Construction & Mining	49.4	42.7	38.2	38.5	40.3
Pct. Ch. Ann. Rate	5.6	-13.5	-10.5	0.6	4.7
Trade, Trans., & Utilities	93.7	88.9	89.4	90.3	88.6
Pct. Ch. Ann. Rate	-0.4	-5.1	0.6	1.0	-1.9
Wholesale Trade	24.3	23.8	23.8	25.2	26.2
Retail Trade	45.5	43.7	43.9	41.9	38.6
Trans. & Warehousing	20.5	18.0	18.5	20.0	20.8
Utilities	3.4	3.4	3.3	3.1	3.0
Information	6.1	5.7	6.1	6.5	6.5
Pct. Ch. Ann. Rate	-2.3	-6.7	6.7	7.5	-0.2
Financial Activities	24.8	24.7	24.3	25.1	25.6
Pct. Ch. Ann. Rate	0.7	-0.2	-1.7	3.3	1.7
Finance & Insurance	19.4	19.6	19.0	19.6	19.9
Real Estate & Rental	5.4	5.2	5.3	5.6	5.6
Source: IHS Markit					

Short Term Outlook for North Dakota					
December 2020 Forecast					
	2019	2020	2021	2022	2023
Prof. & Business Svcs.	32.8	32.0	32.4	35.8	37.6
Pct. Ch. Ann. Rate	0.7	-2.4	1.3	10.5	4.8
Prof, Scientific, & Tech	16.3	16.3	16.1	17.7	18.8
Management	3.6	3.7	3.7	3.9	4.0
Admin & Waste Svcs	13.0	12.0	12.6	14.3	14.8
Educ & Health Services	67.2	66.1	68.7	68.9	69.5
Pct. Ch. Ann. Rate	1.1	-1.6	3.8	0.3	0.9
Educational Services	4.2	4.3	4.2	4.4	4.3
Health Care	63.0	61.8	64.5	64.5	65.1
Leisure & Hospitality	40.5	33.9	35.6	35.3	36.4
Pct. Ch. Ann. Rate	0.4	-16.2	4.8	-0.7	3.0
Arts, Entmnt, & Rec	5.6	4.4	4.9	5.9	5.8
Accom & Food Svcs	34.9	29.5	30.7	29.4	30.6
Other Services	15.3	14.3	14.4	15.2	15.6
Pct. Ch. Ann. Rate	-0.3	-6.7	0.9	5.8	2.4
Government	83.0	80.9	82.4	83.7	85.1
Pct. Ch. Ann. Rate	0.6	-2.5	1.8	1.5	1.7
Federal	9.3	9.5	9.4	9.4	9.3
State & Local	73.7	71.4	73.0	74.3	75.7
Resident Employment & Unemployment (Thousands)					
Total Employment	394.0	381.1	383.3	390.1	395.0
Pct. Ch. Ann. Rate	0.2	-3.3	0.6	1.8	1.3
Labor Force	403.6	401.8	400.4	404.0	408.2
Labor Force Partic Rate	67.3	66.7	66.5	67.0	67.4
Number Unemployed	9.6	20.7	17.0	13.8	13.2
Unemployment Rate	2.4	5.2	4.3	3.4	3.2
Source: IHS Markit					

North Dakota Outlook

Short Term Outlook for North Dakota					
December 2020 Forecast					
	2019	2020	2021	2022	2023
Personal Income (Billions \$)					
Total Personal Income	43.6	46.4	45.4	46.5	48.9
Pct. Ch. Ann. Rate	3.1	6.4	-2.1	2.3	5.2
Real Personal Income	44.0	46.2	44.4	44.5	45.8
Pct. Ch. Ann. Rate	1.5	5.0	-3.9	0.1	3.0
Real Disposable Income	39.8	42.2	40.4	40.4	41.6
Real Per Capita Income (Ths)	57.7	60.4	58.0	57.9	59.4
Med. Household Income (Ths)	70.0	76.1	71.3	72.5	74.7
Avg. Annual Wage (Ths)	53.3	55.2	56.3	57.2	59.3
Real Gross State Product, NAICS Based (Billions 2012\$)					
Total GSP	53.9	51.7	52.4	54.3	56.0
Pct. Ch. Ann. Rate	0.9	-4.2	1.4	3.5	3.3
Housing					
Total Housing Starts (Ths)	2.5	3.3	3.4	3.2	3.0
Population (Thousands)					
Total Population	762.6	766.0	766.5	767.6	770.8
Pct. Ch. Ann. Rate	0.5	0.4	0.1	0.1	0.4
Source: IHS Markit					

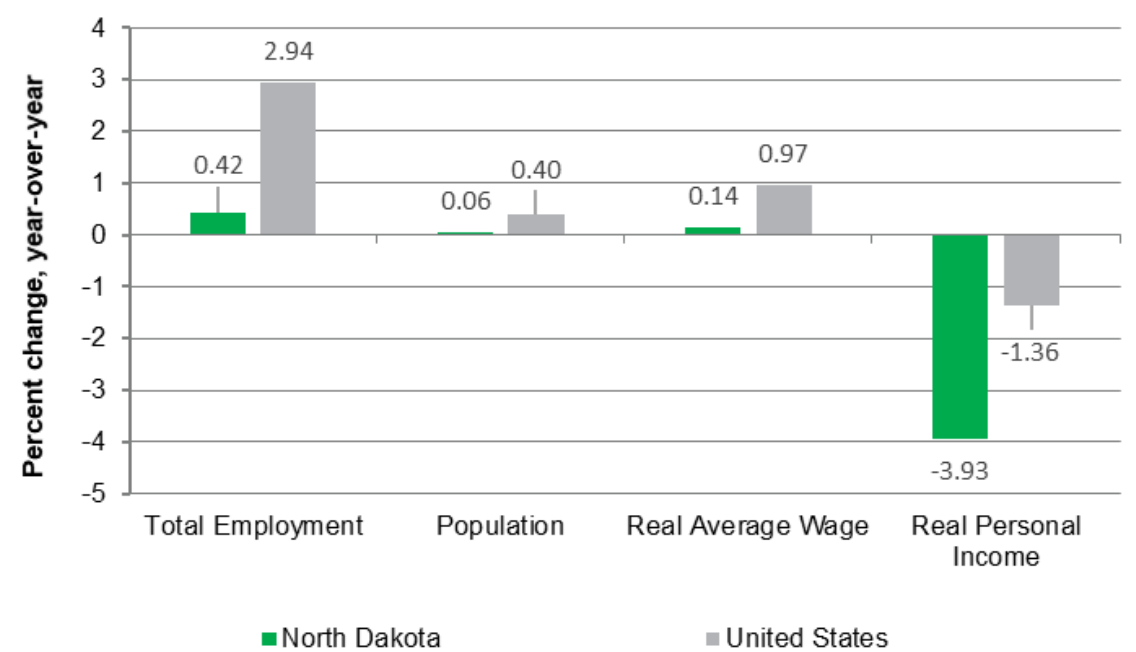
Key performance indicators, 2020



Source: IHS Markit

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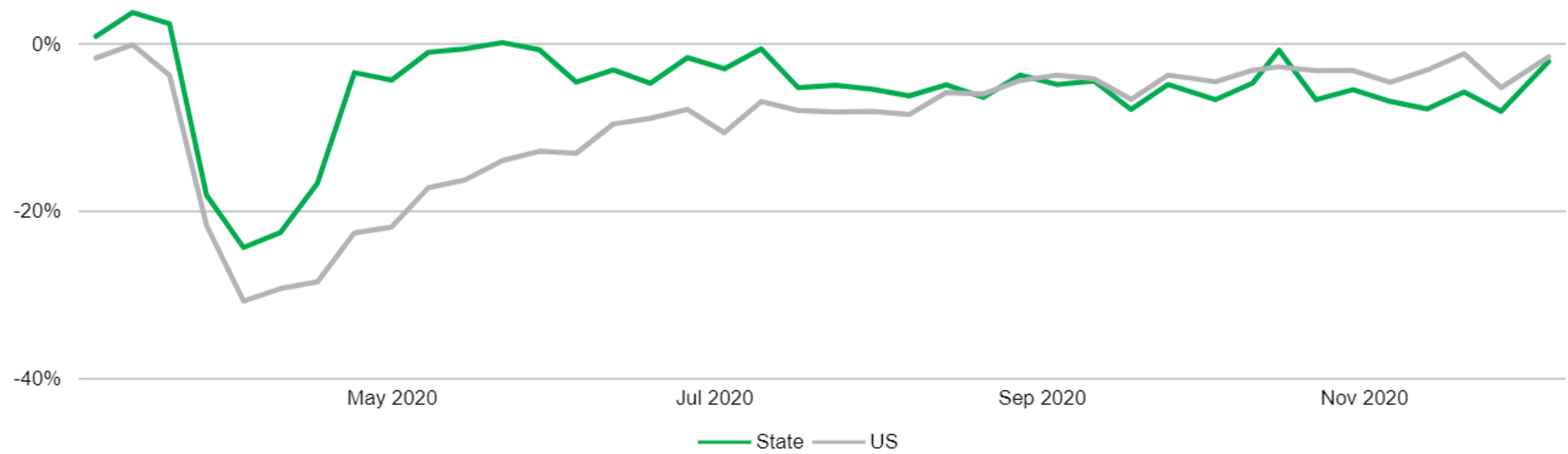
Key performance indicators, 2021



Source: IHS Markit

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Change in consumer spending compared to January average



Source: Bureau of Labor Statistics, Opportunity Insights Recovery Tracker

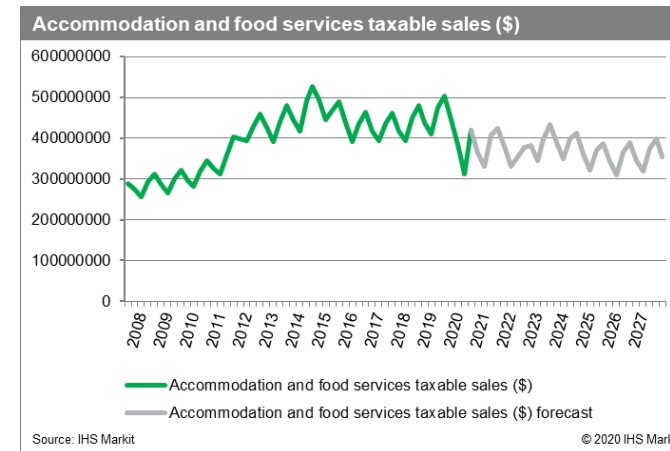
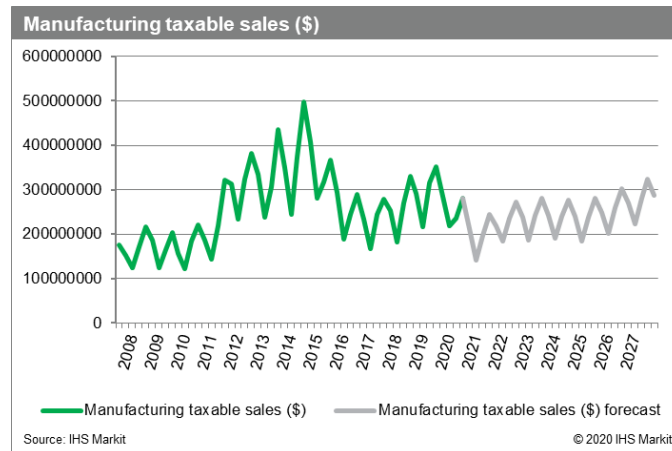
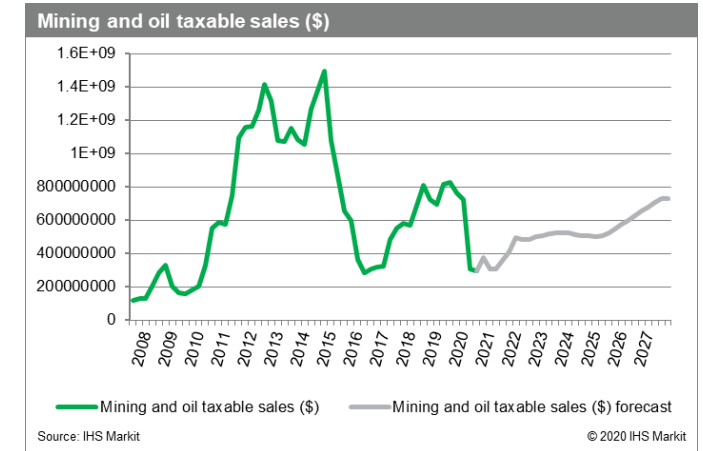
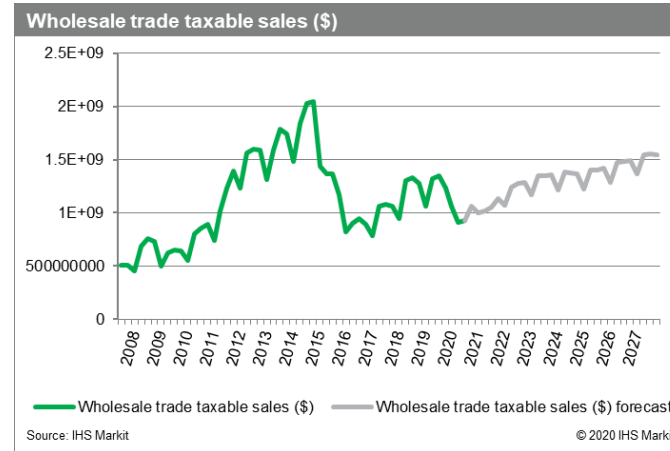
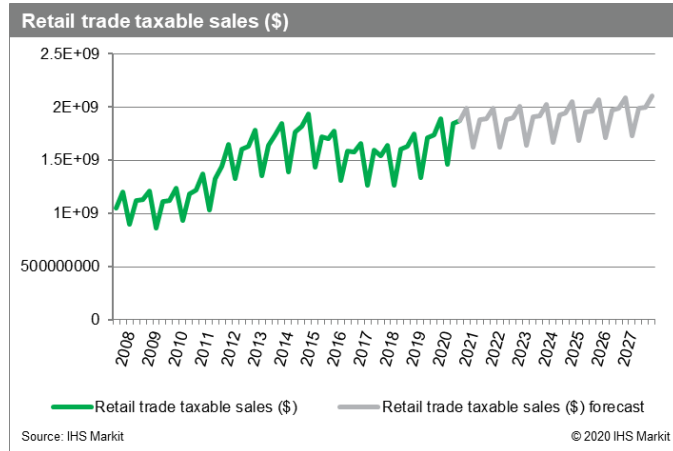
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Economic indicators used in the tax model

REVENUE SOURCE	ECONOMIC DRIVER	DESCRIPTION
Sales and Use tax	<ul style="list-style-type: none"> •Bakken new producing wells •Employment by sector •Gross state product by sector 	Taxable sales are divided into 15 different sectors and the sectors are individually modeled. The main drivers of these models are the new producing wells in the Bakken play, sector employment numbers and gross state product by sector. The forecast of the sectors are summed to total taxable sales then the sales and use tax revenue forecast is calculated.
Motor vehicle excise tax	<ul style="list-style-type: none"> •New passenger and light truck registrations (ND state) 	The motor vehicle excise tax base is best captured by the state's new vehicle registrations (including new passenger car and light truck).
Individual income tax	<ul style="list-style-type: none"> •Total wage disbursements (ND state) •Personal income, dividends interest and rent (ND state) 	<p>The tax base of individual income tax submitted as <u>withholdings</u> is relatively stable and largely driven by total wage income in the state.</p> <p>The tax base of individual income tax submitted as <u>estimated payments</u>, on the other hand, is more volatile due to the nature of capital gains realization. That being said, a reasonable amount of variations in the tax base of individual income estimated payments is captured by the state's property income, i.e., rental income of persons, personal dividend income, and personal interest income.</p>
Corporate income tax	<ul style="list-style-type: none"> •Bakken new producing wells 	The tax base of corporate income tax is mainly driven by by the Bakken new producing wells, as it affects oil company's profits.

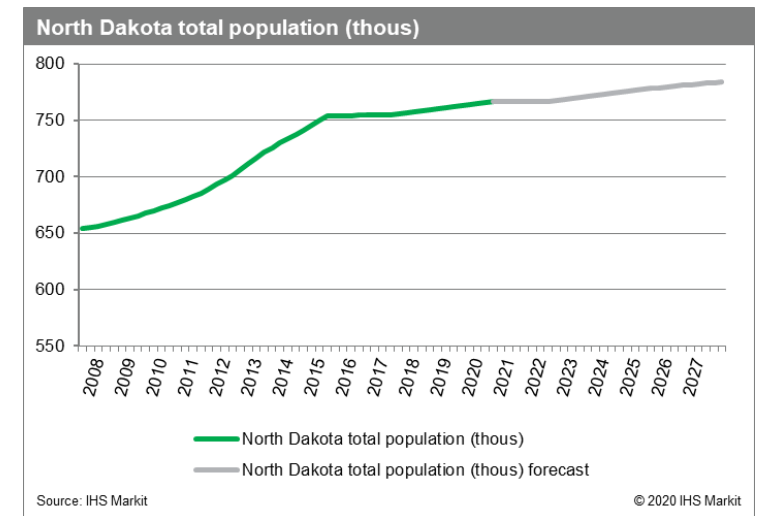
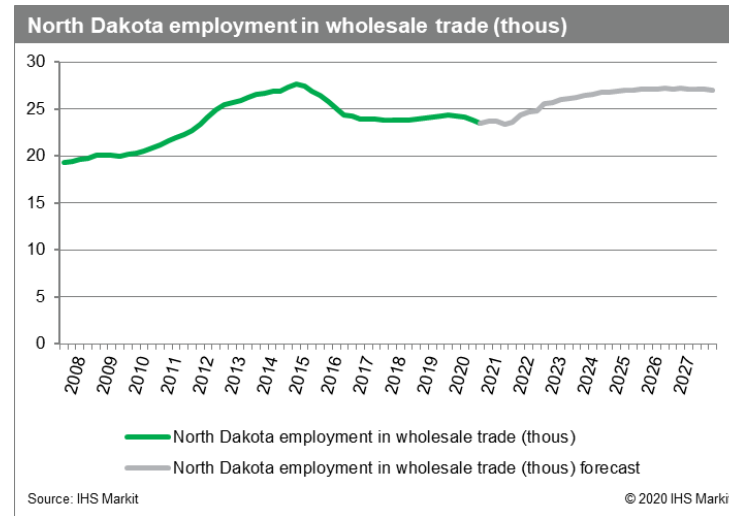
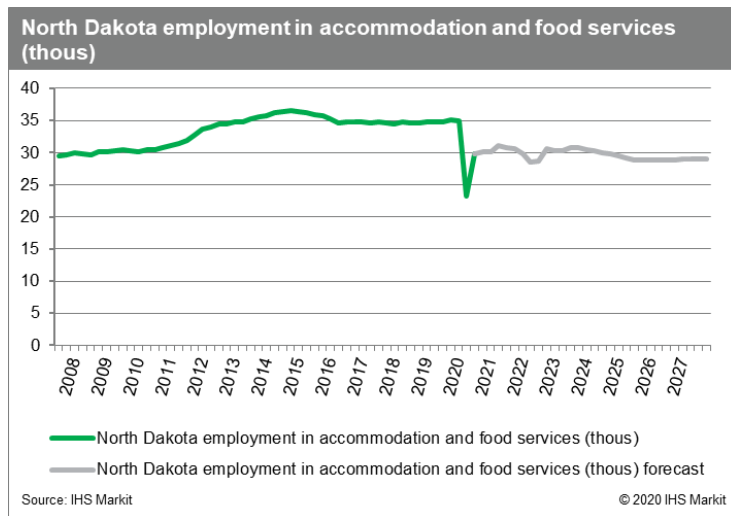
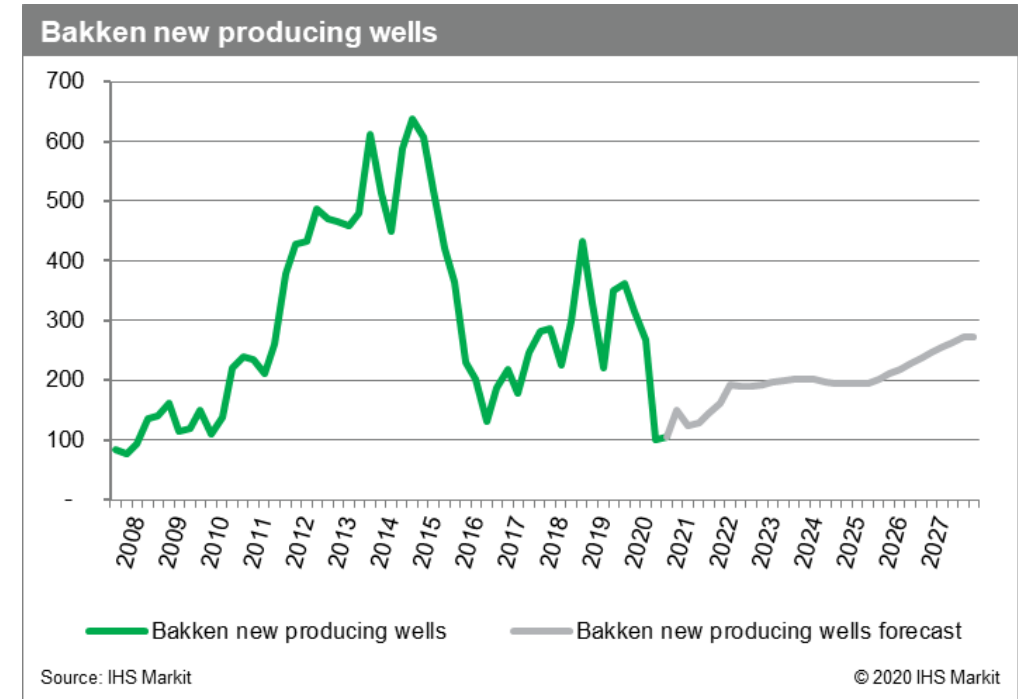
Taxable sales by sector

- There are fifteen taxable sales sectors that are modeled. The five largest sectors are retail trade, wholesale trade, mining and oil, accommodation and food services, and manufacturing.

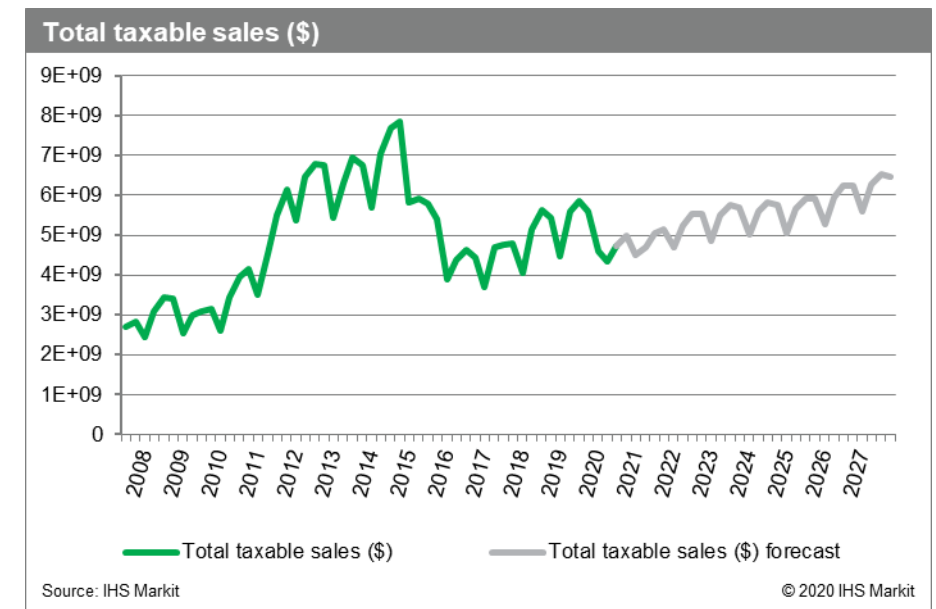
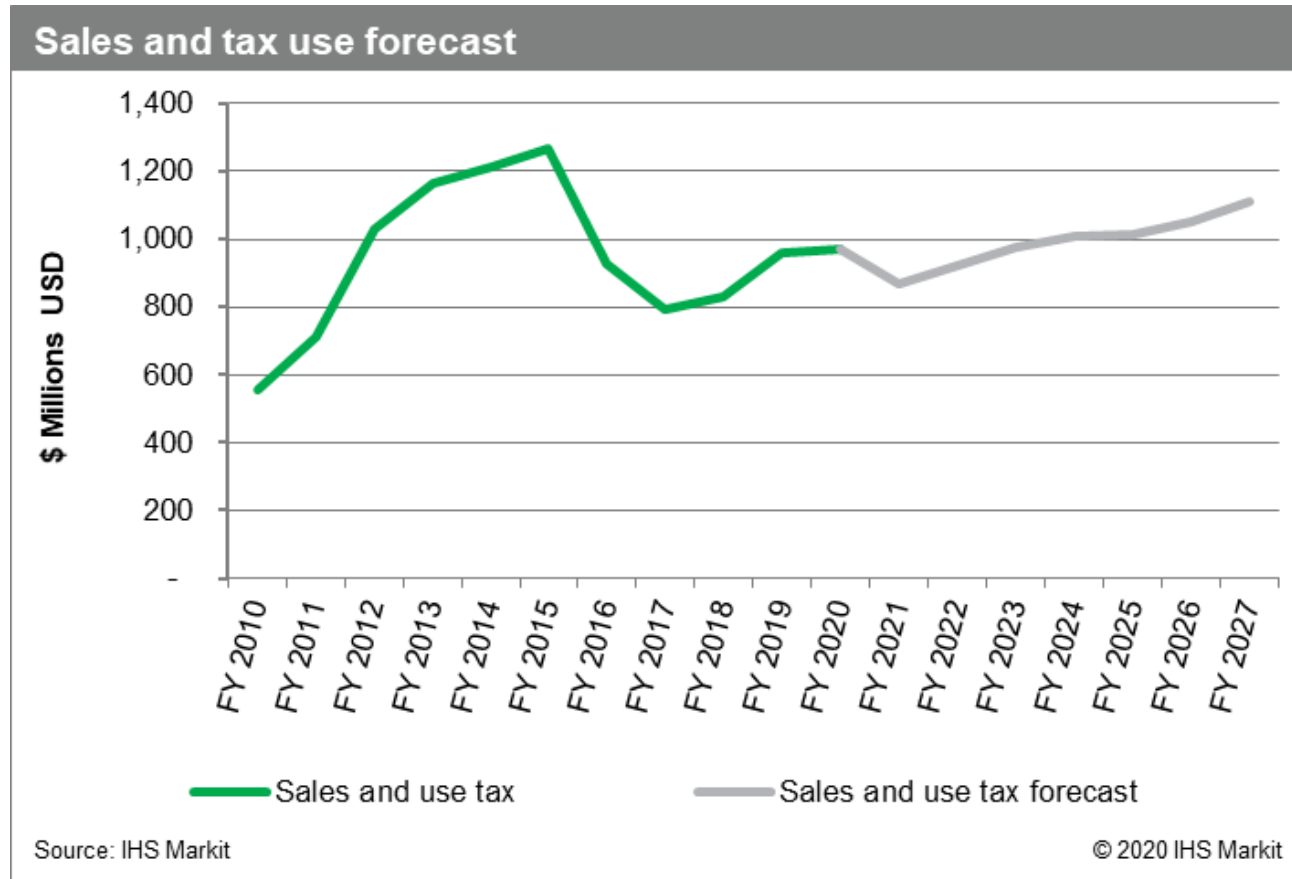


Drivers of taxable sales sectors

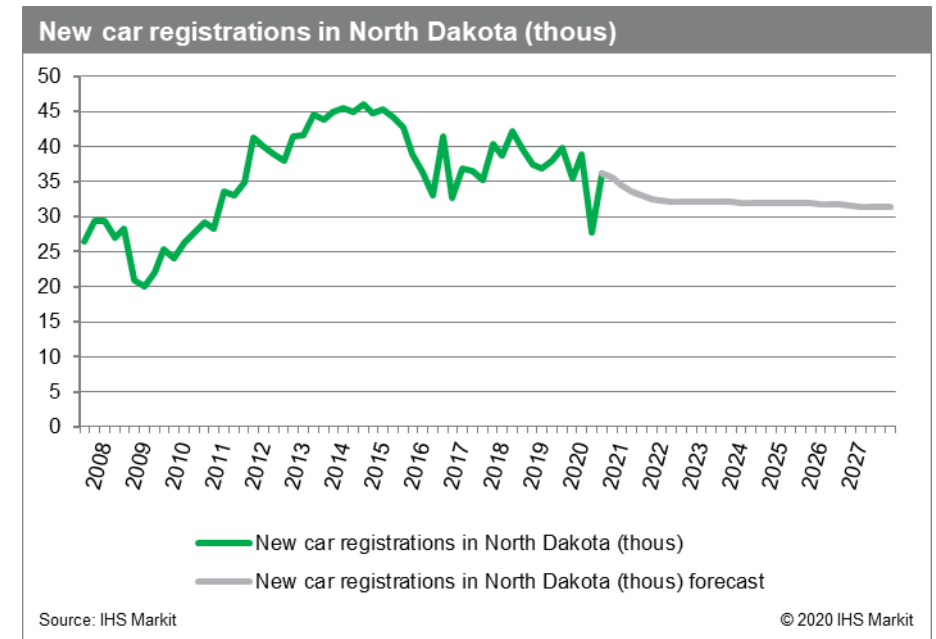
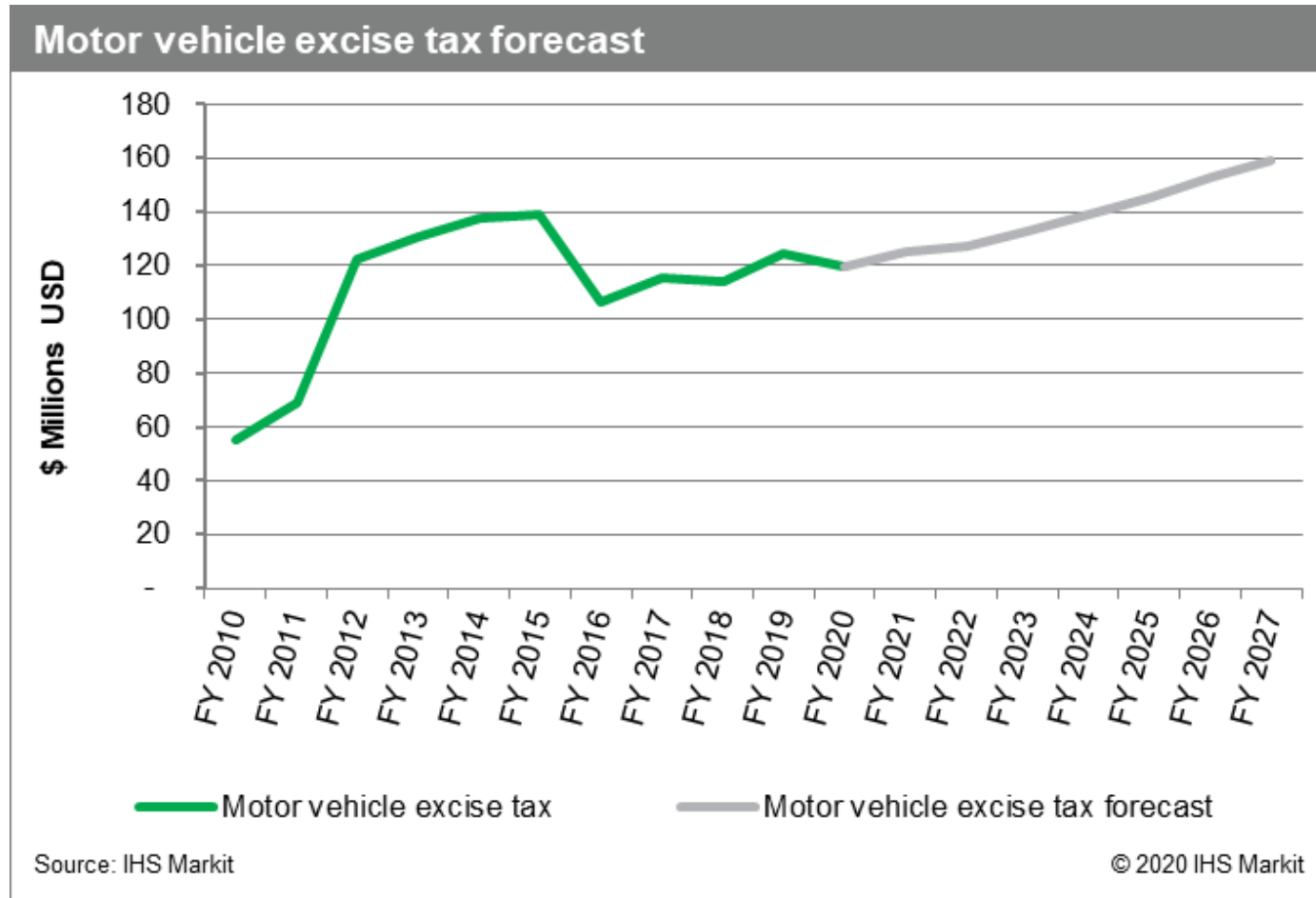
- The number of new producing wells in the Bakken play is the main driver in four of the five largest taxable sales sectors; these sectors are wholesale trade, mining and oil, accommodation and food services, and manufacturing
- Of the fifteen taxable sales models, nine include Bakken new producing wells as a driver.
- Sector-specific employment and gross state product numbers for North Dakota are also used as drivers for some sector models like retail trade, wholesale trade, and accommodation and food services.



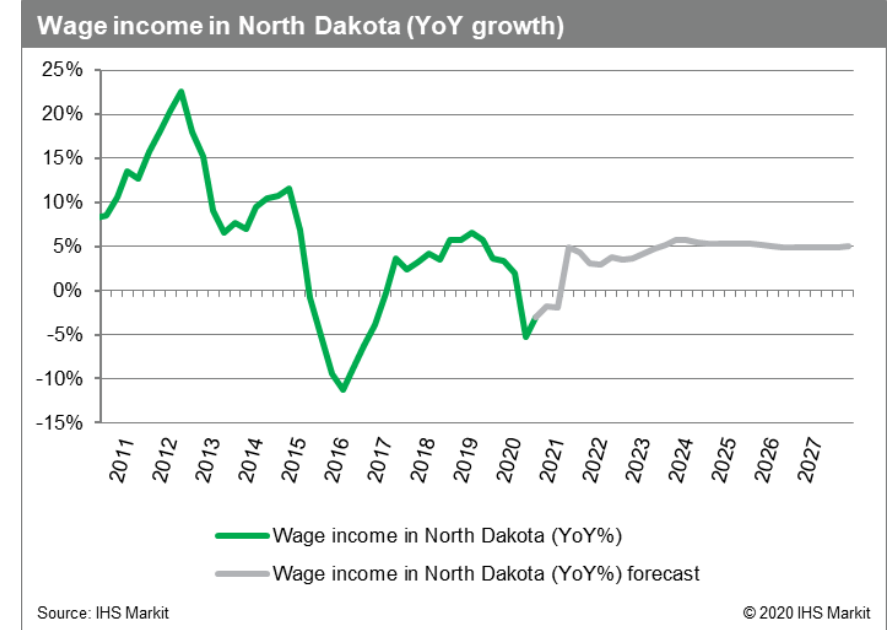
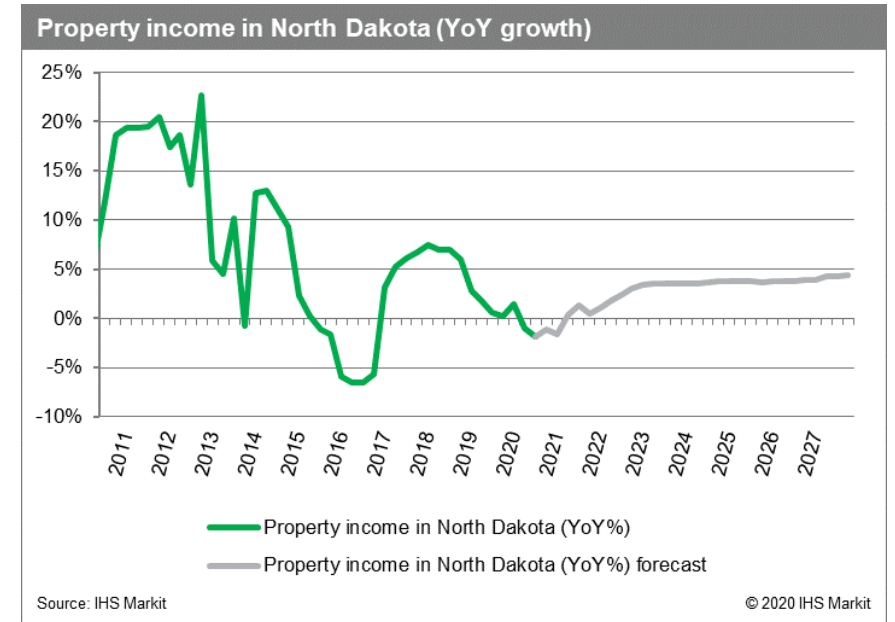
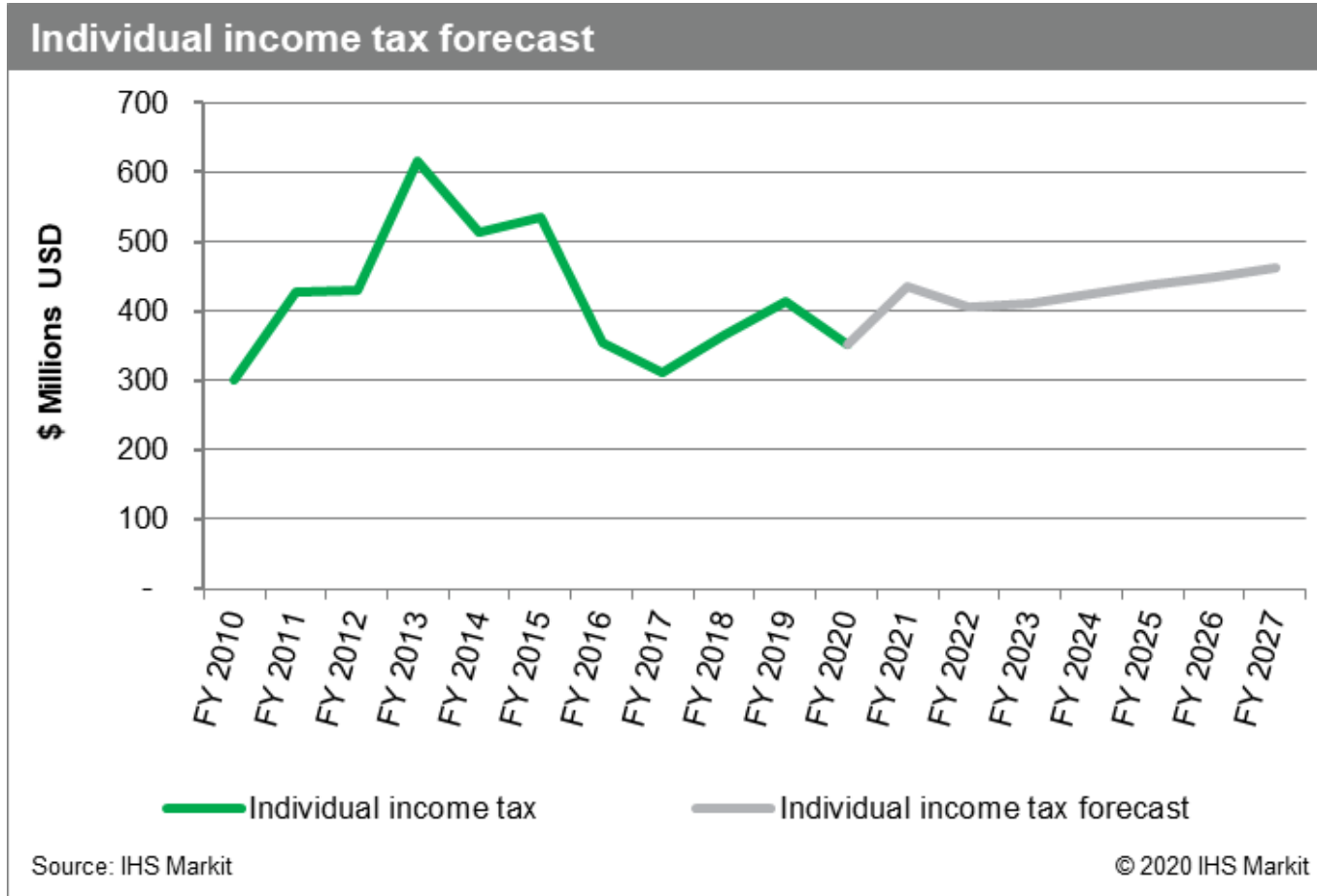
Sales and use tax revenue



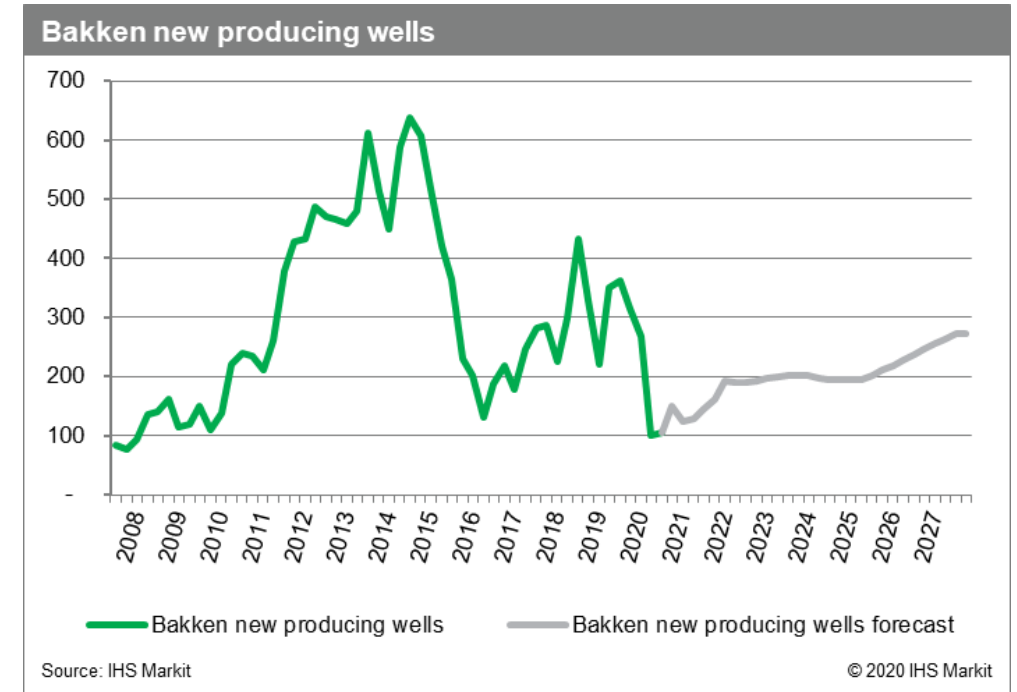
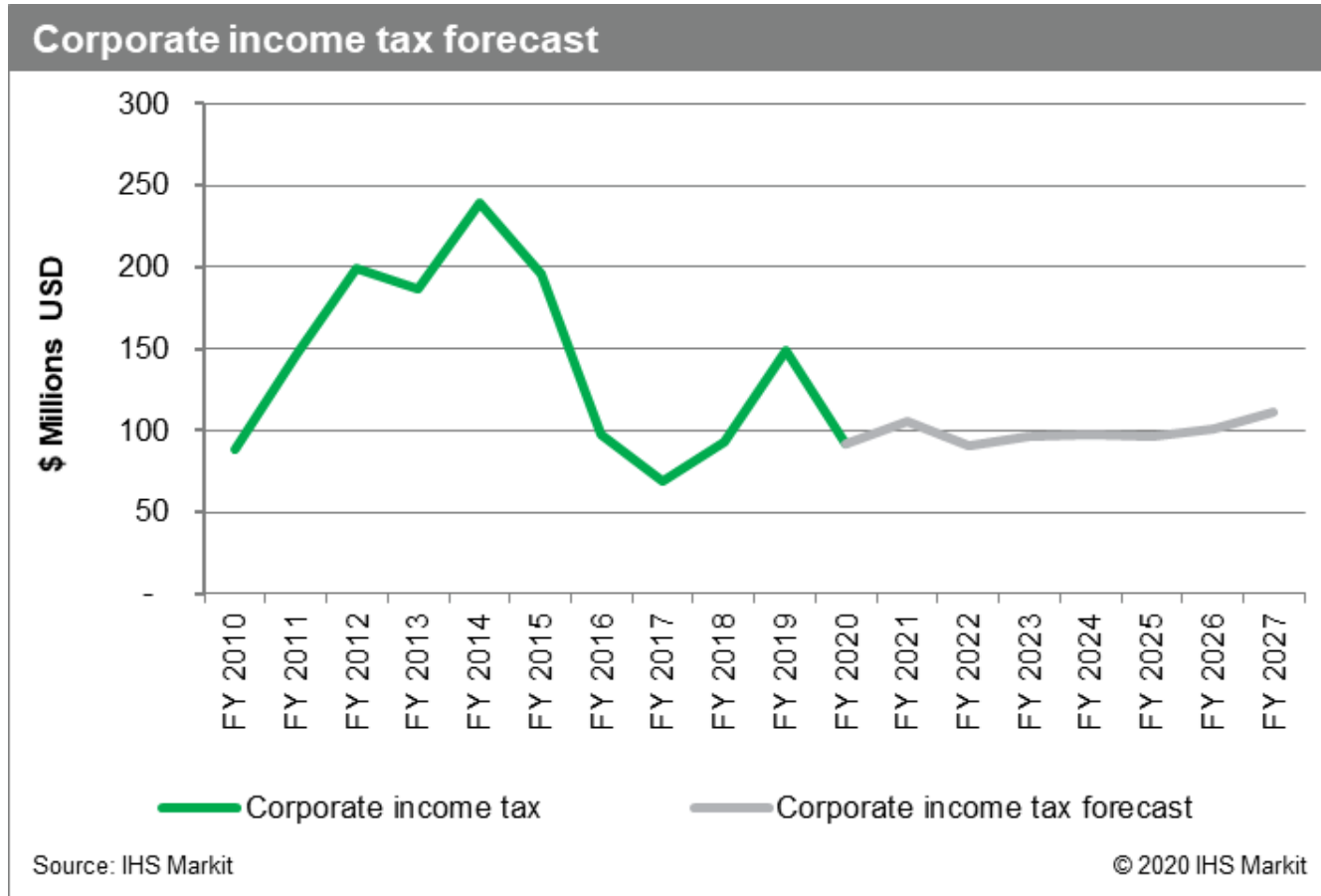
Motor vehicle excise tax revenue



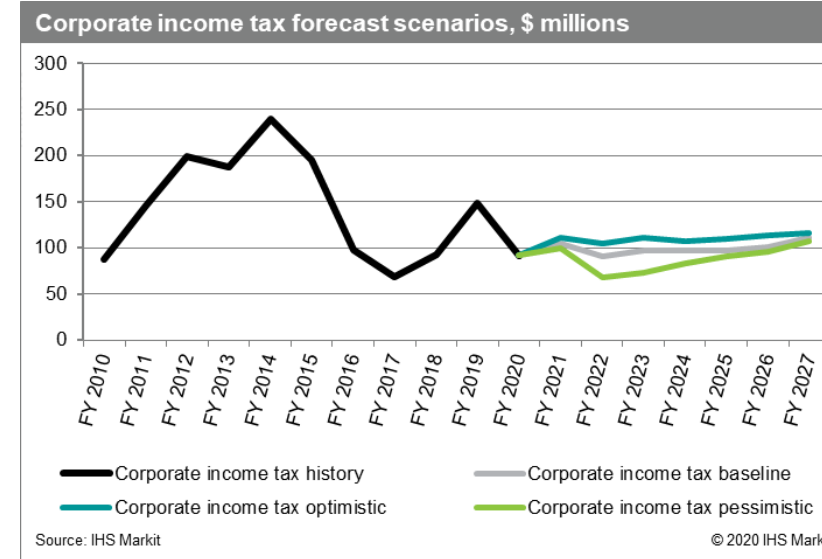
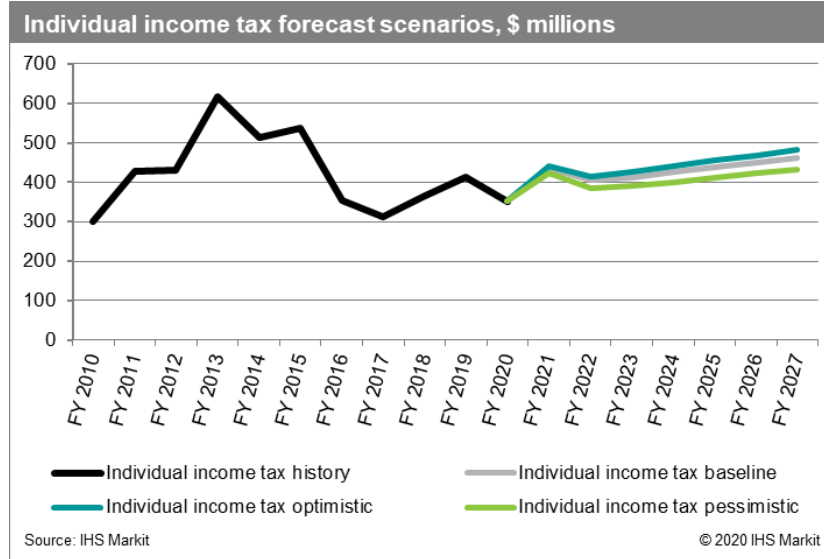
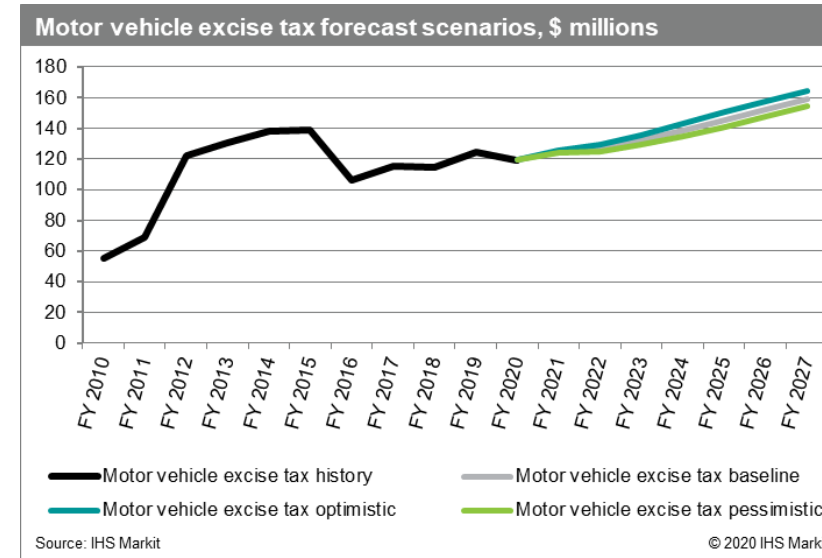
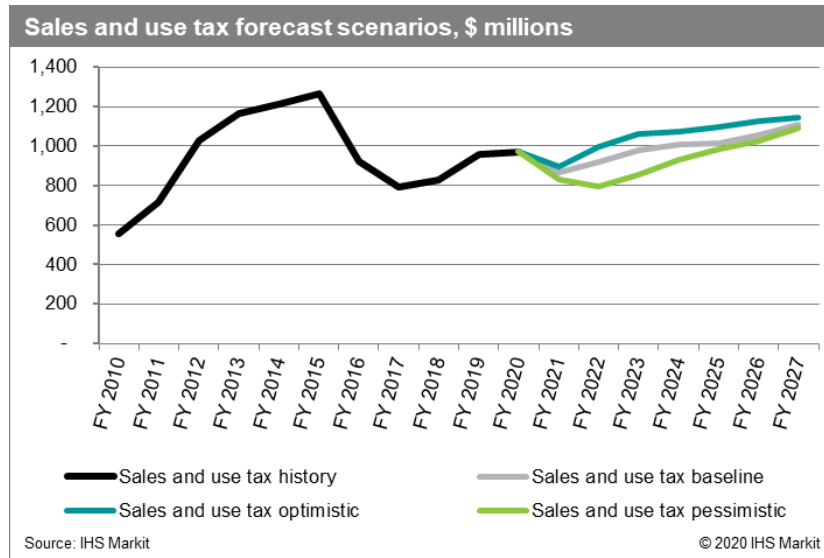
Individual income tax revenue



Corporate income tax revenue



Optimistic and pessimistic scenarios



Optimistic and pessimistic scenarios

Revenue Source	2019-21 Biennium Baseline	2019-21 Biennium Optimistic	2019-21 Biennium Pessimistic
Sales and use tax	1,838,773,846 2.9%	1,869,070,881 4.6%	1,798,624,117 0.7%
Motor vehicle excise tax	244,393,106 2.2%	245,214,381 2.6%	243,591,423 1.9%
Net individual income tax	786,357,241 1.1%	794,542,704 2.1%	774,340,313 -0.5%
Net corporate income tax	196,921,068 -18.4%	202,696,406 -16.1%	190,962,526 -20.9%

Revenue Source	2021-23 Biennium Baseline	2021-23 Biennium Optimistic	2021-23 Biennium Pessimistic
Sales and use tax	1,897,250,392 3.2%	2,056,357,685 10.0%	1,650,232,213 -8.3%
Motor vehicle excise tax	259,564,643 6.2%	264,741,837 8.0%	254,504,067 4.5%
Net individual income tax	816,535,809 3.8%	839,918,033 5.7%	773,869,238 -0.1%
Net corporate income tax	187,707,324 -4.7%	214,809,210 6.0%	141,420,104 -25.9%

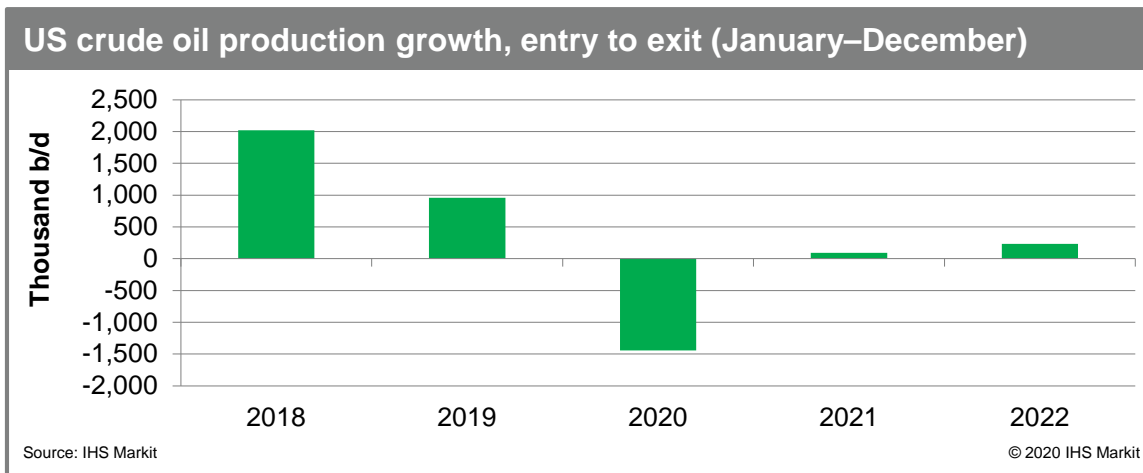
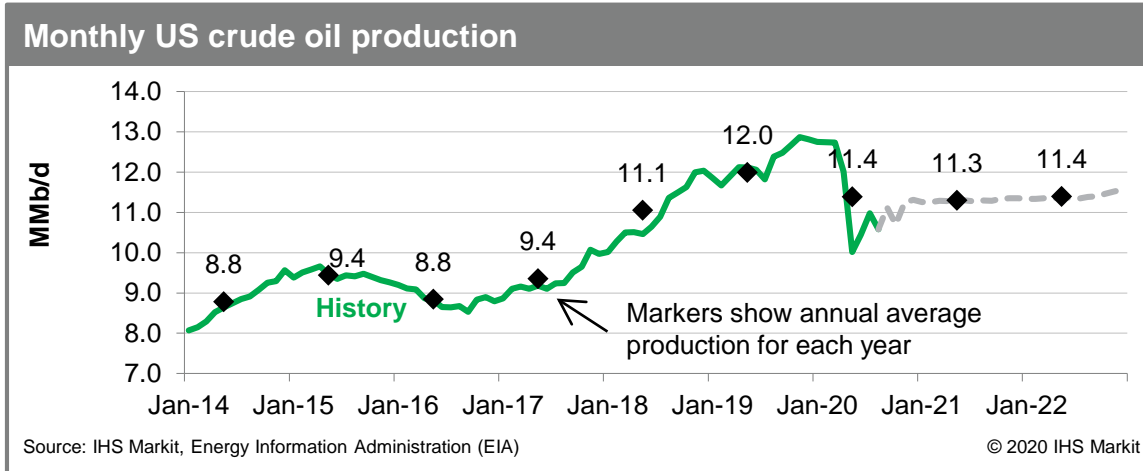
* The percentages reflect the change from the prior biennium.

North Dakota Energy Outlook

Executive summary for Q4 2020 long term global outlook – key messages

- **Positive vaccine news points to a more certain recovery in oil markets in 2021, but a dark “COVID winter” still looms**
 - Higher world total liquids demand is likely to occur in 2021, with higher prices in the second half of the year
 - The demand outlook is bleaker over the next two to three months, due to soaring new cases of COVID-19 in Europe and North America.
 - The return of Libyan production and the stall in the recovery of oil demand means that the plan for OPEC+ to increase production 2 MMb/d in January is off the table for now. Recent announced cuts of 1 million bbls/day by Saudi Arabia bodes well for prices
- **Global upstream spending could be lower than anticipated in the years ahead, leading to a tighter market.**
 - Upstream spending is projected to decline by a third in 2021 compared to 2019, with little change in upstream costs,
 - A financial shift by upstream companies to return more cash to investors is likely to constrain upstream spending.
 - North American operators are going through a major consolidation period which may ultimately curtail longer-term investment
- **Supply growth lags beyond 2021, while little change to the long-term Brent price track.**
 - With the production cuts announced by Saudi Arabia, Brent is likely to average \$50/bbl in 2021
 - We expect Brent will average about \$56/bbl in 2022, rising to nearly \$63 by 2026.
 - WTI prices will average about \$2.50 to \$3.00 lower, reaching \$60 by 2026 and then remain in the low \$60/bbl range over the longer term
- **Joe Biden’s victory in the US presidential election points to a pivot point in US energy policy,**
 - The administration will pursue policies that may increase Iranian oil supply in the short term and lower US oil demand in the long term.
 - Increased regulation with possible curtailment of development, including fracking, could potentially occur primarily on federal lands; only significant onshore areas are portions of the Permian Basin
 - US plug-in electric vehicle (PEV) sales will likely receive a boost compared with what would have been the case in a second Trump administration.

US crude oil production: Annual average output expected to increase slightly through 2022



- **Outlook mostly unchanged.**

- Output to average 11.3 MMb/d in 2021 and 11.4 MMb/d in 2022.
- Output recovery due to most shut-in wells returning to production.
- Return to previous record high of nearly 13 MMb/d in the near term unlikely.

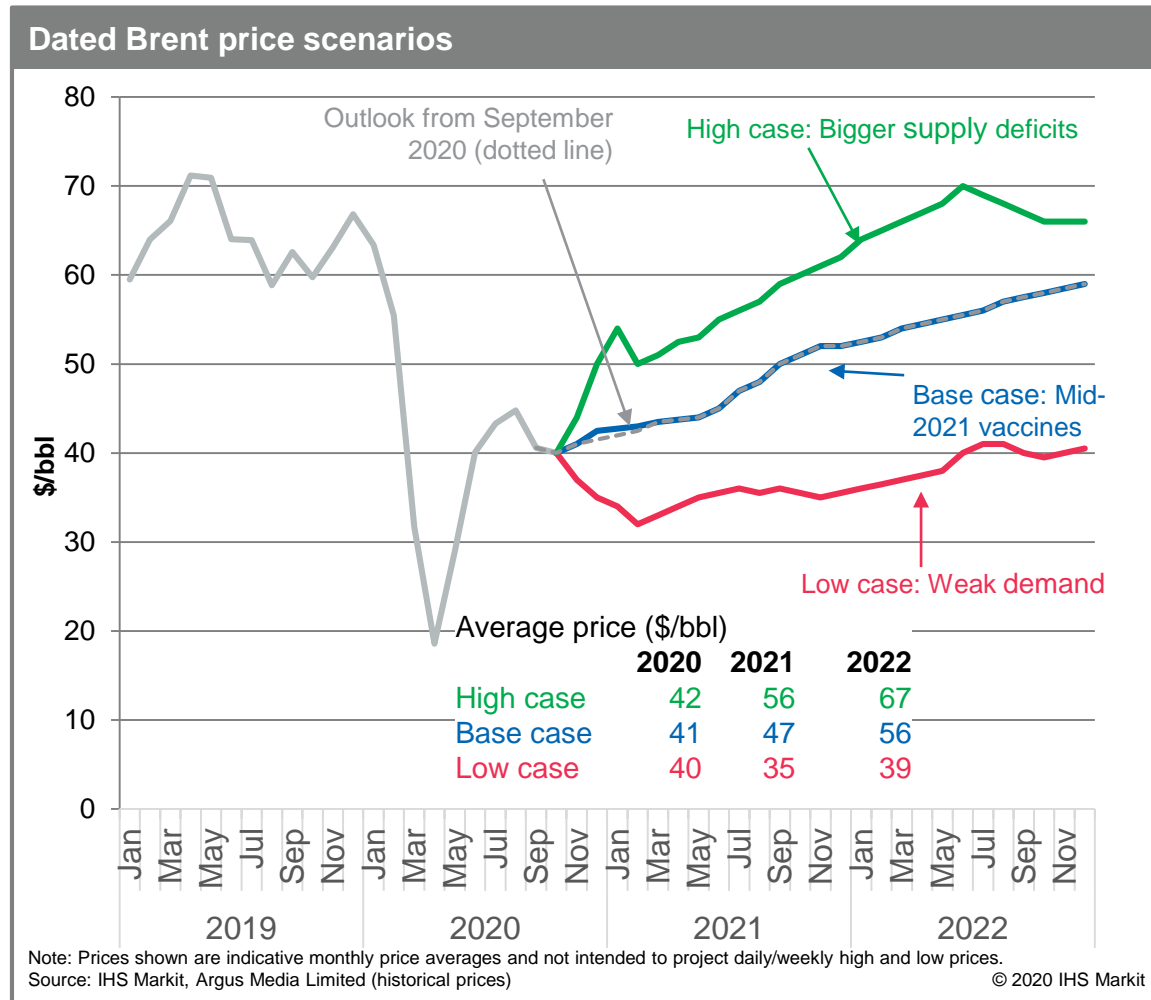
- **Focus on free cash flow.**

- Upstream oil and gas producers—under pressure from banks—will prioritize debt reduction and returns to shareholders, in contrast to the recent past when operators prioritized growth and outspent cash flow.

- **WTI prices to average \$50 /bbl through 2021**

- This will create the conditions for a resumption of slow growth.
- Current WTI oil prices in the mid to high \$40s are not yet high enough to allow for significant US production growth,
- If WTI were to average \$60/bbl or above, stronger output growth would result.

In the base case, Dated Brent averages \$44/bbl in first half 2021 and then rises to \$52/bbl by end-2021 as effective vaccines reach a broader population



Base-case scenario: COVID-19 vaccine by mid-2021

- The global economy contracts 4.4% in 2020. World GDP grows by 4.0% in 2021 and 3.6% in 2022.
- Oil demand growth picks up as effective COVID-19 vaccines become widely available by mid-2021.
- Demand gets to pre-pandemic levels only by end-2022,
- To offset increase in barrels from Libya, OPEC+ reduces output in first quarter 2021.
- The easing of sanctions under US President Biden results in Iranian production rising to 2.7 MMB/d in 3rd qtr. 2021 and further to 3.4 MMB/d in 4th qtr. 2022.
- US operators returning more cash to investors is that US production growth is modest
- The oil market has a hard time digesting the record 1.4 billion bbl global supply surplus accumulated by May 2020;

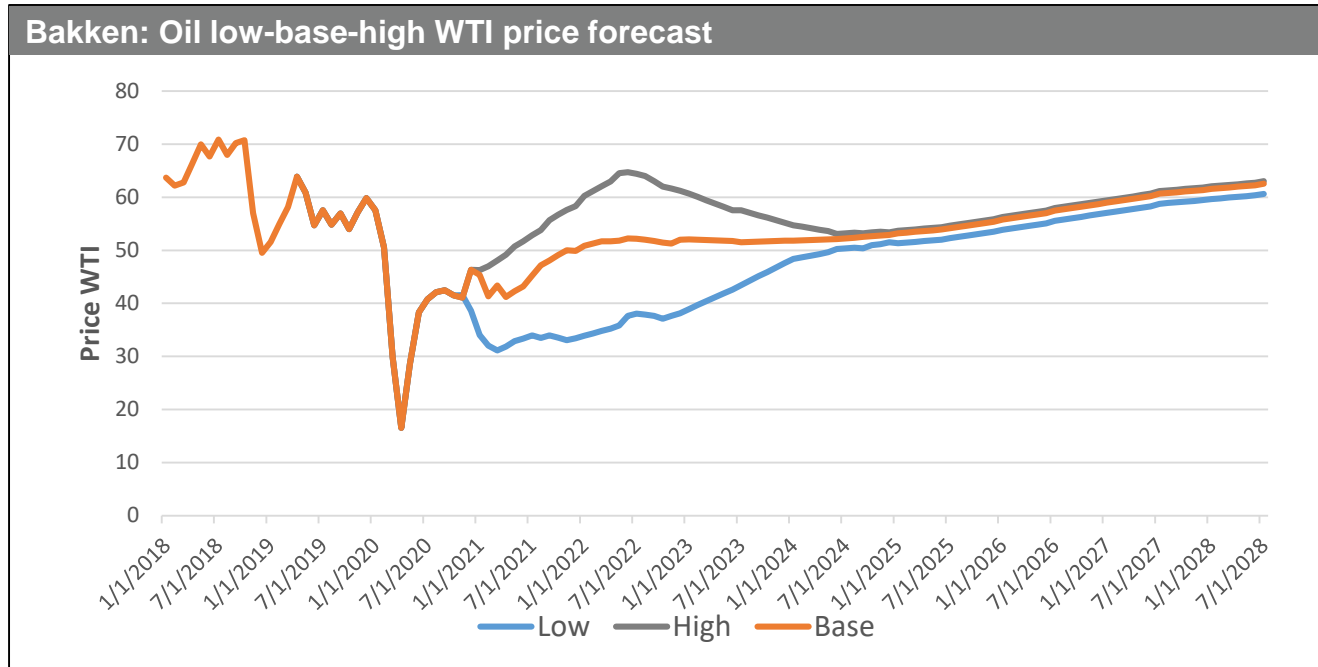
High-case scenario: Bigger supply deficits

- Enthusiasm about the development of an effective vaccine results in a price spike in early winter 2020–21.
- Rapid spread of vaccination revives economic activity and drives up demand and prices.

Low-case scenario: Weak demand

- New COVID-19 cases remain high in 2020–21.
- Vaccines are of limited effectiveness.
- Poor global cooperation on vaccine distribution means infections spread and countries continue to impose mobility and economic restrictions to various extents.

Prices for all three cases converge in the low \$50/bbl range by 2024, gradually increasing to the low \$60/bbl over the long term



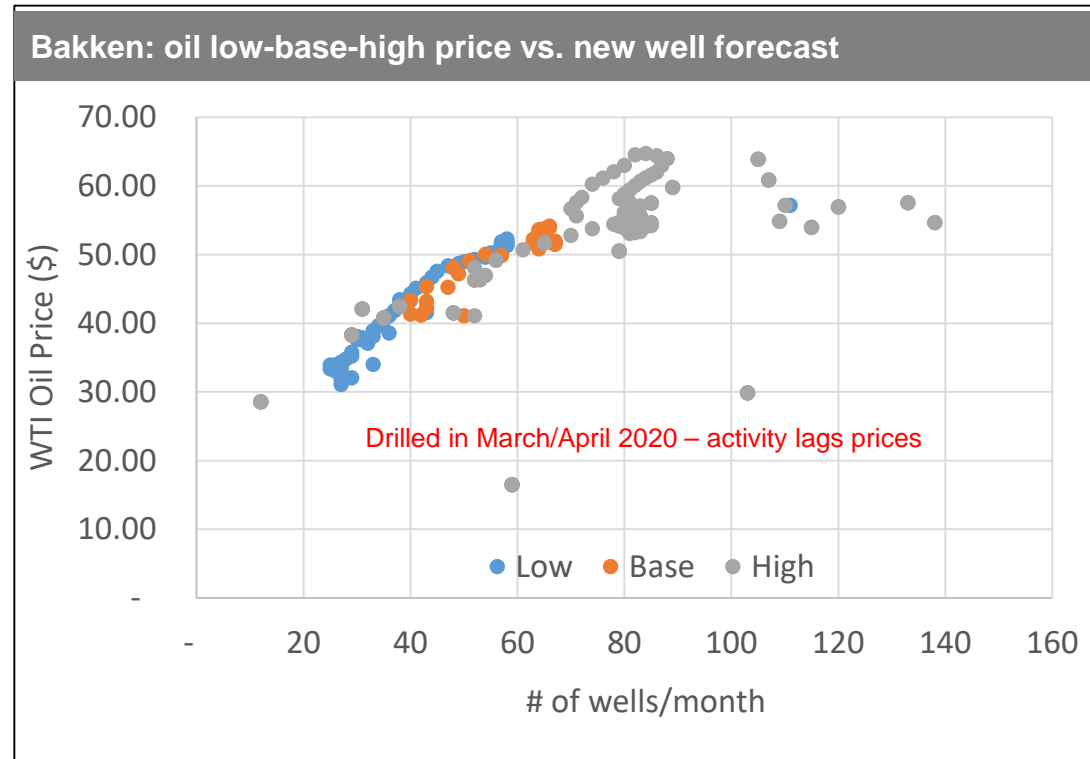
WTI Average Price Forecast (\$/bbl)			
Year	Low Price	Base Price	High Price
2020*	\$ 36.03	\$ 36.75	\$ 36.75
2021	\$ 33.05	\$ 45.53	\$ 52.31
2022	\$ 36.52	\$ 51.69	\$ 62.66
2023	\$ 43.13	\$ 51.77	\$ 57.75
2024	\$ 50.01	\$ 52.28	\$ 53.65
2025	\$ 52.27	\$ 54.16	\$ 54.63
2026	\$ 55.33	\$ 57.23	\$ 57.71
2027	\$ 58.39	\$ 60.29	\$ 60.76
2028	\$ 60.50	\$ 62.40	\$ 62.87

*Qtr 2 - 4

* Differential between dated Brent and WTI is \$2.70 in 2021, increasing to \$3.30 by 2028

- At the end of 2021, there is a \$26/bbl gap in forecast oil prices between the slow and fast recovery scenarios, compared to a \$23/bbl gap in September, suggesting a decrease in recovery uncertainty
- The slow recovery price forecast is expected to recover by a rate of approximately \$7/year through 2022 and 2024. The \$7/year recovery is somewhat lower than the ~\$10/year with overall historical precedent .
- The fast recovery scenario sees significant improvement for prices in the short term, although the longer-term outlook moderates and converges with the base case

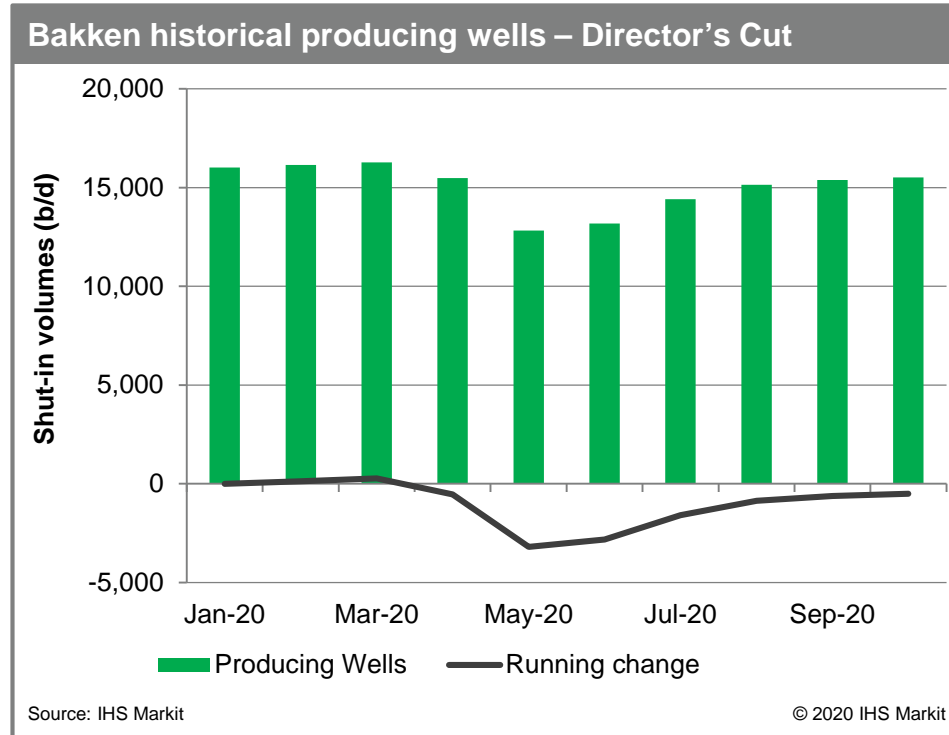
Price forecast, availability of quality locations combined with available cash flows will drive new well forecast for each of the price cases



- At \$30/bbl we would expect minimal drilling with only a small handful of wells being drilled
- Break even prices suggest that when the oil price reaches the mid to high \$50's per bbl, a large number of locations become economic and high levels of activity will occur, although the number of wells may be highly variable - the other factor is available cash flow which higher prices would allow to increase

- Total locations drilled – 15,686
- Current breakeven prices (WTI - \$/bbl)
 - Quintile 1 - \$35.88 – 1440 locations
 - Quintile 2 - \$45.20 - 4726 locations
 - Quintile 3 – \$55.92 – 7745 locations
 - Quintile 4 - \$62.84 - many
 - Quintile 5 – \$80.56 - many
- For the base case there are 1736 new wells along with about 717 DUC wells by the beginning of 2024
- The slow recovery forecast suggests that 758 new wells and 692 DUCs will be completed by the beginning of 2024, which is slightly more than the remaining number of quintile 1 wells
- For the high case there are 2542 new wells along with about 413 DUC wells by the beginning of 2024

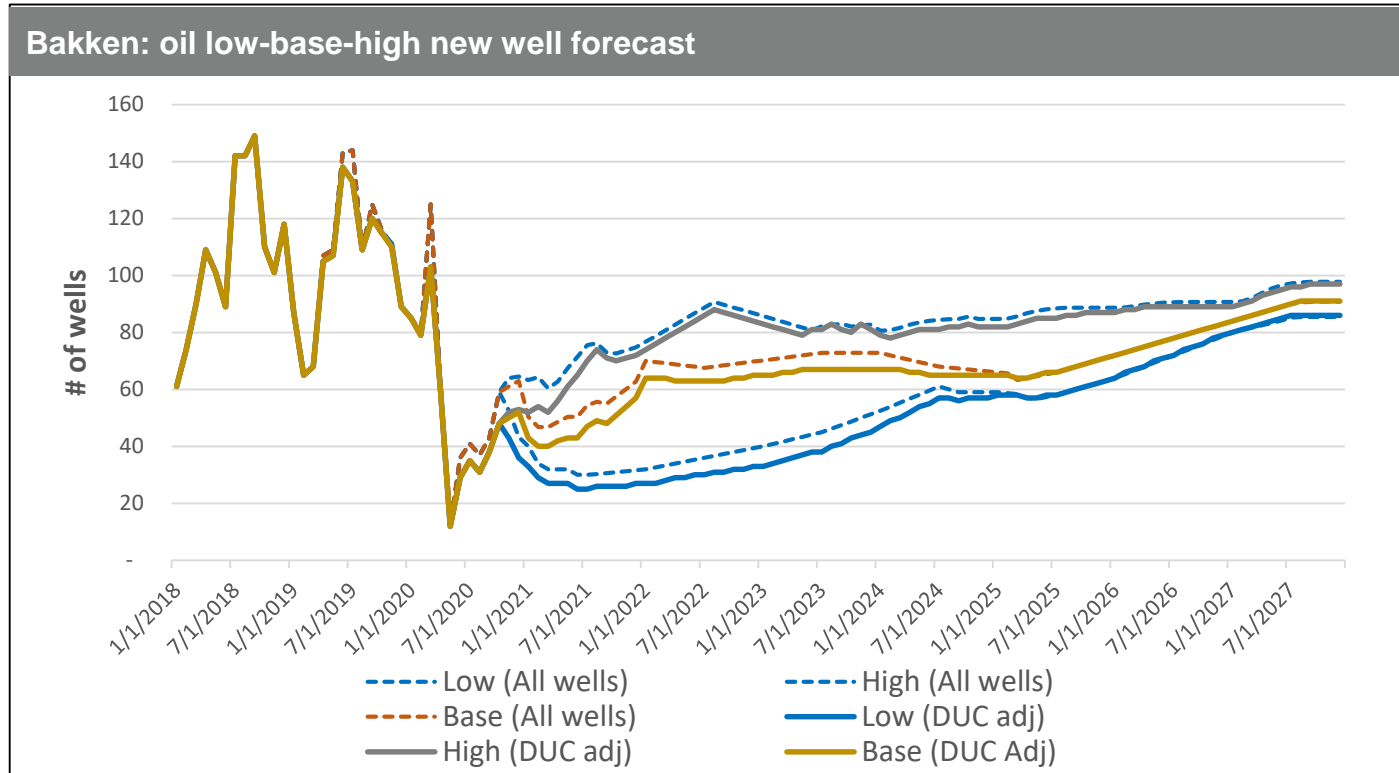
Bakken – 2020 activity for new wells, DUCs and producing wells suggest shut-in wells coming back on-line and high contributions of DUCs



2020 new well and DUC estimates		
	Total Jan - Oct 2020	Total 2020 (estimated)
IHS Completed Wells	614	700
IHS Forecast with DUC	576	700
IHS Forecast w/o DUC	405	450
IHS Used DUCs	171	250
Dir Cut New Wells	614	700
Dir Cut Total DUCs	300	300
Wells due to DC rig counts	437	483

- Since September, the average rig count has been 14
- In October 2020, there were 15,512 activity producing wells which is 95.3% of the number of wells producing in March, 2020
- The North Dakota Directors’ Cut indicates that in 2020 about 300 DUC wells have been completed and brought into service helping to increase production above previous forecasts. IHS believes that the number of net 2020 DUCs is around 250. This leaves about 780 remaining DUCs that will contribute to the new well forecast.
- In 2020 we estimate that ~250 (36%) of the ~700 new wells brought on-line were DUC wells

New well outlook: low-base-high cases (with DUC adjustments) underlay tax model forecast

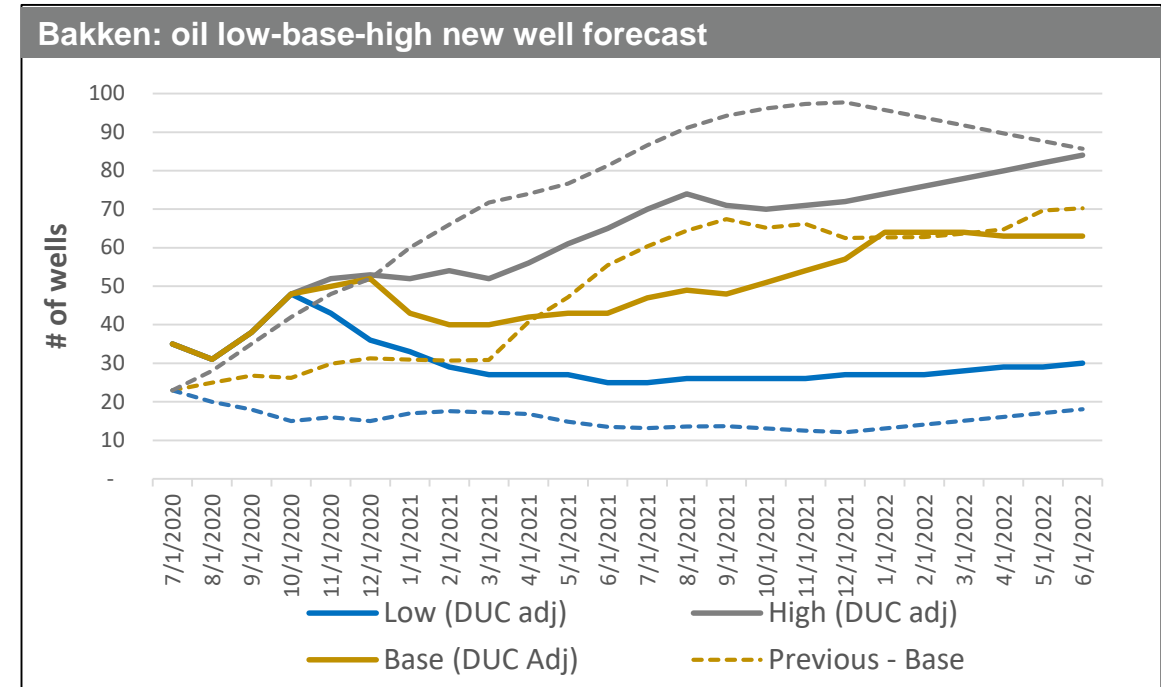
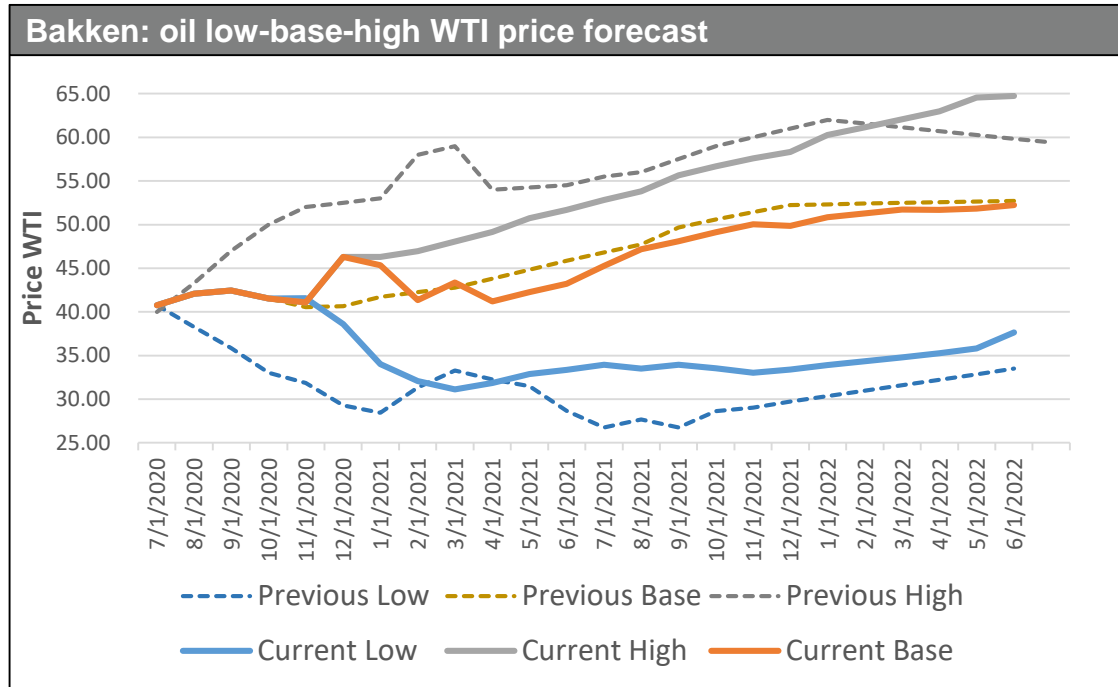


Low-base-high annual wells – adjusted and including DUCs			
Year	Low Price	Base Price	High Price
2020	598	621	624
2021	324	557	768
2022	359	763	990
2023	464	798	975
2024	648	788	970
2025	709	800	1,019
2026	860	930	1,064
2027	1,011	1,064	1,132
2028	1,040	1,137	1,220

- To better reflect capital expense, well counts have been adjusted downward for the tax forecast (DUC adj) by using the formula:
 - new drills x 1 + DUCs x 0.65 = DUC adj

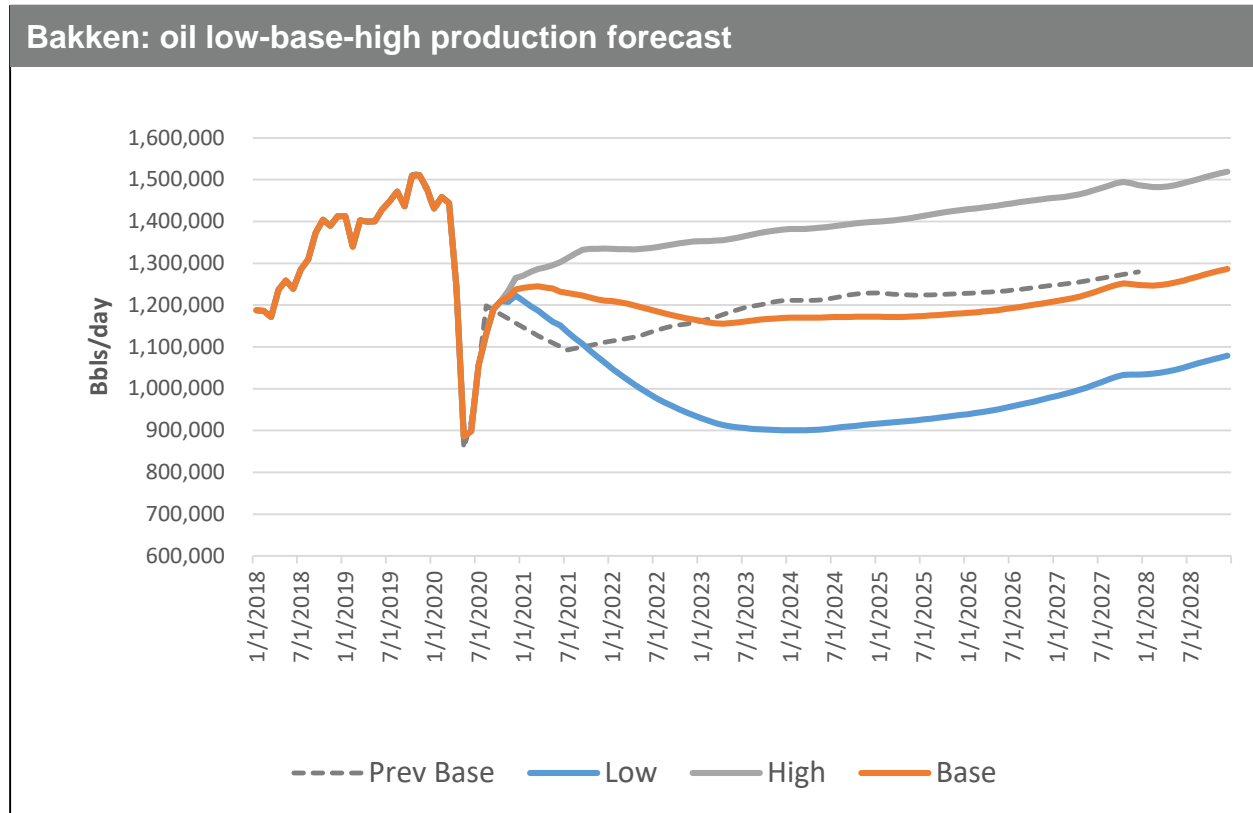
- The low and base cases will draw heavily on the 780 remaining DUC wells, but these will be exhausted by mid-2025 –
- From 2021 to through 2023, DUC wells contribute about 28% of total wells for the base case and 47% of the wells for the low case
- Base case wells while currently at near 60 (including DUCs) are likely to sag later this year, recovering by the beginning of 2025 as we see recovery occurring in late 2021

Adjustments in price forecast and well forecast since September



- Narrowing range between high and low-price cases has narrowed the outlook for drilling
- Much higher recent and near-term contributions from DUC wells has increased recent historical new wells
- Base case longer-term price recovery pushed out to the second half of 2021, which will lower well counts in late 2021
- Slight decrease in long-term outlook for WTI has slightly lowered long-term base case

Oil production is forecast to recover more in the high and base cases while production will decrease if prices remain low

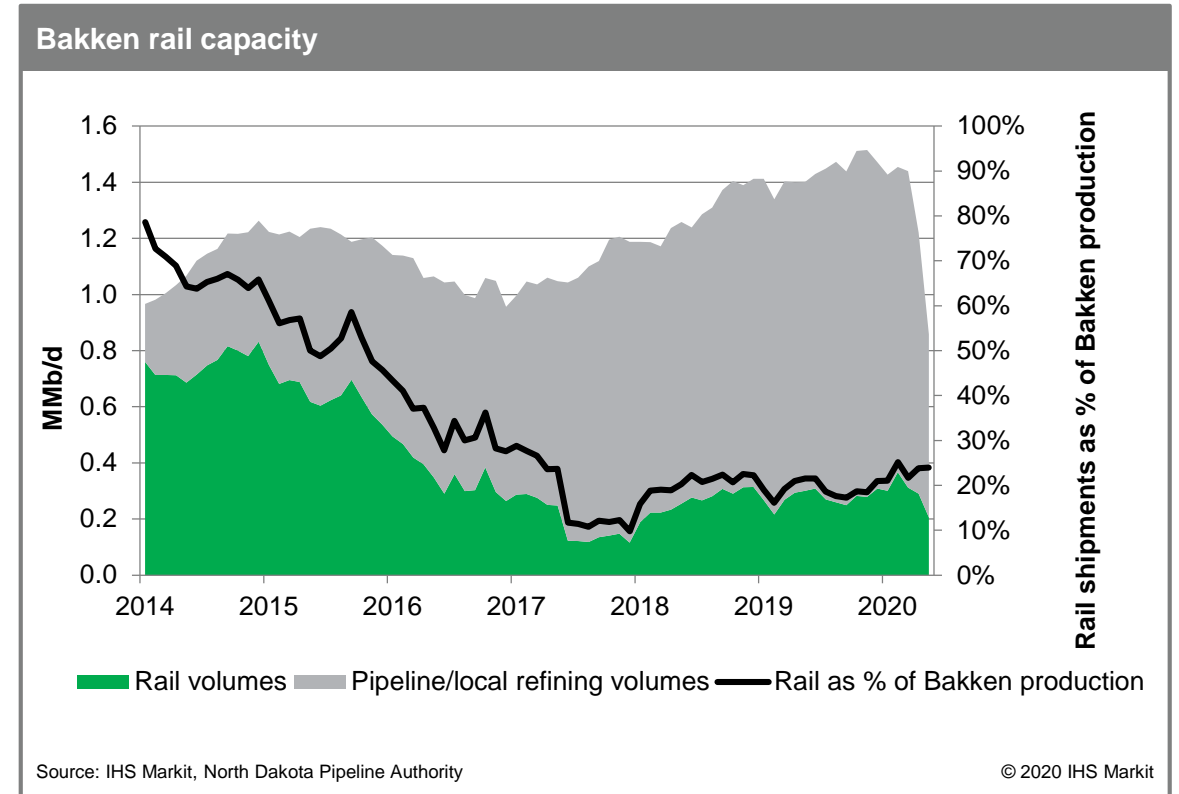
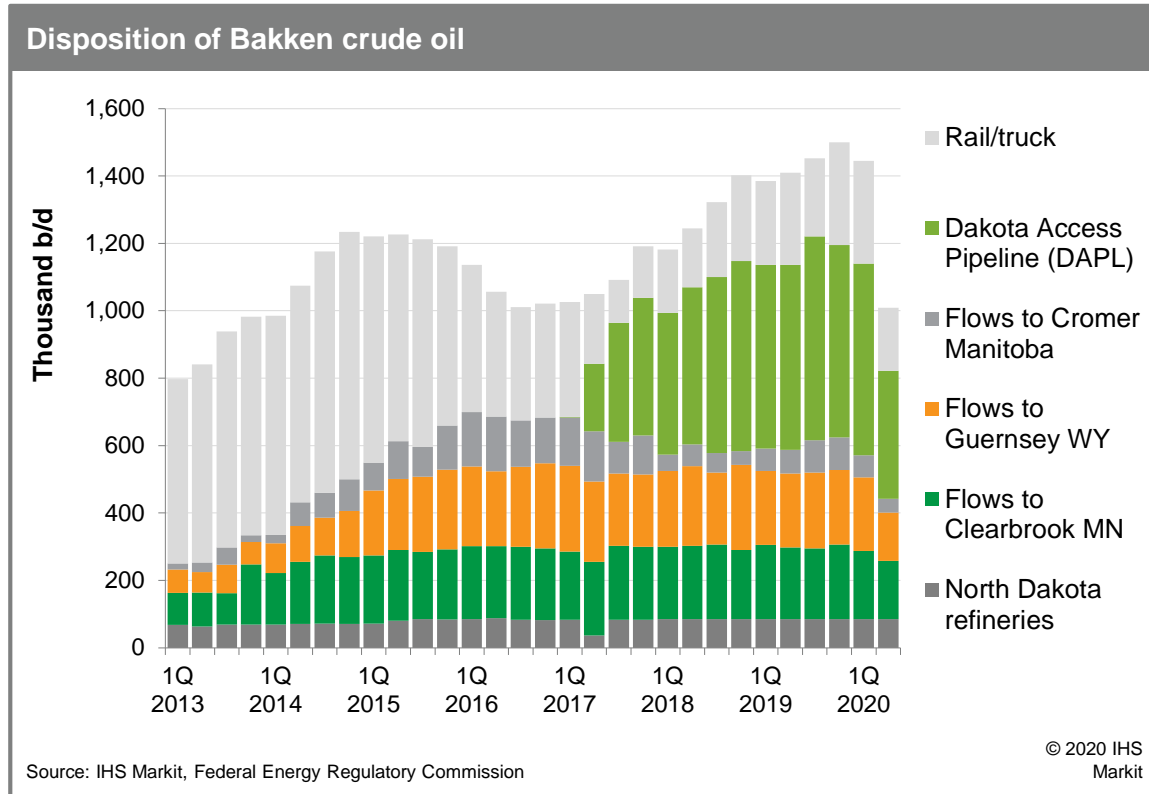


- Generally, it takes over 60-65 new wells coming on-line to maintain production at 1.1 MMbbls/day
- Price sensitivity suggests that a ~200,000 bbl/day difference occurs between each case

Important take-aways

- Even with low rig counts, the current surge in production is due to shut-in wells coming back on-line and the large contributions of DUC wells
- While DUCs will make up a large portion of the new-well outlook, they contribute only about 65% of the revenue of newly drilled and completed wells
- Since September, the range of low to high price outlooks and consequent drilling has narrowed, and is expected to continue to narrow in the future
- The current WTI prices in the high \$40/bbl range are projected to dip in the next few months and then recover later this year
- The announced cuts by Saudi Arabia of the past week point to a more optimistic sentiment going forward

Possible Dakota Access pipeline closure would negatively impact Bakken producers with higher differentials due to more rail transport



- Pipeline could be forced to shut down by court order in 2021
- Some DAPL barrels could shift to pipeline systems moving crude through Rockies, the rest would move by rail
- Bakken producers would likely have to accept lower wellhead prices for their crude in order to cover the higher transportation cost of moving more crude by rail

North Dakota Agriculture Prospects

January 2021

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Farms Consolidation Continues



US cropland shifting to larger farms

US: Change in Number of Cropland Acres by Farm Size					
Item	2002	2007	2012	2017	Chng 2002-2017
1 to Acres	249,242	291,828	285,875	360,990	111,748
10 to 49 Acres	4,111,751	4,296,973	4,115,755	4,068,888	-42,863
50 to 69 Acres	2,468,654	2,451,606	2,457,020	2,183,352	-285,302
70 to 99 Acres	4,649,652	4,500,846	4,415,577	3,925,972	-723,680
100 to 139 Acres	6,114,934	5,775,871	5,737,126	5,181,887	-933,047
140 to 179 Acres	7,273,320	6,590,706	6,341,110	5,803,430	-1,469,890
180 to 219 Acres	6,217,966	5,588,532	5,610,170	5,008,450	-1,209,516
220 to 259 Acres	6,455,901	5,730,418	5,523,418	5,014,346	-1,441,555
260 to 499 Acres	34,088,945	30,444,392	28,780,760	26,950,862	-7,138,083
500 to 999 Acres	56,659,861	51,556,447	49,471,560	45,887,053	-10,772,808
1,000 to 1,999 Acres	72,787,584	69,844,694	68,663,555	66,222,703	-6,564,881
2,000 or more Acres	101,619,442	122,535,288	133,562,674	149,433,925	47,814,483
Total	302,697,252	309,607,601	314,964,600	320,041,858	17,344,606
Source: IHS Markit			© 2021 IHS Markit		

- US cropland has increased by 17.3 million acres from 2002 to 2017.
- Largest farms with 2,000 acres or more have increased by 47.8 million acres during the same time period. These farms increased their share of total cropland from 34% in 2002 to 47% in 2017. This trend of increasing consolidation is expected to continue.
- Farm size from 10 acres to 1,999 acres all showed decreases from 2002 to 2017.

North Dakota cropland shifting to larger farms

North Dakota: Change in Number of Cropland Acres by Farm Size					
Item	2002	2007	2012	2017	Chng 2002-2017
1 to Acres	345	476	461	889	544
10 to 49 Acres	31,924	37,058	39,602	36,985	5,061
50 to 69 Acres	29,084	29,764	37,287	26,040	-3,044
70 to 99 Acres	66,081	77,635	79,283	60,538	-5,543
100 to 139 Acres	95,827	107,257	103,923	79,621	-16,206
140 to 179 Acres	271,739	311,509	302,564	218,351	-53,388
180 to 219 Acres	114,659	125,983	120,373	92,153	-22,506
220 to 259 Acres	135,453	165,645	137,258	104,174	-31,279
260 to 499 Acres	1,114,352	1,238,939	977,865	783,282	-331,070
500 to 999 Acres	2,553,071	2,394,008	1,971,167	1,549,416	-1,003,655
1,000 to 1,999 Acres	6,348,159	5,650,208	4,500,189	3,976,361	-2,371,798
2,000 or more Acres	15,745,783	17,388,698	18,877,268	21,023,866	5,278,083
Total	26,506,477	27,527,180	27,147,240	27,951,676	1,445,199

Source: IHS Markit © 2021 IHS Markit

- ND cropland has increased by 1.4 million acres from 2002 to 2017.
- Largest farms with 2,000 acres or more have increased by 5.3 million acres during the same time period. These farms increased their share of total cropland from 59% in 2002 to 75% in 2017.
- Farm sizes from 50 acres to 1,999 acres all showed decreases in area from 2002 to 2017.
- This trend follows the US trend in cropland and is expected to continue.

US farm income and balance sheet outlook



Cash receipts from US agriculture are expected to grow during the forecast period

US Cash Receipts, Government Payments, Net Cash & Farm Income and Cash Expenses(Billion \$)									
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F
Total Cash Receipts	377.4	358.5	370.4	371.4	370.6	368.5	370.1	368.6	384.8
Livestock Cash Receipts	189.5	162.7	175.6	176.3	176.0	165.8	167.1	172.5	183.9
CropCash Receipts	78.3	63.7	66.9	67.0	66.2	62.5	60.0	62.4	63.6
Government Payments	10.8	13.0	11.5	13.7	22.4	36.5	11.3	12.8	11.1
Gross Cash Income	422.6	399.4	413.2	414.2	427.8	437.5	409.9	410.1	424.8
Cash Expenses	315.8	303.8	311.9	311.4	317.5	316.1	315.1	313.5	318.4
Net Cash Income	106.8	95.6	101.3	102.8	110.3	121.5	94.9	96.6	106.4
Net Farm Income	81.6	62.3	75.1	81.3	83.7	107.4	81.3	76.5	86.8

Source: IHS Markit © 2021 IHS Markit

- US cash receipts are expected to grow during forecast period based on expected higher livestock cash receipts. But cattle and calves receipts are expected to increase only marginally.
- Farm expenses are expected to remain relatively flat during the forecast period.
- Net cash income is expected to drop in the forecast period because of lower government payments.

Government payments to decrease in forecast period

- Direct Government payments are a record in 2019/20 and 2020/21 because of government aid relating to the trade wars and COVID-19. These payments are expected to drop sharply in the forecast period as a result of expected lower government payments in the forecast period.
- Market Facilitation Program funding:
 - 2018 - \$8.59 billion; \$1.2 billion food purchases; and \$200 million market promotion.
 - 2019 - \$14.48 billion; \$1.14 billion food purchases; and \$100 million market promotion.
- Coronavirus Food Assistance Program funding in 2020:
 - CFAP1: \$19 billion with \$16 billion direct payments and \$3 billion food purchase aid.
 - CFAP2: \$13.2 billion.

US farm balance sheet to continue strong in forecast period

US Farm Balance Sheet									
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F
Farm Assets (bil \$)	2,880	2,914	3,006	3,027	3,075	3,077	3,122	3,189	3,260
Farm Liabilities (bil \$)	357	374	390	402	419	432	430	434	443
Farm Equity (bil \$)	2,523	2,540	2,616	2,625	2,657	2,645	2,691	2,755	2,817
Debt/Equity Ratio	0.14	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16
Debt/Asset Ratio	0.12	0.13	0.13	0.13	0.14	0.14	0.14	0.14	0.14

Source: IHS Markit © 2021 IHS Markit

- Farm assets and equity are forecast at a record on 2023/24.

Oilseeds



Higher prices lead to expanded plantings but share of world exports flat to declining

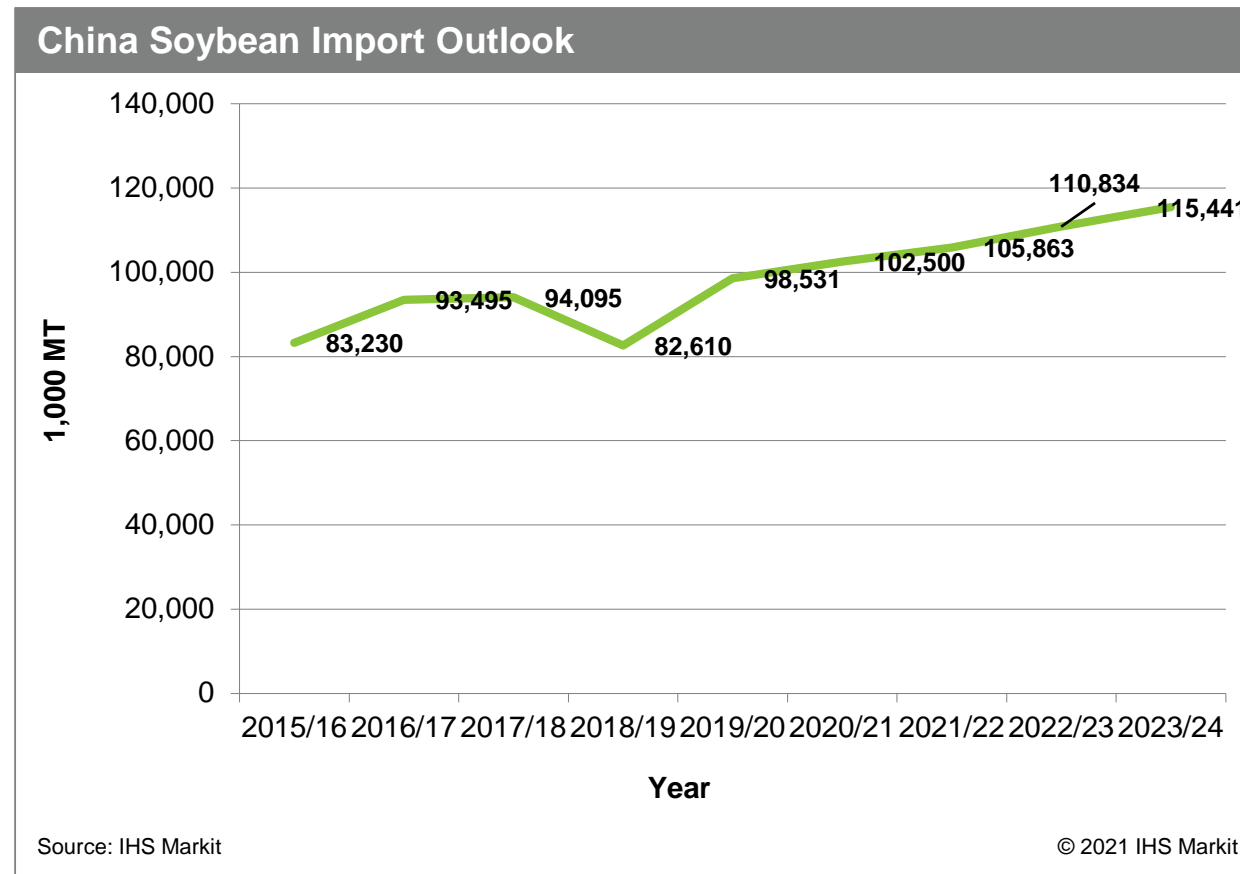
US Soybean Prices, Net returns, Acres, Stocks and Share of World Production and Exports									
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F
Marketing Year Average Farm Price (\$/B	8.95	9.47	9.33	8.48	8.60	11.15	10.95	9.23	9.94
Net returns (\$/Acre)	264.00	326.48	297.56	263.78	240.06	394.06	398.82	309.31	345.96
Acreage (mil acres)	82.7	83.5	90.2	89.2	76.1	83.1	89.4	85.8	85.1
Production (mil bu)	3,926	4,296	4,412	4,428	3,552	4,146	4,598	4,447	4,436
Exports (mil bu)	1,936	2,170	2,139	1,757	1,684	2,250	2,160	2,112	2,166
US Ending Stocks (mil bu)	197	298	430	901	515	112	254	415	497
US Percent Share of World Production	33.9	33.4	35.0	33.4	28.7	31.4	31.9	31.0	30.6
US Percent Share of World Exports	40.8	38.4	35.8	32.1	30.4	36.6	32.1	32.7	32.6

Source: IHS Markit © 2021 IHS Markit

- Soybean prices are record high in 2020/21 and expected to continue high in 2021/22 due to lower stocks. Net returns in those years are also high. Prices are expected to drop in ensuing forecast years as stocks build.
- The expectation of normal / trend yields in South America and higher area point to sharp growth in Brazil's production which will continue to erode US share of world soybean production and exports.
- North Dakota soybean area declined from 7.1 million acres in 2017 to 5.6 million acres in 2019. Area though increased to 5.75 million acres in 2020 and is likely to follow the US area forecast based on higher prices.

China soybean imports to continue to grow

- China soybean imports are forecast to increase to a record in 2023/24.
- But competition from Brazil will be strong. Brazil's exports could increase by more than 10.0 MMT from 2020/21 to 2023/24.



Canola acreage and production to be relatively flat in forecast period

- US canola planted area was down 188,000 acres from 2019/20 to 2020/21 due to prevent plant. Area is expected to rebound in 2021/22 and be relatively flat through the rest of the forecast period.
- US farm canola prices are expected to range between 15 cents per pound to 17 cents during the forecast period.
- The ND canola acreage in 2020/21 was down by 250,000 acres in 2020/21. As a result, ND production was down 7% in 2020/21. But area and production is expected to rebound in 2021/22 and follow the US trend for the rest of the forecast period.

Wheat



US wheat situation overall relatively stable

US Wheat Prices, Net Returns, Acres, Stocks and Share of World Production and Exports									
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F
Marketing Year Average Farm Price (\$/B	4.89	3.89	4.72	5.15	4.60	5.60	5.55	4.77	4.98
Net returns (\$/Acre)	74.77	77.95	63.07	88.17	79.54	119.69	117.91	76.13	85.96
Acreage (mil acres)	55.0	50.1	46.1	47.8	45.5	44.5	45.4	44.90	44.81
Production (mil bu)	2,062	2,309	1,741	1,885	1,932	1,828	1,909	1,881	1,890
Exports (mil bu)	778	1,051	912	937	966	1,000	950	884	884
US Ending Stocks (mil bu)	976	1,181	1,099	1,080	1,028	884	851	815	785
US Percent Share of World Production	7.6	8.3	6.2	7.0	6.9	6.4	6.8	6.6	6.6
US Percent Share of World Exports	12.3	15.6	13.5	14.7	13.7	14.2	13.9	12.8	12.7

Source: IHS Markit Global Trade Atlas © 2021 IHS Markit

- US wheat acreage to remain fairly flat over forecast period.
- Lower stocks and production in 2020/21 helped boost prices in 2020/21 and 2021/22. Prices are expected to drop in the rest of the forecast period as stocks are expected to rebuild.
- World wheat exports are expected to increase marginally during forecast period but still be below 2019/20 exports. US to face greater competition from EU exports which are likely to rebound sharply.
- ND is the top wheat producing state followed by Kansas. The 2020 ND wheat crop was down 3% from the previous year based on smaller area. ND wheat plantings are forecast to follow the US trend during the forecast period.

Corn and Other Crops



US corn situation relatively stable

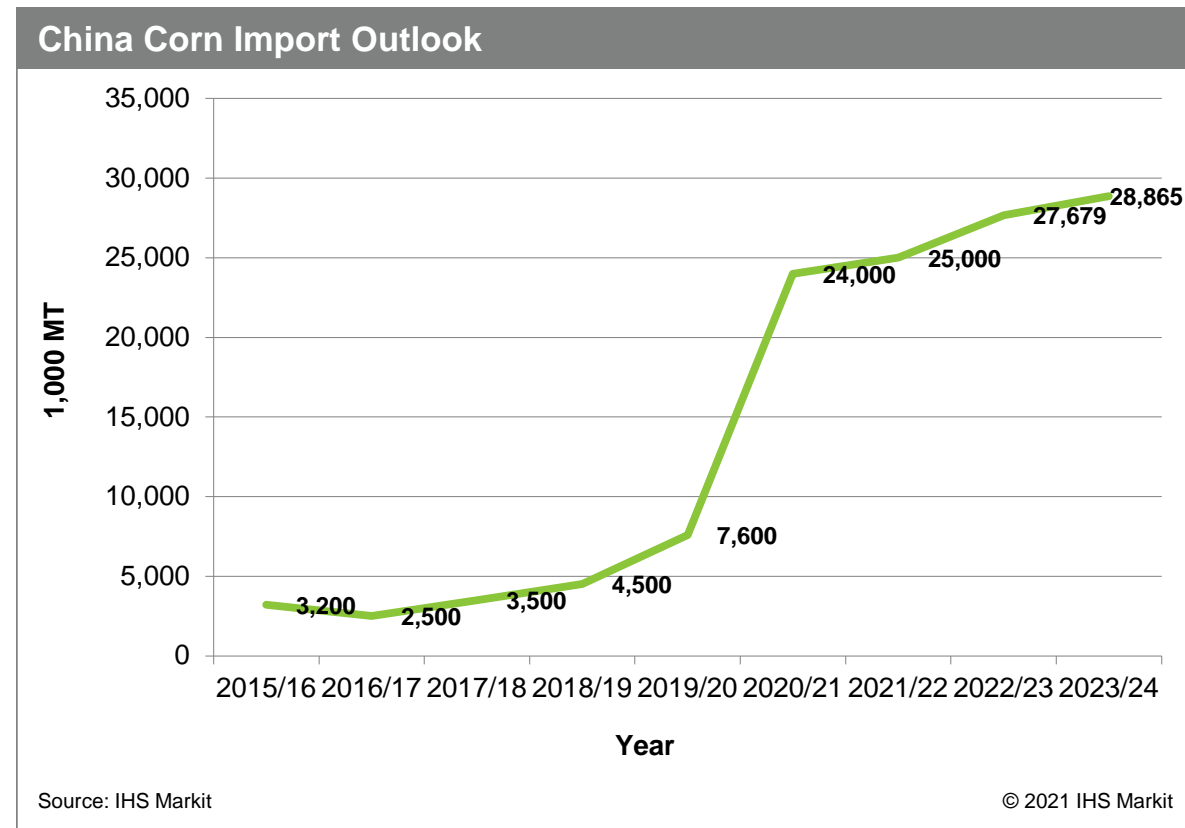
US Corn Prices, Net Returns, Acres, Stocks and Share of World Production and Exports									
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F
Marketing Year Average Farm Price (\$/B	3.61	3.61	3.40	3.60	3.55	4.20	4.10	3.33	3.64
Net returns (\$/Acre)	240.75	256.49	236.52	268.75	209.15	360.48	318.12	215.12	269.99
Acreage (mil acres)	88.0	94.0	90.2	88.9	89.7	91.3	91.2	89.8	86.7
Production (mil bu)	13,602	15,148	14,609	14,340	13,620	14,404	15,156	15,106	14,730
Exports (mil bu)	1,898	2,293	2,438	2,066	1,778	2,800	2,500	2,644	2,802
US Ending Stocks (mil bu)	1,737	2,293	2,140	2,220	1,994	1,463	1,548	1,670	1,360
US Percent Share of World Production	34.0	34.1	34.4	32.4	31.0	32.6	32.8	32.2	31.4
US Percent Share of World Exports	40.1	36.3	41.8	29.0	26.5	35.6	32.1	34.3	35.1

Source: IHS Markit Global Trade Atlas © 2021 IHS Markit

- US corn acreage to increase sharply in 2021/22 due to higher prices but decline in the rest of the forecast period.
- US corn prices increased in 2020/21 and are expected to decline during the rest of the forecast period.
- Farmer net returns per acre increased in 2021/22 because of higher prices but are expected to decline in the rest of the forecast period following the expected decline in prices.
- US share of world exports is expected to hold steady partly due to potential increase in exports to China.
- ND area planted and prices are expected to follow the US trend.

Outlook for record China corn imports

- China corn imports increased sharply in 2020/21 because of the US-China trade deal and are forecast to continue to grow to 2023/24.
- Competition from Brazil to remain strong as Brazil exports to the world could increase by more than 10 million tonnes during the forecast period.



Other crops

- US hay production is expected to be flat in the forecast years with prices declining slightly.

US Hay Prices and Production									
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F
All Hay Price (\$/ST)	145.00	129.00	142.00	166.00	163.00	165.00	152.71	153.40	152.20
Alfalfa Price (\$/ST)	165.83	138.33	145.33	174.58	184.17	179.61	170.58	166.21	165.53
Production (mil ST)	134.7	134.1	128.2	123.6	128.9	127.7	130.1	128.4	128.7
Source: IHS Markit						© 2021 IHS Markit			

- ND 2019 hay production was 4.1 million tons, down 300,000 tons from 2018. Much of this hay is used on farm to support the beef industry.
- ND Sugar beet production in 2020/21 was 5.4 million tons, up 1.0 million tons from the previous year weather reduced harvest based on improved yields. ND is the number 3 sugar beet producing state. The number one producing state is Minnesota.
- ND is the top producer of dry edible beans in the US, typically accounting for 25% or more of total production. Total production for the state in 2020 came in at 14.6 million CWT based on higher yields and nearly double the weather reduced harvest in 2019.

Beef Sector



US Cattle & Beef Sector

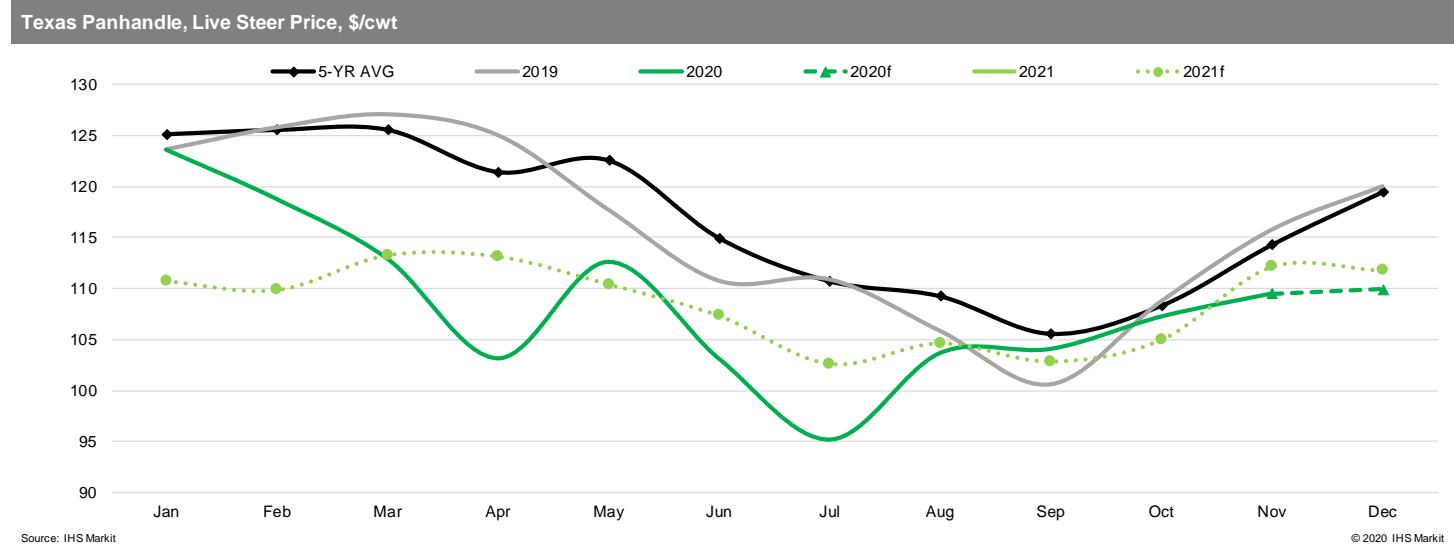
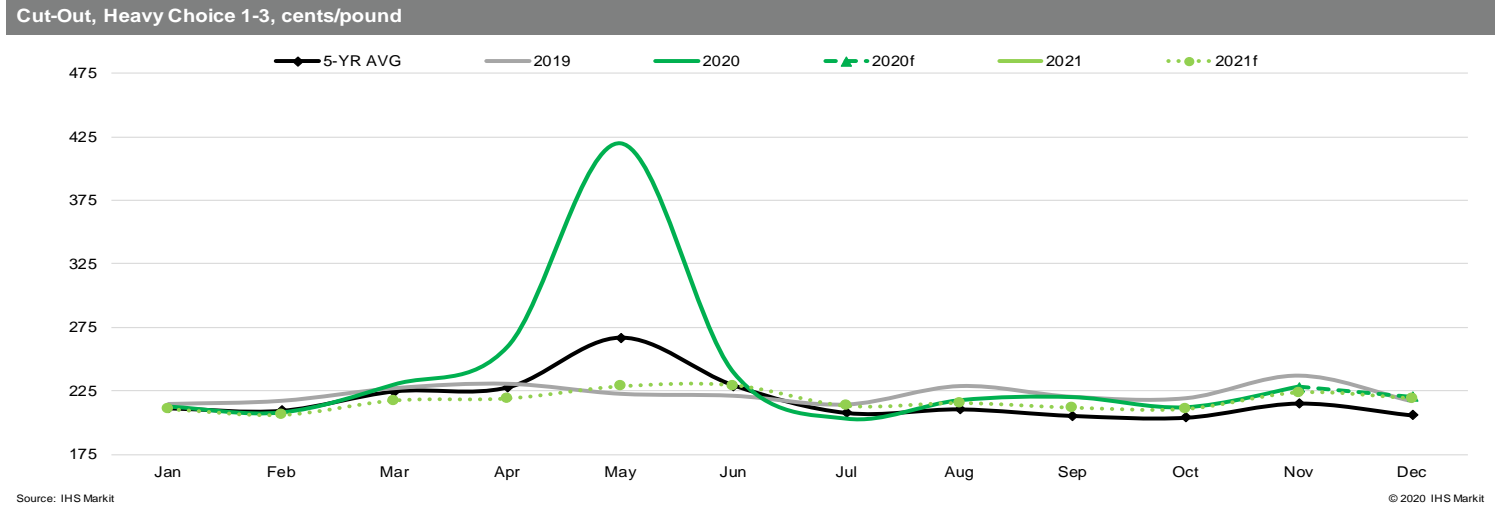
US Cattle and Beef Sector									
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F
Cattle									
Beef Cow Inventories (mil head)	29.3	30.2	31.2	31.5	31.8	31.3	30.9	30.4	30.2
Boxed Beef Cutout	236.86	206.77	209.90	213.97	222.62	237.52	214.15	221.74	230.17
Cow-Calf Returns (Dollars per Cow)	960	654	667	674	625	621	523	587	618
Beef									
Beef Retail (Dollars per pound)	6.29	5.96	5.91	5.92	6.04	6.39	6.26	5.98	6.22
Production (mil lbs)	23,760	25,221	26,228	26,867	26,989	27,414	28,188	27,827	27,102
Imports (mil lbs)	3,371	3,015	2,993	2,999	3,036	3,282	3,291	2,992	2,952
Exports (mil lbs)	2,265	2,556	2,860	3,155	3,020	3,008	3,100	2,973	2,829
Total Domestic Use (mil lbs)	24,773	25,673	26,371	26,665	27,009	27,659	28,369	27,840	27,247

Source: IHS Markit

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- COVID-19 has caused disruptions for the US meat industry. The supply chain has been disrupted, consumers have found limited availability of some meats, and consumers have faced higher prices. The ability of packing plants to harvest livestock and poultry in a timely manner was impacted.
- US Boxed beef cutout and cow-calf returns are expected to decline during the forecast period.
- ND Cattle ranchers are slowly rebuilding their herd Inventory of all cattle and calves as of January 1, 2020 totaled 1.90 million head, up 4% from a year ago. Cash receipts from ND cattle marketings totaled \$983 million in 2019, down 5% from the previous year's marketings.

Short-term outlook for cut-out and steer prices



Appendix

Biennium forecast comparison

Revenue Source	2019-21 Biennium Forecast (December)	2019-21 Biennium Forecast (September)	Difference (level)	Difference (%)
Sales and use tax	1,838,773,846	1,826,825,051	11,948,795	0.7%
Total taxable sales	39,321,819,445	36,286,404,210	3,035,415,236	8.4%
Motor vehicle excise tax	244,393,106	226,192,324	18,200,782	8.0%
Individual income tax				
Total individual income tax collections	1,037,157,241	1,009,034,287	28,122,954	2.8%
Transfer to refund reserve accounts	(250,800,000)	(243,800,000)	(7,000,000)	2.9%
Net individual income tax collections	786,357,241	765,234,287	21,122,954	2.8%
Corporate income tax				
Total corporate income tax collections	256,921,068	197,640,874	59,280,194	30.0%
Transfer to refund reserve accounts	(60,000,000)	(44,000,000)	(16,000,000)	36.4%
Net corporate income tax collections	196,921,068	153,640,874	43,280,194	28.2%

Revenue Source	2021-23 Biennium Forecast (December)	2021-23 Biennium Forecast (September)	Difference (level)	Difference (%)
Sales and use tax	1,897,250,392	1,888,021,935	9,228,457	0.5%
Total taxable sales	41,560,797,201	38,492,801,283	3,067,995,918	8.0%
Motor vehicle excise tax	259,564,643	220,561,100	39,003,543	17.7%
Individual income tax				
Total individual income tax collections	1,069,535,809	1,019,059,176	50,476,632	5.0%
Transfer to refund reserve accounts	(253,000,000)	(242,000,000)	(11,000,000)	4.5%
Net individual income tax collections	816,535,809	777,059,176	39,476,632	5.1%
Corporate income tax				
Total corporate income tax collections	255,707,324	241,130,710	14,576,614	6.0%
Transfer to refund reserve accounts	(68,000,000)	(65,000,000)	(3,000,000)	4.6%
Net corporate income tax collections	187,707,324	176,130,710	11,576,614	6.6%

2020Q3 comparison

2020Q3 - actual compared to September forecast				
	Actual	September forecast	Difference (level)	Difference (%)
Sales and use tax	219,893,943	203,268,727	16,625,216	8.2%
Total taxable sales	4,719,505,129	4,038,337,296	681,167,833	16.9%
Motor vehicle excise tax	33,967,835	27,359,190	6,608,645	24.2%
Total individual income tax collections	157,869,877	146,445,650	11,424,227	7.8%
Total corporate income tax collections	54,448,542	10,965,740	43,482,802	396.5%

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