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March 16, 2021

# North Dakota Revenue Outlook

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IHS Markit

Presentation



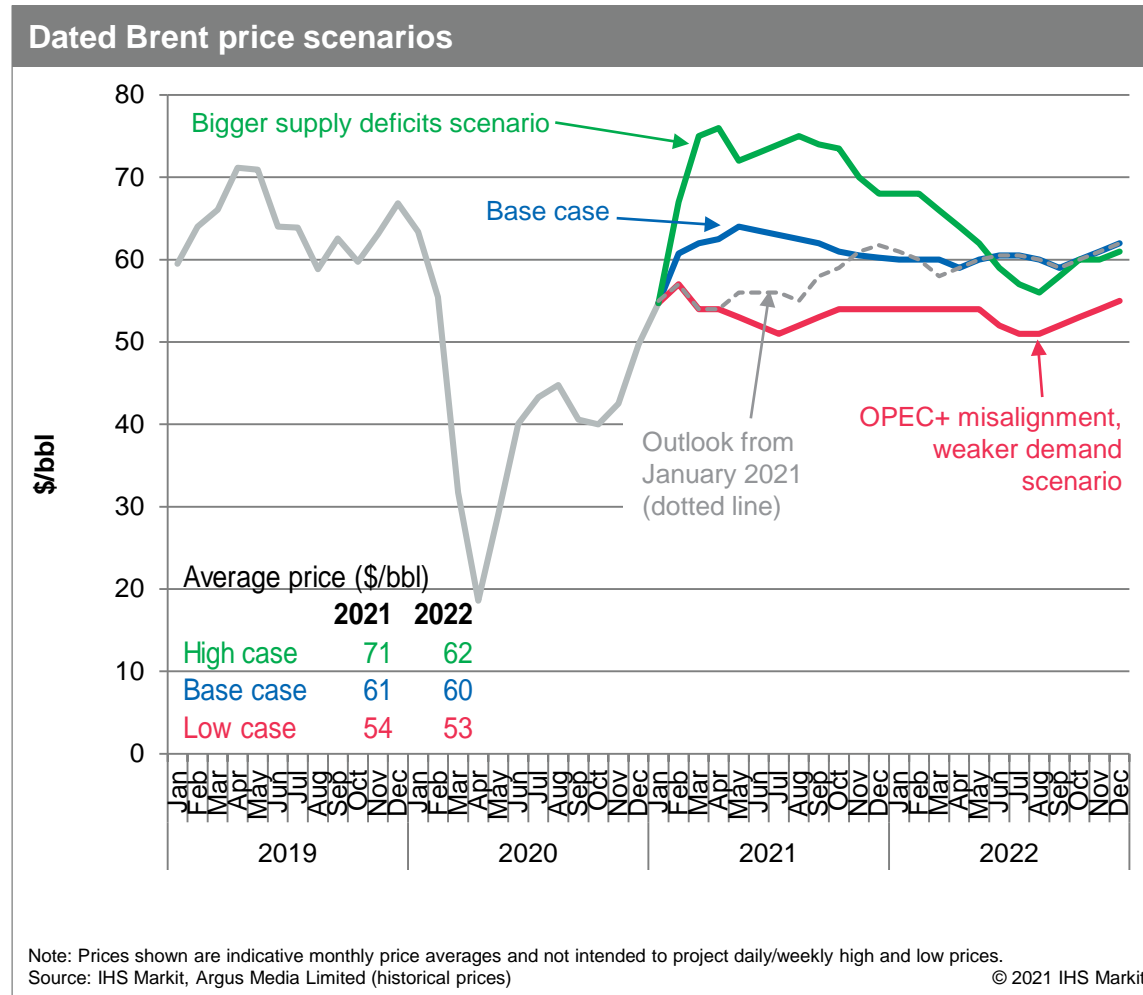
# North Dakota Energy Outlook

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## Executive summary for Q1 2020 long term global outlook – key messages

- **Saudi Arabia's production level will be a key factor in determining if there is a severe oil price spike or not**
  - Higher world total liquids demand is likely to occur in 2021, than previously forecasted due to Covid-19 vaccination roll-outs and reduced cases being reported
  - 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 through May 2021 bodes well for prices; however, there is still ~4.5 Mmbbls being withheld from the market
- **Global upstream spending could be lower than anticipated in the years ahead, leading to a tighter market.**
  - A financial shift by upstream companies to return more cash to investors is likely to constrain upstream spending, with US production expected to grow by 400,000 bbls/day through 2021.
  - 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.**
  - Brent is likely to average \$61/bbl in 2021, up \$4/bbl from the previous forecast, but the longer-term forecast is for only modest increases
  - WTI prices will average about \$2.00 to \$3.00 lower, averaging \$59/bbl in 2021, but continuing to track lower than Brent over the longer-term, averaging in the low to upper \$50/bbl range through 2026
- **Changes in the administration will have effect on world oil markets,**
  - The administration will pursue policies that may increase Iranian oil supply by up to 1.5 Mmbbls/day, if the 2015 nuclear deal is reinstated.
  - 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
  - Renewable energy sources and plug-in electric vehicle (PEV) sales will receive a boost which may affect long-term oil demand

# In the base case, Dated Brent averages \$63/bbl in first half of 2021 up from \$55/bbl in the previous forecast



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

- After a 3.7% contraction in 2020, global GDP grows 5.0% in 2021 and 4.2% in 2022.
- Oil demand is at 93–94 MMb/d in fourth quarter 2020 and first quarter 2021. Global oil demand grows 5 MMb/d by third quarter 2021, driven by a broad vaccination campaign.
- After production cuts in first quarter 2021, Saudi Arabia raises output along with other OPEC+ producers during the rest of 2021.
- US crude oil production grows 0.3 MMb/d between the first and fourth quarters of 2021 and 2022 each—far less than the 1.0 MMb/d growth during the same period of 2019.

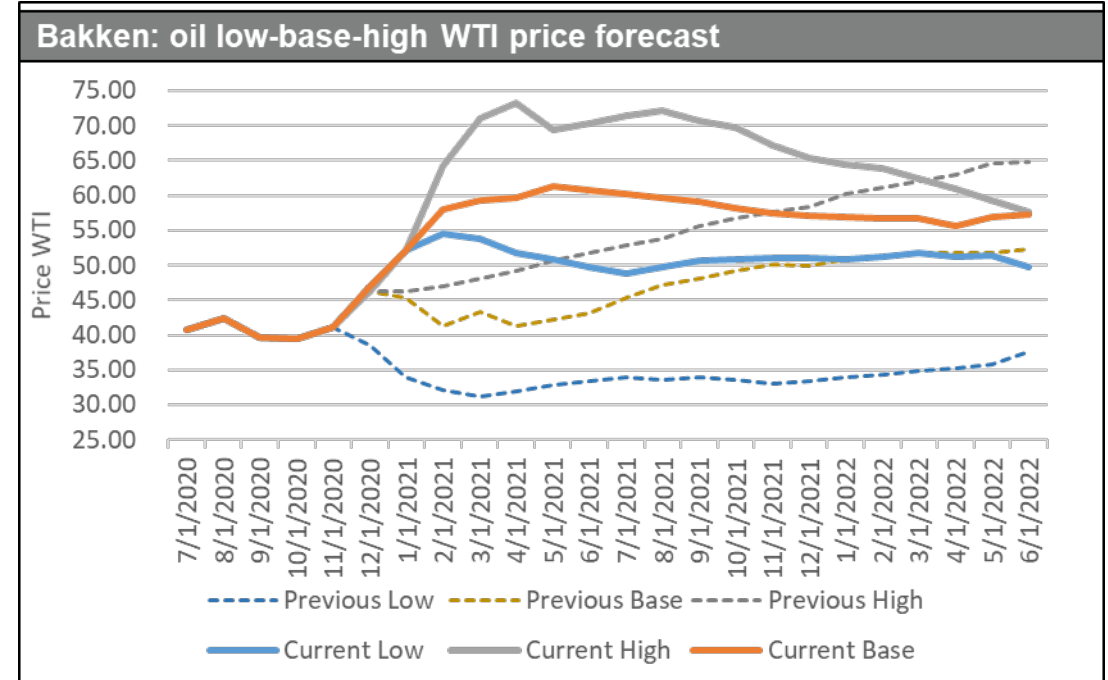
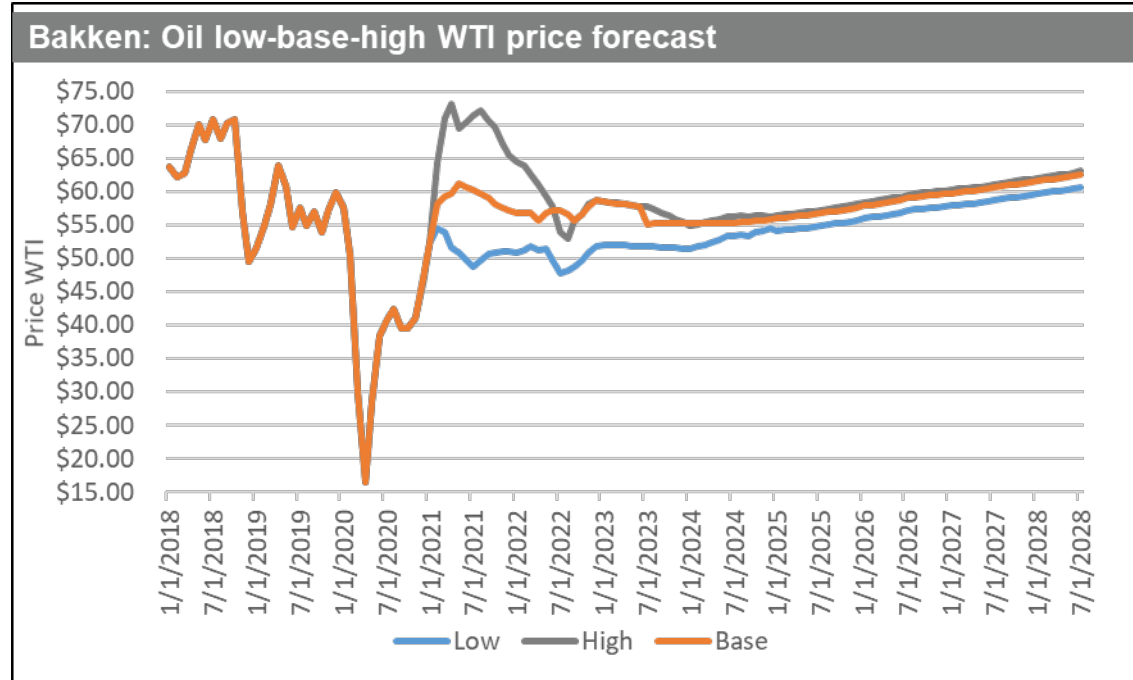
## High-case scenario: Bigger supply deficits

- COVID-19 is contained faster than in the base case owing to effective rapid vaccination.
- A spike in demand growth brings prices to \$75/bbl by second quarter 2021, prompting supply response—first from OPEC+, but later—from the United States, resulting in prices dropping below \$60 in 2022.

## Low-case scenario: OPEC+ misalignment and weaker demand

- Demand recovery slows as vaccination campaigns encounter bottlenecks, while new COVID-19 strains hobble economic and oil demand recovery.
- Most OPEC+ producers increase output, while Saudi Arabia keeps its production constrained, defending \$50/bbl oil prices.

# Short term price forecasts for all three cases have risen dramatically within the past three months and we are seeing the upside of previous projections

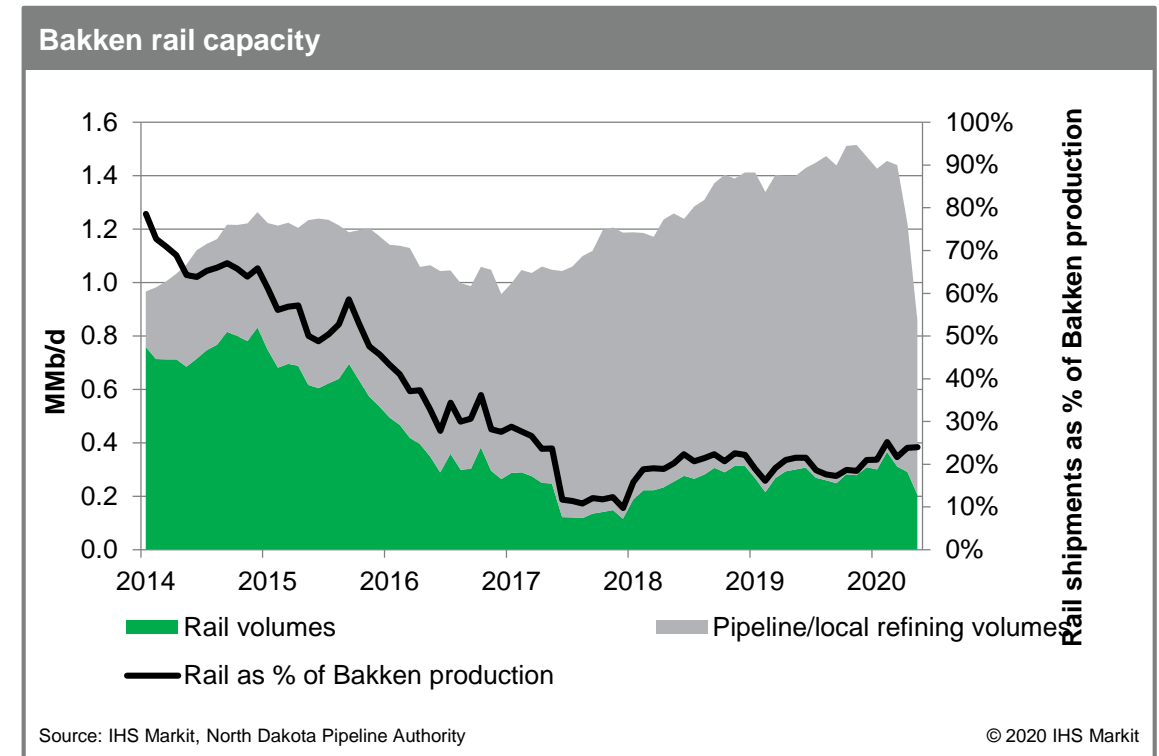
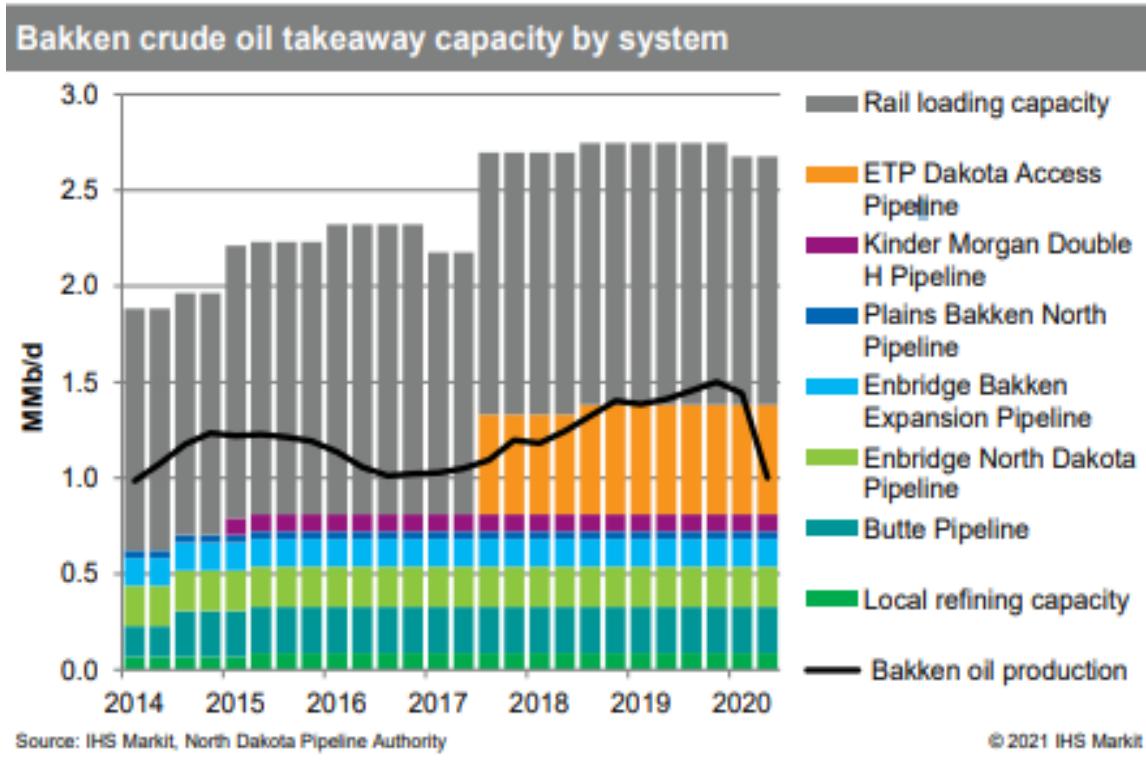


\* Differential between dated Brent and WTI is \$2.70 in 2021, increasing to \$3.30 by 2028

\*Qtr 2 - 4

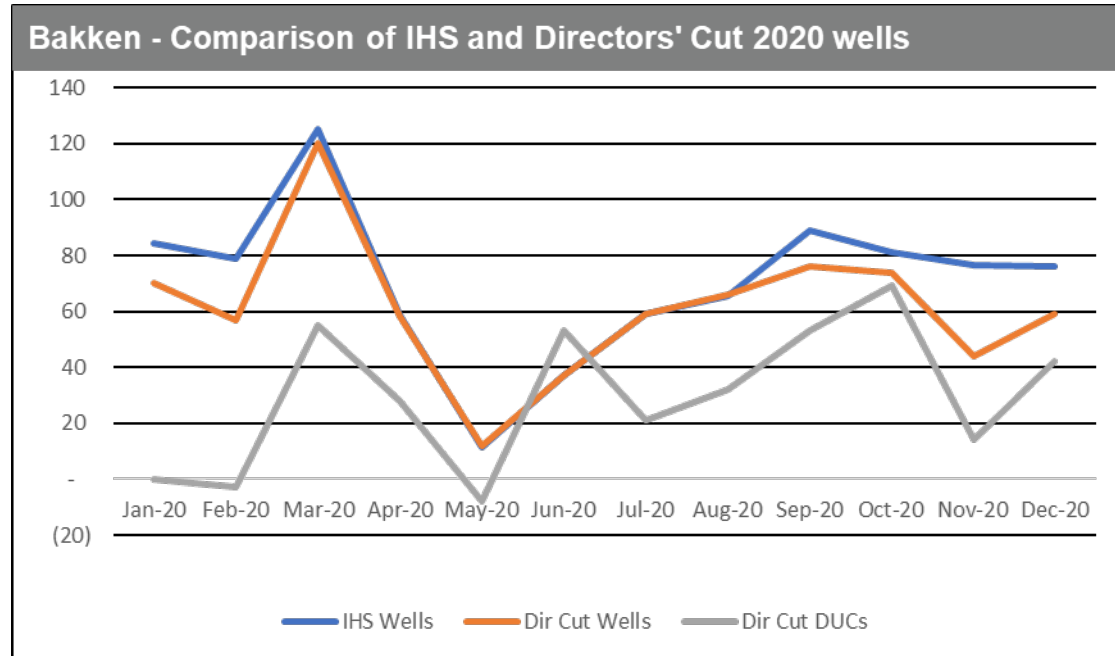
- Recent historical WTI prices have exceeded the previous outlooks by a considerable margin, but we expect these to moderate in the months and years ahead as shown by the base case projection
- Over the longer-term price forecasts are converging with previous outlooks
- The fast recovery scenario sees significant increases for prices in the short term, although the longer-term outlook moderates and converges with the base case – The lowest projections reflect a \$40/bbl price floor

## 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 – Lost key appeal January 26 shutdown is more likely - tribes opposed to DAPL have pending court cases or Biden Administration could force shut down due to nullification of federal easement
- Some DAPL barrels could shift to pipeline systems moving crude through Rockies, the rest would move by rail at an additional \$8-10/bbl
- The % of oil from the Bakken would rise to 50-60% which could lower the differential by a significant amount thereby reducing cashflows and capital available for drilling. This could temporarily drop drilling forecasts which are currently based on DAPL remaining open by ~10-20%

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



There may be variance on reported wells due to reporting lags and methodologies employed to account for possible lags

Total IHS 2020 wells - 843

Total Directors' Cut reported wells - 732

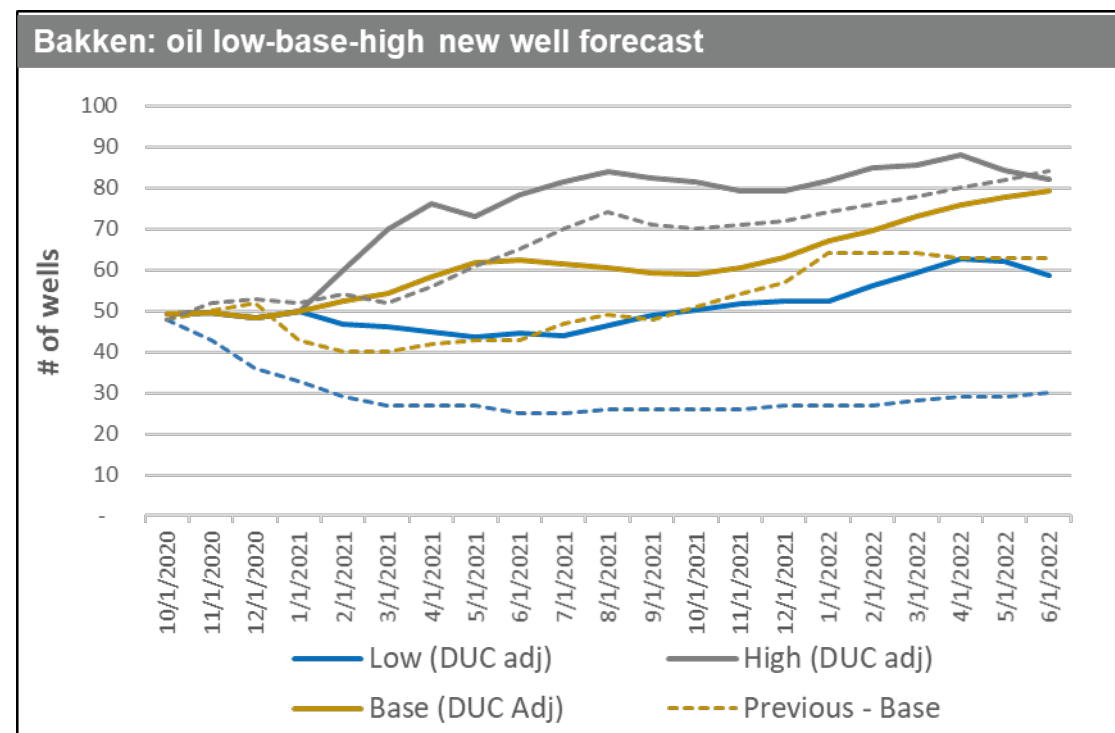
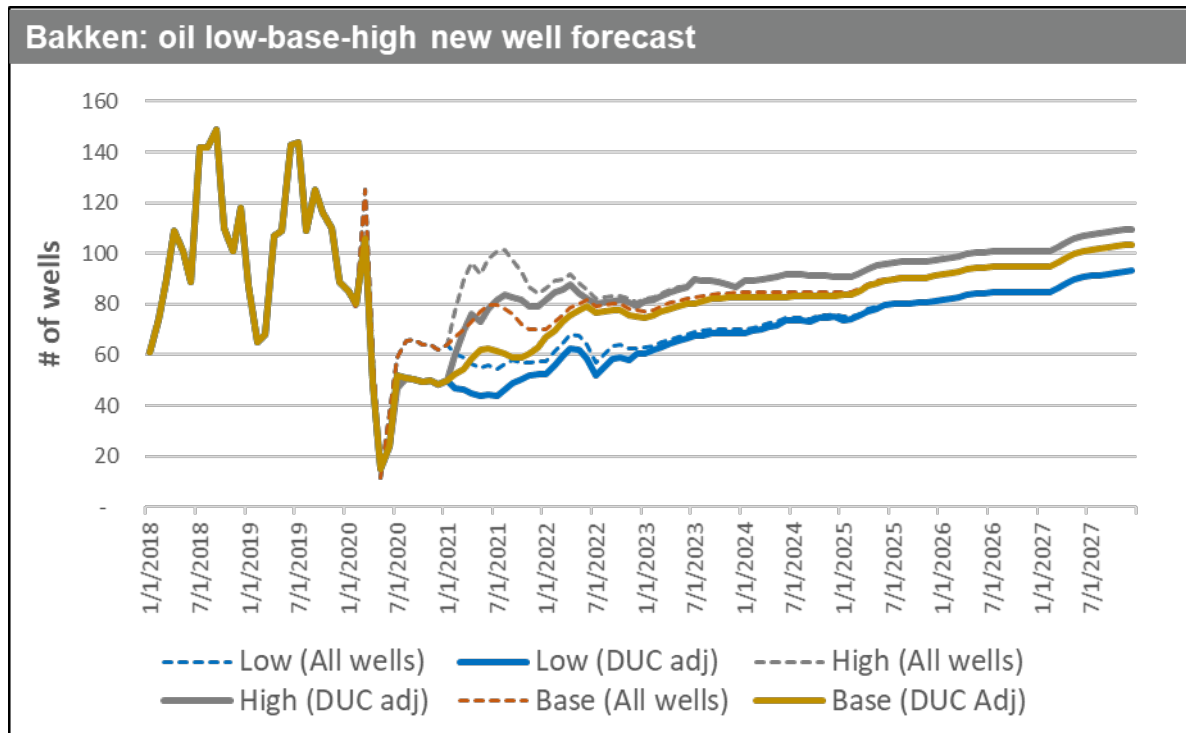
Total Directors' Cut DUCs - 367

Estimated Directors' Cut based on Rigs\* and DUCs - 839

- *Since September, the average rig count has been 14 with an assumption of 19 days from spud to spud*
- *14 rigs should produce about 22-23 wells per month*

- In December 2020, there were 15,798 activity producing wells which is 97.0% of the number of wells producing in March, 2020
- The North Dakota Directors' Cut indicates that in 2020 about 367 DUC wells have been completed and brought into service helping to increase production above previous forecasts. Beginning in January 2021, IHS and the Director's cut show about 668 remaining DUCs contributing to the forecast over the next two years
- In 2020 we estimate that ~367 (44%) of the ~840 new wells brought on-line were DUC wells . In 2021, IHS estimates that 43% of the 877 new wells coming on-line will come from the DUC inventory

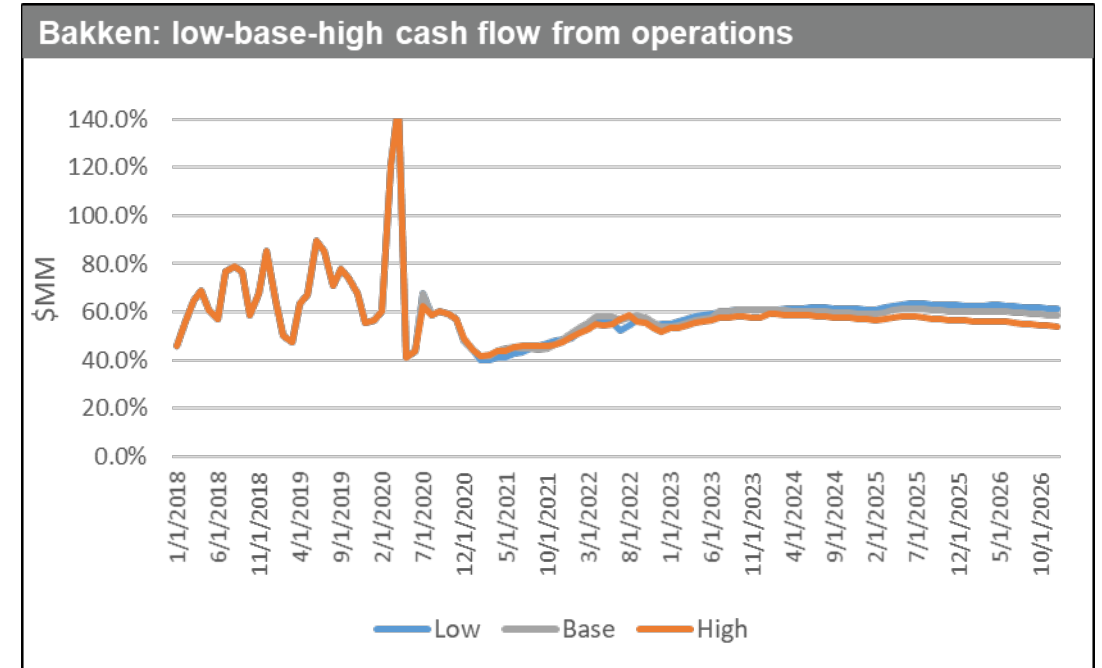
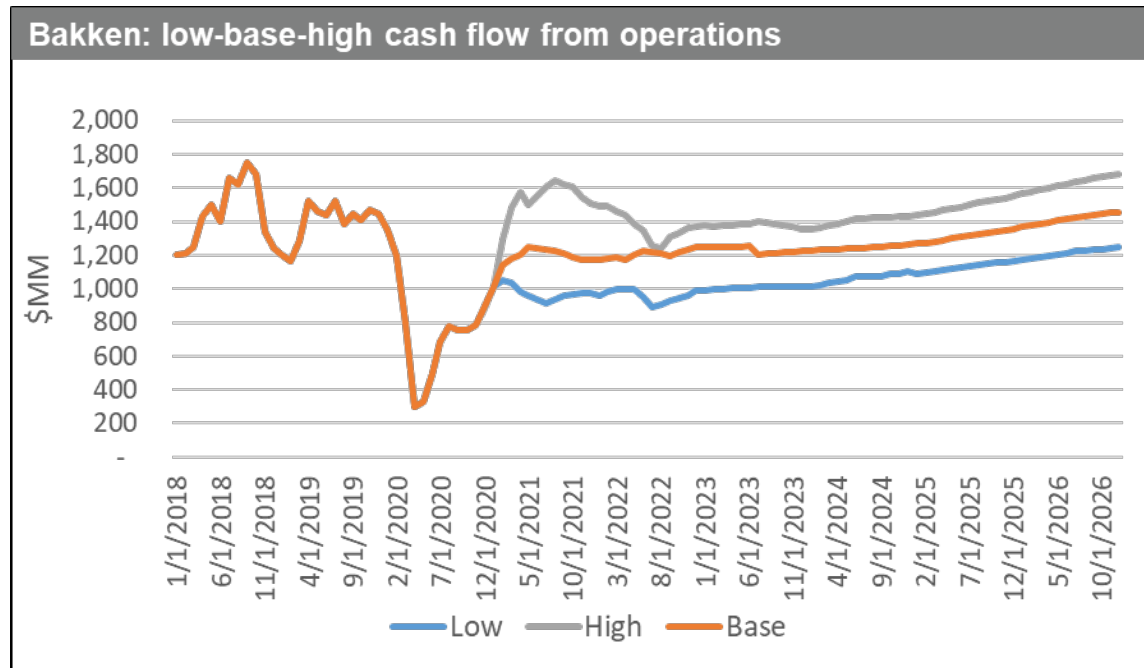
# Increased price outlooks have boosted forecasted new wells since the December forecast



- 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 new wells for the next two years
- Since our forecast is now skewing to the high side of previous forecasts, the current base case reflects the previous high case through the first half of 2021 but over the longer term continues to track higher than previously



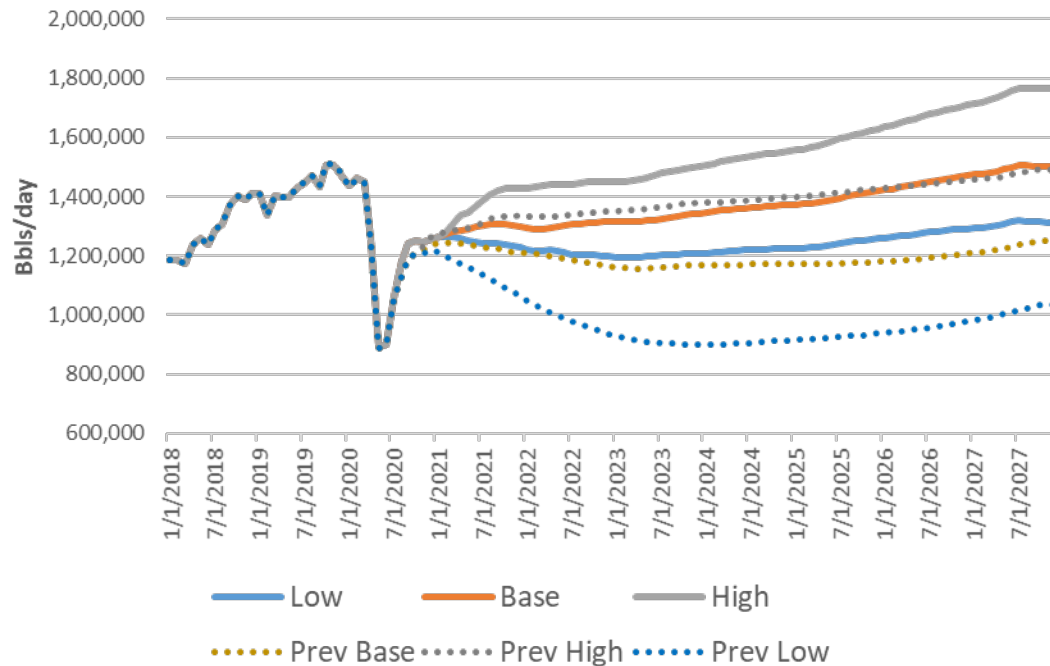
# Although operators plan to apply a lower percentage of their cash flows to capital expenditures, there is sufficient cash to drive a robust outlook



- For the short term operators will reduce cash flow capital spend to around 40-50%, but as the DUC inventory is depleted, more cash will be needed to maintain production levels
- Generally, we project that operators will spend about 60% of cash flows over the longer term for all cases, and the amount of cash available will be driven largely by price

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

Bakken: oil low-base-high production forecast



- 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 new wells is due in large part to DUC an ~800 DUC inventory contribution over the next two years
- 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 December, the range of low to high price outlooks has increased substantially, but will moderate over the longer term
- Recent price increases and outlooks have skewed previous outlooks to the high-side, so that the current base case now reflects yesterdays' high outlook
- Drilling outlooks reflect reduced cashflows being applied to new capital spending
- The announced cuts by Saudi Arabia will continue through May, but the future return of the ~4.5 MMbbls still off the market will affect the longer-term price outlook

# North Dakota Agriculture Outlook

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# US farm income and balance sheet outlook

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## Total cash receipts and farm asset 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	2016	2017	2018	2019	2020	2021F	2022F	2023F	2024F
Total Cash Receipts	377.4	358.5	370.4	371.4	369.7	375.7	395.8	399.1	396.4	405.5
Livestock Cash Receipts	189.5	162.7	175.6	176.3	176.0	166.6	170.5	181.4	183.5	188.9
CropCash Receipts	187.9	195.8	194.9	195.1	193.7	209.1	225.3	217.7	212.9	216.6
Government Payments	10.8	13.0	11.5	13.7	22.4	46.5	18.9	7.4	8.5	7.8
Total Cash Income	422.6	399.4	413.2	414.2	426.9	453.1	443.5	435.4	434.0	442.6
Cash Expenses	315.8	303.8	311.9	311.4	317.5	315.8	328.0	327.0	324.3	329.8
Net Cash Income	106.8	95.6	101.3	102.8	109.4	137.3	115.4	108.4	109.7	112.8
Net Farm Income	81.7	62.3	75.1	81.3	83.6	120.6	104.5	90.5	90.6	95.1

Source: IHS Markit

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US Farm Balance Sheet										
Item	2015	2016	2017	2018	2019	2020	2021F	2022F	2023F	2024F
Farm Assets (bil \$)	2,880	2,914	3,006	3,027	3,075	3,121	3,183	3,255	3,327	3,403
Farm Liabilities (bil \$)	357	374	390	402	419	435	436	441	449	459
Farm Equity (bil \$)	2,523	2,540	2,616	2,625	2,657	2,685	2,746	2,814	2,879	2,944

Source: IHS Markit

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- US cash receipts are expected to grow during forecast period based on higher cash receipts for both livestock and crops.
- Farm expenses are expected to remain relatively flat during the forecast period.
- Farm income is expected to drop in the forecast period because of lower government payments.
- Farm assets and equity are forecast at a record on 2024/25.

## 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.
  - Government payments are forecast to fall from a record \$46.5 billion in 2020 to \$7.8 billion in 2024.
- However, crop and livestock prices are higher and total cash receipts are forecast to increase from \$376 billion in 2020 to \$406 billion in 2024.
- Net farm income is forecast to average \$94 billion from 2021 to 2024 compared with an average of \$76 billion from 2016 to 2019.

## Weather Concerns

- 48% of soybean area in North Dakota is considered in severe drought and 52% in moderate drought.
- 34% of corn area in North Dakota is considered in severe drought and 66% in moderate drought.
- 76% of spring wheat area in North Dakota is considered in severe drought and 24% in moderate drought.
- Because subsoil moisture is not good timely rains will be needed throughout the growing season.

# Oilseeds

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

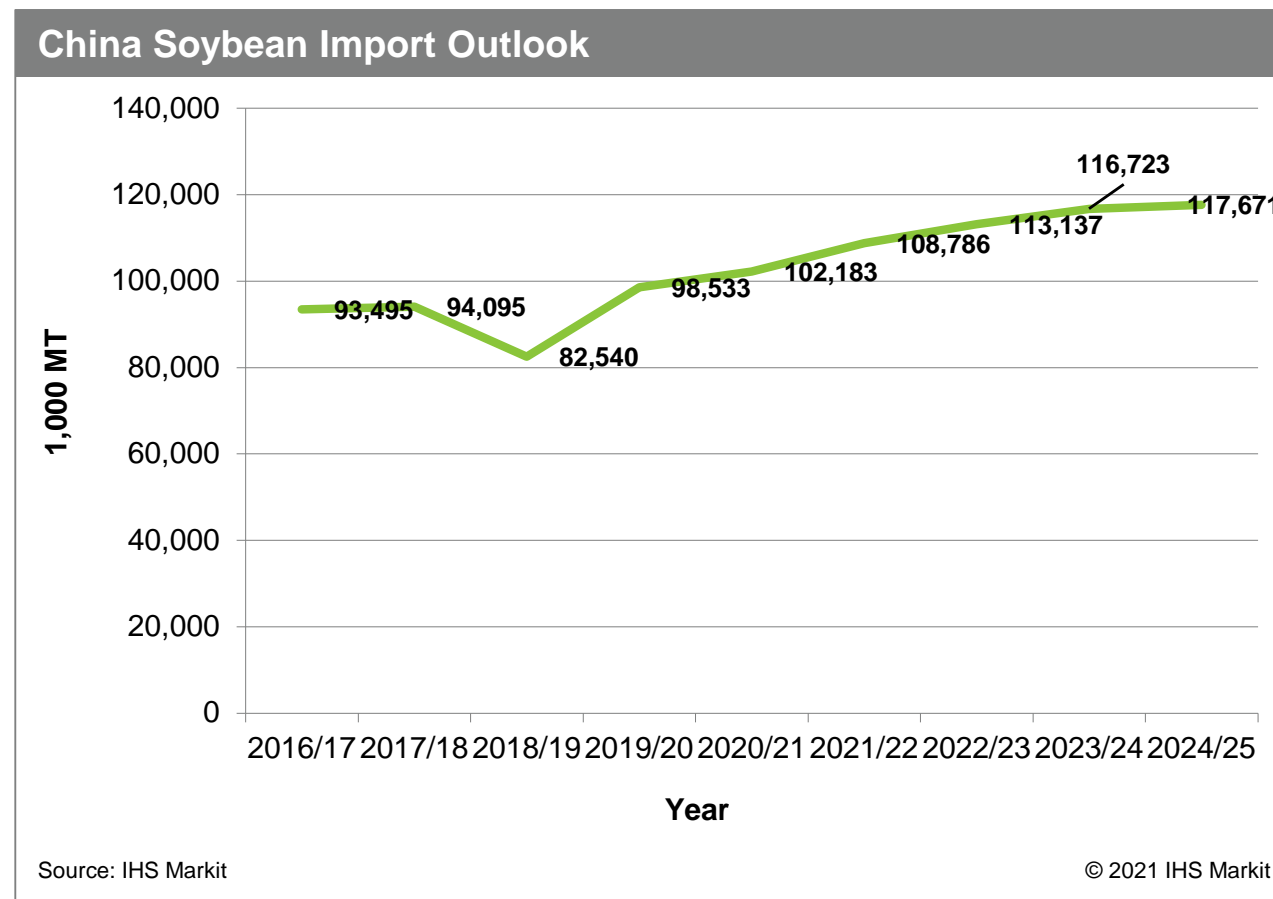
US Soybean Prices, Net returns, Acres, Stocks and Share of World Production and Exports										
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F	2024/25F
Marketing Year Average Farm Price (\$/Bu)	8.95	9.47	9.33	8.48	8.55	12.00	10.50	10.08	10.35	10.19
Net returns (\$/Acre)	264	326	298	264	238	415	407	353	368	361
Planted Acreage (mil acres)	82.7	83.5	90.2	89.2	76.1	83.1	90.1	89.2	87.4	87.6
Production (mil bu)	3,927	4,297	4,412	4,428	3,552	4,135	4,639	4,621	4,554	4,610
Exports (mil bu)	1,943	2,167	2,134	1,676	1,682	2,250	2,200	2,236	2,285	2,288
US Ending Stocks (mil bu)	196.7	302	438	910	523	106	237	430	525	632
US Percent Share of World Production	33.9	33.4	35.0	33.4	28.7	31.2	32.2	31.7	31.0	30.9
US Percent Share of World Exports	40.8	38.4	35.7	31.1	30.3	36.0	33.9	33.6	33.6	33.4

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 slowly in ensuing forecast years as stocks build but remain relatively high.
- 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 2024/25, 15 MMT above 2020/21 forecast imports.
- But competition from Brazil will be strong. Brazil's exports could increase by more than 10.0 MMT from 2020/21 to 2024/25.



## Canola acreage and production to be relatively flat in forecast period

- US canola planted area was down 215,000 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 forecast to fall from about 21 cents per pound in 2020/21 to 18.8 cents per pound in 2024/25.
- The North Dakota canola acreage in 2020/21 was down by 190,000 acres in 2020/21. But, North Dakota production was up 1% in 2020/21 because of higher yields. Area is expected to rebound in 2021/22 and area and production are expected to follow the US trend for the rest of the forecast period.

# Wheat

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## 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	2024/25F
Marketing Year Average Farm Price (\$/Bu)	4.89	3.89	4.72	5.15	4.60	5.75	5.80	5.26	5.45	5.46
Net returns (\$/Acre)	75	78	63	88	128	130	99	109	109	108
Planted Acreage (mil acres)	55.0	50.1	46.0	47.8	45.5	44.3	45.3	44.90	43.60	43.9
Production (mil bu)	2,062	2,309	1,741	1,885	1,932	1,826	1,902	1,869	1,832	1,871
Exports (mil bu)	778	1,051	906	937	966	1,000	950	813	839	856
US Ending Stocks (mil bu)	976	1,181	1,099	1,080	1,028	856	789	802	775	775
US Percent Share of World Production	7.6	8.3	6.2	7.0	6.9	6.4	6.7	6.6	6.4	6.5
US Percent Share of World Exports	12.3	15.6	13.5	14.7	13.7	14.4	13.7	11.9	12.2	12.3

Source: IHS Markit Global Trade Atlas © 2021 IHS Markit

- US wheat acreage to remain relatively flat over forecast period.
- Lower stocks and production in 2020/21 helped boost prices in 2020/21 and 2021/22. Prices are expected to fall in the rest of the forecast period.
- 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 2.6% 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

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## US corn situation relatively stable

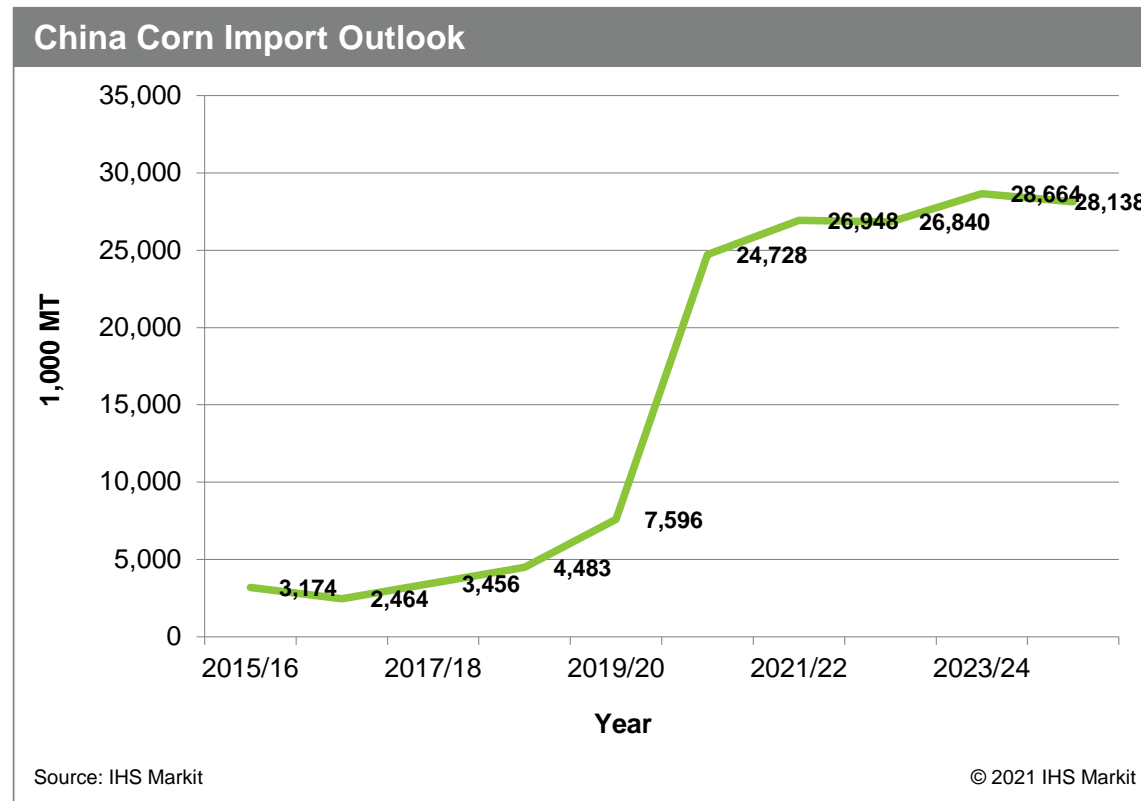
US Corn Prices, Net Returns, Acres, Stocks and Share of World Production and Exports										
Item	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21F	2021/22F	2022/23F	2023/24F	2024/25F
Marketing Year Average Farm Price (\$/Bu)	3.61	3.61	3.40	3.60	3.55	4.60	4.20	3.61	3.77	3.72
Net returns (\$/Acre)	241	256	237	269	209	404	372	262	297	290
Planted Acreage (mil acres)	88.0	94.0	90.2	88.9	89.7	90.8	94.2	91.4	87.8	88.2
Production (mil bu)	13,602	15,148	14,609	14,340	13,620	14,182	15,658	15,333	14,866	15,063
Exports (mil bu)	1,898	2,294	2,438	2,066	1,778	2,900	2,500	2,522	2,606	2,599
US Ending Stocks (mil bu)	1,737	2,293	2,140	2,221	1,919	1,091	1,618	2,074	2,053	2,105
US Percent Share of World Production	34.0	34.1	34.4	32.4	31.0	31.8	33.2	32.4	31.6	31.5
US Percent Share of World Exports	39.9	36.2	41.7	28.8	26.6	38.1	32.6	32.9	33.3	32.92

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 as stocks were drawn down but are expected to decline during the rest of the forecast period as stocks are increased.
- Farmer net returns per acre increased in 2020/21 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 be steady partly due to likely increased exports to China.
- ND planted corn area declined sharply in 2020/21 and as a result production was also down sharply. But area and production are expected to increase in 2021/22 and follow the US trend through forecast period..

## 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 2024/25.
- Competition from Brazil to remain strong as Brazil exports to the world could increase by more than 6 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	2016	2017	2018	2019	2020	2021	2022	2023	2024
All Hay Price (\$/MT)	150.75	131.75	136.67	158.50	168.25	158.42	162.04	160.62	159.52	159.23
Alfalfa Price (\$/MT)	165.83	138.33	145.67	174.17	182.92	172.58	178.73	177.79	175.14	174.52
Production (mil ST)	134.7	134.1	128.2	123.6	128.9	127.7	130.1	128.4	128.7	128.3

Source: IHS Markit © 2021 IHS Markit

- ND 2020 hay production was 3.6 million tons, down 520,000 tons from 2019. Much of this hay is used on farm to support the beef industry.
- ND Sugar beet production in 2020/21 was 5.5 million tons, up more than 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 12.8 million CWT based on higher yields and up 66% from the weather reduced harvest in 2019.

# Beef Sector

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## US Cattle & Beef Sector

US Cattle and Beef Sector									
Item	2016	2017	2018	2019	2020	2021	2022	2023	2024
<b>Cattle</b>									
Beef Cattle Inventories (mil head)	30.2	31.2	31.5	31.8	31.3	31.0	30.4	30.2	30.0
Choice Boxed Beef Cutout (\$/cwt)	206.8	209.9	214.0	222.6	238.9	220.6	221.1	226.7	230.5
<b>Beef</b>									
Beef Retail (Dollars per pound)	6.29	5.96	5.91	5.92	6.04	6.54	6.27	6.28	6.40
Production (billion lbs)	25.22	26.23	26.87	27.15	27.47	27.55	27.75	27.05	26.72
Imports (bil lbs)	3.01	2.99	3.00	3.06	3.34	3.34	3.09	2.92	2.88
Exports (billion lbs)	2.56	2.86	3.16	3.03	2.96	3.09	2.95	2.71	2.64
Total Domestic Use (billion lbs)	25.67	26.37	26.66	27.17	27.87	28.41	27.80	27.17	26.86

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 returns are expected to decline in 2021 but rebound back in during the forecast period.
- ND Cattle ranchers are slowly rebuilding their herd Inventory of all cattle and calves as of January 1, 2021 totaled 1.95 million head, up 3.7% from a year ago. Cash receipts from ND cattle marketings totaled \$983 million in 2019, down 5% from the previous year's marketings.

## Farm Policy

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- **Climate and Conservation Policy** - establish programs that encourage farmers, ranchers, and landowners to adapt practices that improve soil health through farm management practices allowing farmers to sell carbon credits either to the government or private sector.
  - Use CCC to create federal “carbon bank” – allocate \$1 billion to purchase carbon credits from farmers at \$20 per ton to reduce agriculture carbon footprint.
- **China and Phase I Commitments** - need to maintain structural market access import changes.
- **WOTUS** – Trump WOTUS is rule of the land as a result of recent court case. Biden Administration to review and likely bring court challenges but that will take time.
- **Infrastructure** – best opportunity for bipartisan agreement.
- **Farm Bill 2023** – Not too early to focus on because will start to gain steam soon.

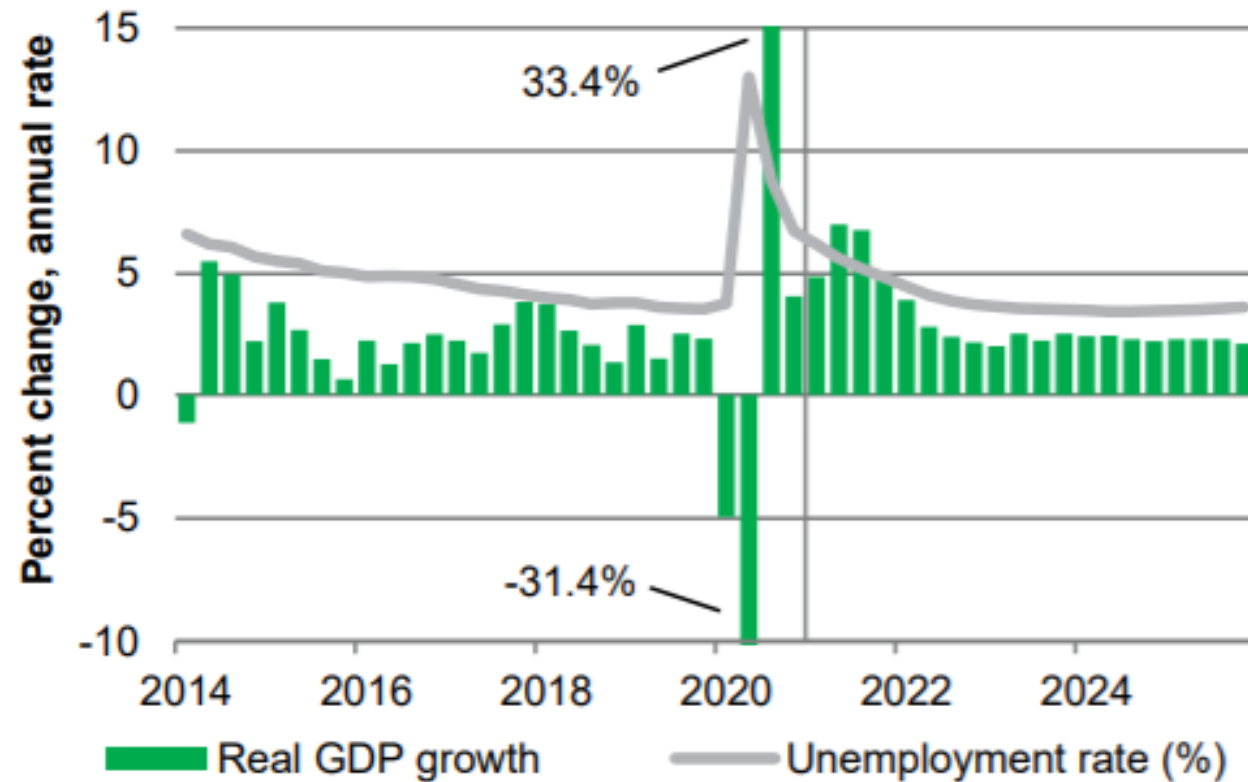
# U.S. and North Dakota Macroeconomic Outlook

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## Little change in GDP growth forecast, but with notable revisions in details

- Our forecasts of real GDP growth for 2021 and 2022 are 5.7% and 4.1%, unchanged from last month.
- With versions of the American Rescue Plan (ARP) Act costing close to \$1.9 trillion having passed in the House and Senate, we've included nearly that full amount in this month's forecast.
- New cost estimates from CBO suggest that spend-outs of grants to states for education and infrastructure will be slower than we assumed.
- After monitoring debate in the Senate last week, we lowered our assumed enhanced federal unemployment benefit from \$400/week to \$300/week.
- Recent firming in Treasury yields encouraged us to revise up our near-term projections of the 10-year note yield, by 20 basis points in 2021 and by 10 basis points in 2022.
- We've revised up the price of Brent crude oil, but only for 2021. In conjunction with the upward revision in the dollar that undermines import prices, this led to a downward revision in 2022 of core PCE inflation, from 1.9% to 1.7%.
- The conditions for Fed "lift-off" are still met by mid-2024.

## Recovery continued through Q4; GDP surpasses prior peak in 2021 Q2

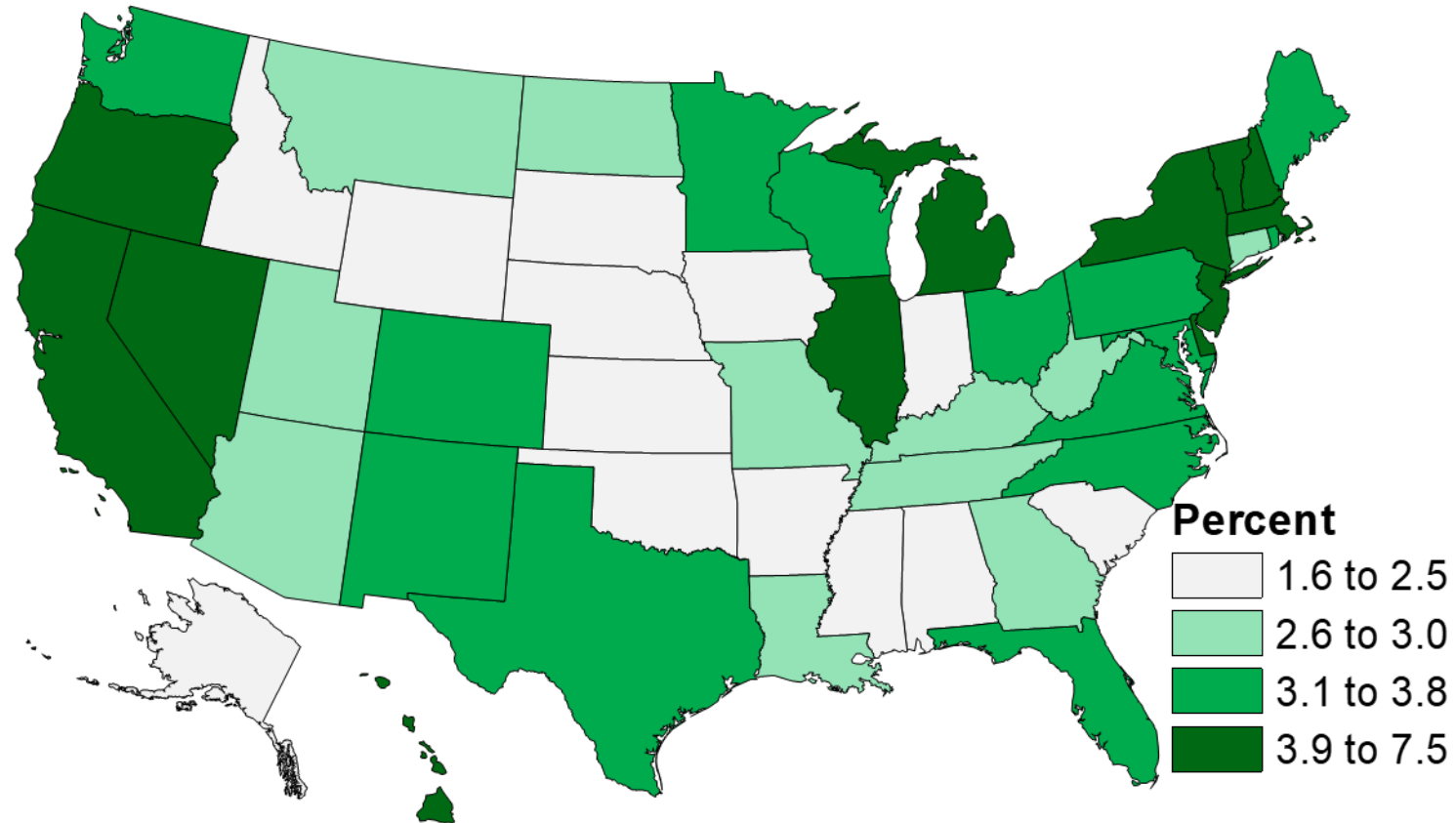


Source: IHS Markit, BEA, BLS

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# Northeastern states will likely register higher year-over-year growth in 2021 because of steeper declines in employment during spring 2020

Year-over-year employment growth, 2021Q4 vs. 2020Q4



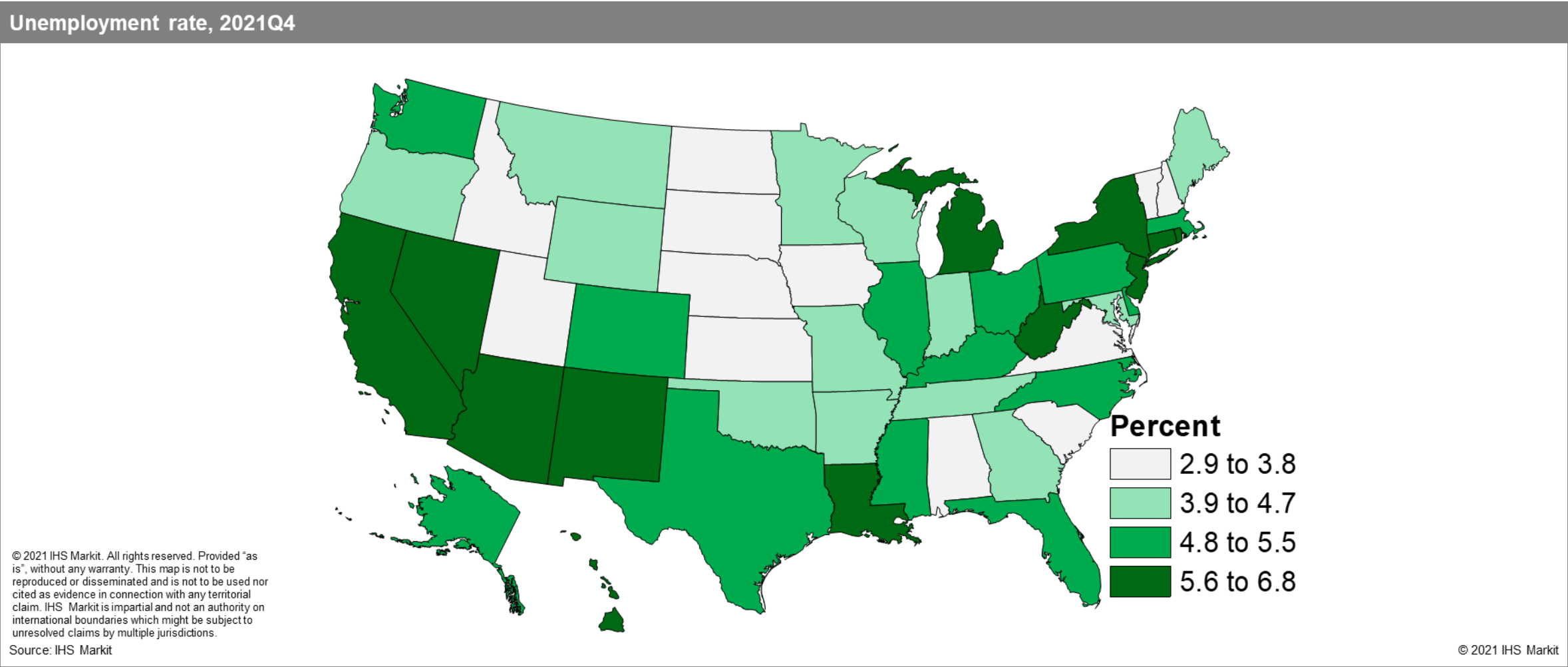
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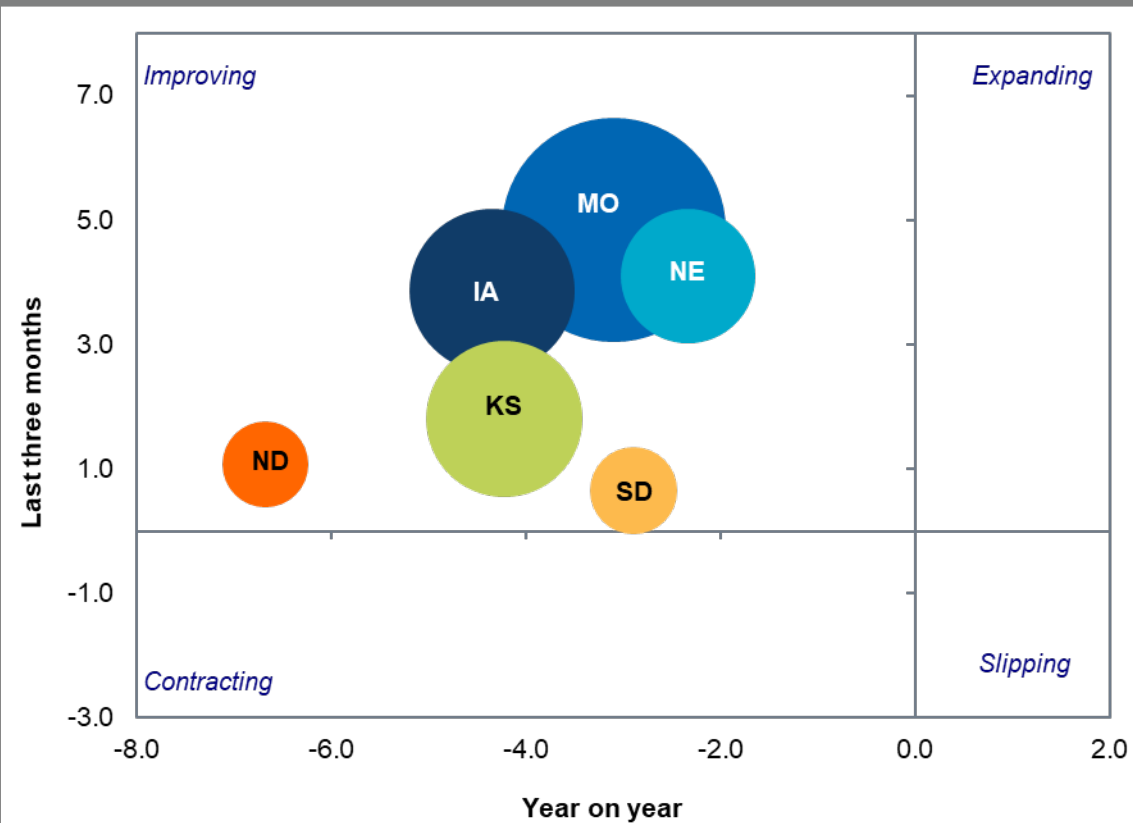


# State unemployment rates will see considerable improvement towards the end of 2021



# West North Central: Year-over-year losses in most states remain smaller compared with country but a few states are struggling

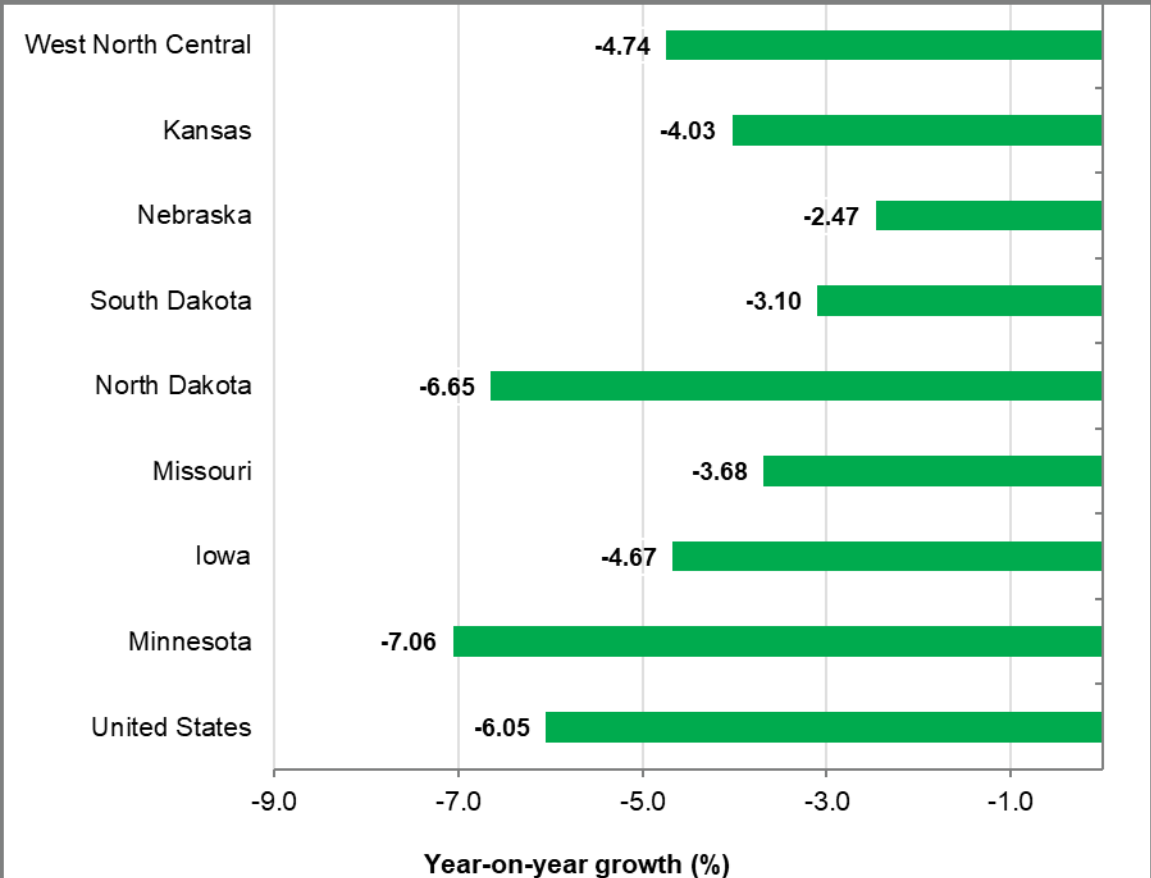
Employment momentum in December 2020, West North Central  
(Percent change, annual rate)



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

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



Source: Bureau of Labor Statistics

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# North Dakota Outlook

Short Term Outlook for North Dakota					
March 2021 Forecast					
	2020	2021	2022	2023	2024
<b>Establishment Employment (Thousands)</b>					
Total Non-Agricultural	414.2	416.6	427.0	433.4	437.7
Pct. Ch. Ann. Rate	-5.7	0.6	2.5	1.5	1.0
Manufacturing	24.9	24.4	24.7	24.9	24.9
Pct. Ch. Ann. Rate	-5.7	-2.1	1.3	1.0	0.1
Durables	16.2	15.6	15.9	16.0	16.0
Machinery	5.7	5.3	5.3	5.3	5.2
Nondurables	8.7	8.8	8.7	8.9	8.9
Food Manufacturing	4.9	4.8	4.7	4.8	4.9
Non-Manufacturing	389.3	392.2	402.3	408.5	412.8
Pct. Ch. Ann. Rate	-5.7	0.7	2.6	1.5	1.1
Construction & Mining	42.9	41.6	42.9	43.5	44.2
Pct. Ch. Ann. Rate	-13.2	-2.9	3.0	1.5	1.6
Trade, Trans., & Utilities	89.2	90.8	91.3	90.5	89.5
Pct. Ch. Ann. Rate	-4.8	1.9	0.5	-0.8	-1.2
Wholesale Trade	23.7	23.6	24.9	26.0	26.4
Retail Trade	43.8	44.5	42.5	40.0	38.5
Trans. & Warehousing	18.2	19.3	20.7	21.4	21.5
Utilities	3.4	3.4	3.2	3.1	3.1
Information	5.7	5.9	6.4	6.6	6.6
Pct. Ch. Ann. Rate	-7.0	3.7	8.5	3.5	0.0
Financial Activities	24.7	24.4	25.0	25.1	25.2
Pct. Ch. Ann. Rate	-0.4	-1.3	2.7	0.4	0.3
Finance & Insurance	19.5	19.1	19.5	19.6	19.6
Real Estate & Rental	5.2	5.3	5.5	5.6	5.7

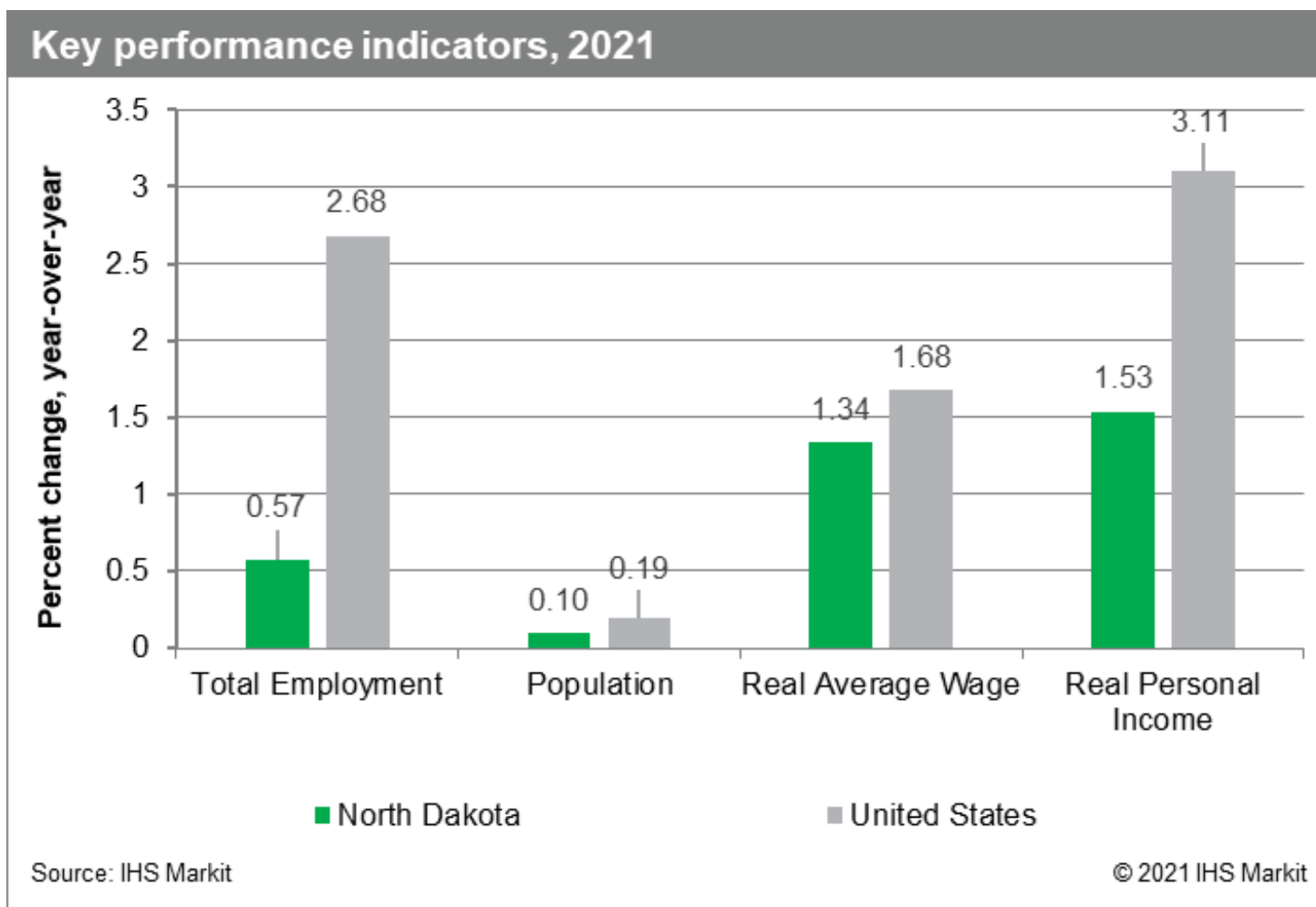
Source: IHS Markit

Short Term Outlook for North Dakota					
March 2021 Forecast					
	2020	2021	2022	2023	2024
Prof. & Business Svcs.	31.9	32.2	35.4	37.2	39.1
Pct. Ch. Ann. Rate	-2.7	1.0	9.7	5.2	5.1
Prof, Scientific, & Tech	16.2	15.9	18.0	19.2	20.0
Management	3.7	3.8	3.9	3.9	4.1
Admin & Waste Svcs	12.0	12.6	13.5	14.0	15.1
Educ & Health Services	66.0	66.2	67.4	68.9	70.1
Pct. Ch. Ann. Rate	-1.8	0.3	1.8	2.2	1.7
Educational Services	4.4	4.2	4.3	4.3	4.3
Health Care	61.7	62.0	63.2	64.6	65.8
Leisure & Hospitality	33.7	34.4	35.0	36.4	37.1
Pct. Ch. Ann. Rate	-16.7	2.1	1.8	3.8	2.0
Arts, Entertainmt, & Rec	4.2	4.1	5.1	5.3	5.3
Accom & Food Svcs	29.5	30.3	29.9	31.1	31.8
Other Services	14.2	14.0	14.7	15.2	15.3
Pct. Ch. Ann. Rate	-7.3	-1.3	5.3	3.0	0.9
Government	81.1	82.6	84.2	85.0	85.7
Pct. Ch. Ann. Rate	-2.3	1.9	1.9	1.0	0.8
Federal	9.5	9.4	9.4	9.4	9.4
State & Local	71.6	73.2	74.7	75.6	76.4
<b>Resident Employment &amp; Unemployment (Thousands)</b>					
Total Employment	386.0	391.2	399.6	406.4	411.9
Pct. Ch. Ann. Rate	-3.5	1.3	2.1	1.7	1.4
Labor Force	406.9	407.4	412.0	417.4	422.7
Labor Force Partic Rate	67.6	67.5	68.0	68.7	69.2
Number Unemployed	20.8	16.3	12.4	11.0	10.8
Unemployment Rate	5.1	4.0	3.0	2.6	2.6

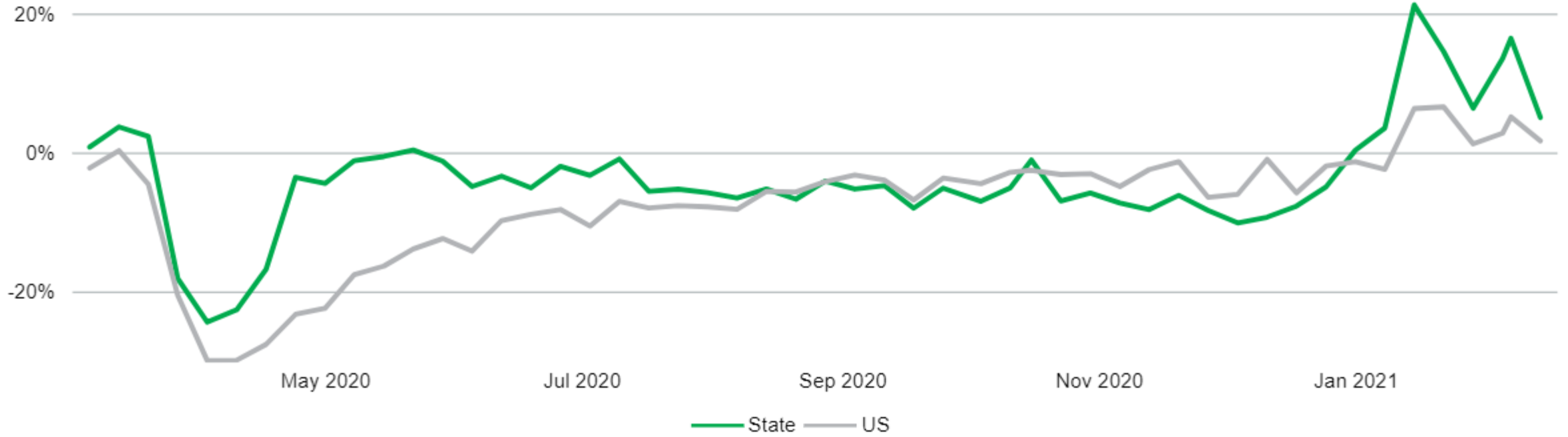
Source: IHS Markit

# North Dakota Outlook

<b>Short Term Outlook for North Dakota</b>					
March 2021 Forecast					
	2020	2021	2022	2023	2024
<b>Personal Income (Billions \$)</b>					
Total Personal Income	45.4	47.2	47.1	49.3	52.1
Pct. Ch. Ann. Rate	4.2	3.9	-0.2	4.7	5.6
Real Personal Income	45.1	45.8	45.0	46.2	47.7
Pct. Ch. Ann. Rate	2.9	1.5	-1.8	2.6	3.2
Real Disposable Income	41.1	41.8	40.8	41.9	43.2
Real Per Capita Income (Ths)	59.0	59.8	58.6	59.9	61.6
Med. Household Income (Ths)	75.6	76.5	75.4	77.3	80.5
Avg. Annual Wage (Ths)	54.8	56.8	58.0	60.2	62.8
<b>Real Gross State Product, NAICS Based (Billions 2012\$)</b>					
Total GSP	51.9	54.1	56.2	57.4	58.9
Pct. Ch. Ann. Rate	-3.8	4.3	3.8	2.3	2.6
<b>Housing</b>					
Total Housing Starts (Ths)	3.3	3.5	3.2	2.9	2.8
<b>Population (Thousands)</b>					
Total Population	765.4	766.1	767.8	770.2	773.2
Pct. Ch. Ann. Rate	0.2	0.1	0.2	0.3	0.4
Source: IHS Markit					



**Change in consumer spending compared to January 2020 average**



Source: Bureau of Labor Statistics, Opportunity Insights Recovery Tracker

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# North Dakota Tax Revenue Outlook

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## Biennium forecast comparison

Revenue Source	2019-21 Biennium Forecast (March)	2019-21 Biennium Forecast (December)	Difference (level)	Difference (%)
<b>Sales and use tax</b>	<b>1,779,129,718</b>	<b>1,838,773,846</b>	<b>(59,644,128)</b>	<b>-3.2%</b>
Total taxable sales	38,463,177,028	39,321,819,445	(858,642,417)	-2.2%
<b>Motor vehicle excise tax</b>	<b>244,275,345</b>	<b>244,393,106</b>	<b>(117,761)</b>	<b>0.0%</b>
<b>Individual income tax</b>				
Total individual income tax collections	1,034,478,144	1,037,157,241	(2,679,097)	-0.3%
Transfer to refund reserve accounts	(249,800,000)	(250,800,000)	1,000,000	-0.4%
<b>Net individual income tax collections</b>	<b>784,678,144</b>	<b>786,357,241</b>	<b>(1,679,097)</b>	<b>-0.2%</b>
<b>Corporate income tax</b>				
Total corporate income tax collections	272,125,376	256,921,068	15,204,308	5.9%
Transfer to refund reserve accounts	(64,000,000)	(60,000,000)	(4,000,000)	6.7%
<b>Net corporate income tax collections</b>	<b>208,125,376</b>	<b>196,921,068</b>	<b>11,204,308</b>	<b>5.7%</b>

Revenue Source	2021-23 Biennium Forecast (March)	2021-23 Biennium Forecast (December)	Difference (level)	Difference (%)
<b>Sales and use tax</b>	<b>1,795,249,810</b>	<b>1,897,250,392</b>	<b>(102,000,582)</b>	<b>-5.4%</b>
Total taxable sales	39,326,392,340	41,560,797,201	(2,234,404,861)	-5.4%
<b>Motor vehicle excise tax</b>	<b>260,940,310</b>	<b>259,564,643</b>	<b>1,375,667</b>	<b>0.5%</b>
<b>Individual income tax</b>				
Total individual income tax collections	1,059,247,861	1,069,535,809	(10,287,947)	-1.0%
Transfer to refund reserve accounts	(251,000,000)	(253,000,000)	2,000,000	-0.8%
<b>Net individual income tax collections</b>	<b>808,247,861</b>	<b>816,535,809</b>	<b>(8,287,947)</b>	<b>-1.0%</b>
<b>Corporate income tax</b>				
Total corporate income tax collections	277,944,529	255,707,324	22,237,205	8.7%
Transfer to refund reserve accounts	(75,000,000)	(68,000,000)	(7,000,000)	10.3%
<b>Net corporate income tax collections</b>	<b>202,944,529</b>	<b>187,707,324</b>	<b>15,237,205</b>	<b>8.1%</b>



## 2020Q4 comparison

<b>2020Q4 - actual compared to December forecast</b>				
	<b>Actual</b>	<b>December forecast</b>	<b>Difference (level)</b>	<b>Difference (%)</b>
<b>Sales and use tax</b>	203,653,943	227,465,113	-23,811,170	-10.5%
Total taxable sales	4,898,464,409	4,982,806,415	-84,342,006	-1.7%
<b>Motor vehicle excise tax</b>	32,449,541	32,527,905	-78,364	-0.2%
<b>Total individual income tax collections</b>	91,140,694	91,543,870	-403,176	-0.4%
<b>Total corporate income tax collections</b>	32,856,717	24,868,189	7,988,528	32.1%

## Biennium forecast

Revenue Source	2017-19 Biennium Actual	2019-21 Biennium Forecast (Original)	2019-21 Biennium Forecast	2021-23 Biennium Forecast
<b>Sales and use tax</b>	<b>1,786,479,717</b>	<b>1,868,262,000</b> 4.6%	<b>1,779,129,718</b> -0.4%	<b>1,795,249,810</b> 0.9%
<b>Motor vehicle excise tax</b>	<b>239,039,038</b>	<b>249,951,800</b> 4.6%	<b>244,275,345</b> 2.2%	<b>260,940,310</b> 6.8%
<b>Individual income tax</b>				
Total individual income tax collections	961,072,888		1,034,478,144 7.6%	1,059,247,861 2.4%
Transfer to refund reserve accounts	(183,000,000)		(249,800,000)	(251,000,000)
<b>Net individual income tax collections</b>	<b>778,072,888</b>	<b>803,305,000</b> 3.2%	<b>784,678,144</b> 0.8%	<b>808,247,861</b> 3.0%
<b>Corporate income tax</b>				
Total corporate income tax collections	299,456,537		272,125,376 -9.1%	277,944,529 2.1%
Transfer to refund reserve accounts	(58,000,000)		(64,000,000)	(75,000,000)
<b>Net corporate income tax collections</b>	<b>241,456,537</b>	<b>132,268,000</b> -45.2%	<b>208,125,376</b> -13.8%	<b>202,944,529</b> -2.5%

\* 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
<b>Sales and use tax</b>	829,120,206 4.6%	957,359,511 15.5%	970,559,564 1.4%	808,570,154 -16.7%	866,786,058 7.2%	928,463,752 7.1%
<b>Motor vehicle excise tax</b>	114,342,237 -1.0%	124,696,801 9.1%	119,506,814 -4.2%	124,768,531 4.4%	127,660,074 2.3%	133,280,236 4.4%
<b>Individual income tax</b>						
Total individual income tax collections	459,254,125 7.9%	501,818,763 9.3%	467,896,604 -6.8%	566,581,540 21.1%	525,159,064 -7.3%	534,088,797 1.7%
Transfer to refund reserve accounts	(95,000,000)	(88,000,000)	(115,800,000)	(134,000,000)	(124,000,000)	(127,000,000)
<b>Net individual income tax collections</b>	<b>364,254,125</b> <b>16.5%</b>	<b>413,818,763</b> <b>13.6%</b>	<b>352,096,604</b> <b>-14.9%</b>	<b>432,581,540</b> <b>22.9%</b>	<b>401,159,064</b> <b>-7.3%</b>	<b>407,088,797</b> <b>1.5%</b>
<b>Corporate income tax</b>						
Total corporate income tax collections	129,874,848 25.9%	169,581,689 30.6%	112,654,676 -33.6%	159,470,700 41.6%	133,886,910 -16.0%	144,057,620 7.6%
Transfer to refund reserve accounts	(37,000,000)	(21,000,000)	(21,000,000)	(43,000,000)	(36,000,000)	(39,000,000)
<b>Net corporate income tax collections</b>	<b>92,874,848</b> <b>34.2%</b>	<b>148,581,689</b> <b>60.0%</b>	<b>91,654,676</b> <b>-38.3%</b>	<b>116,470,700</b> <b>27.1%</b>	<b>97,886,910</b> <b>-16.0%</b>	<b>105,057,620</b> <b>7.3%</b>

- 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 2021 to July 2021.

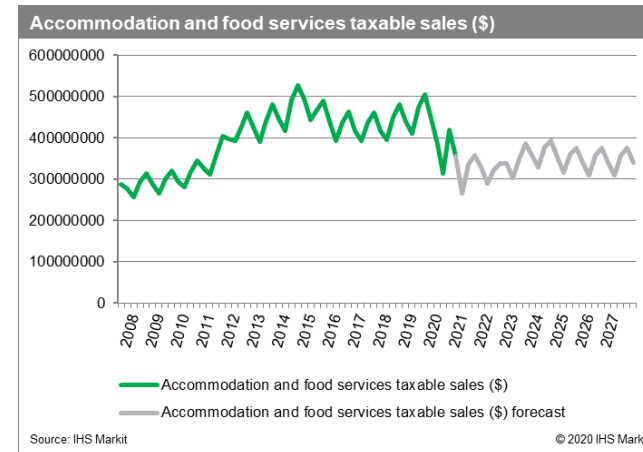
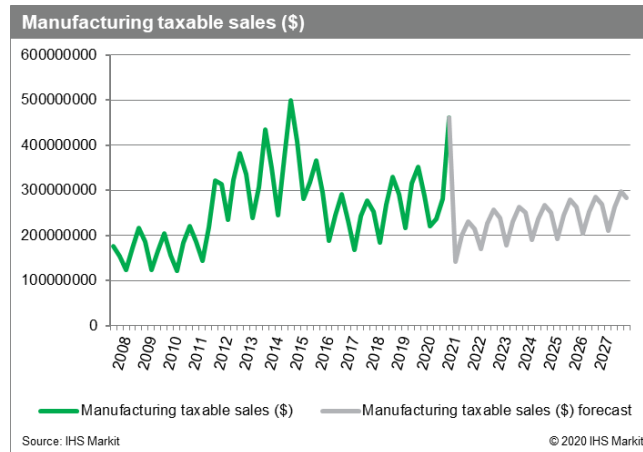
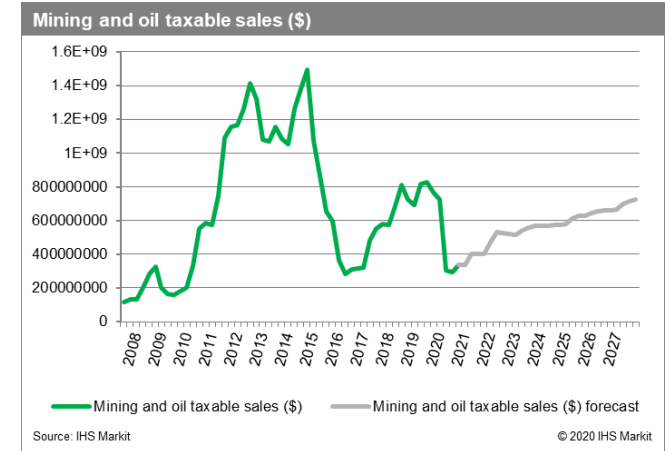
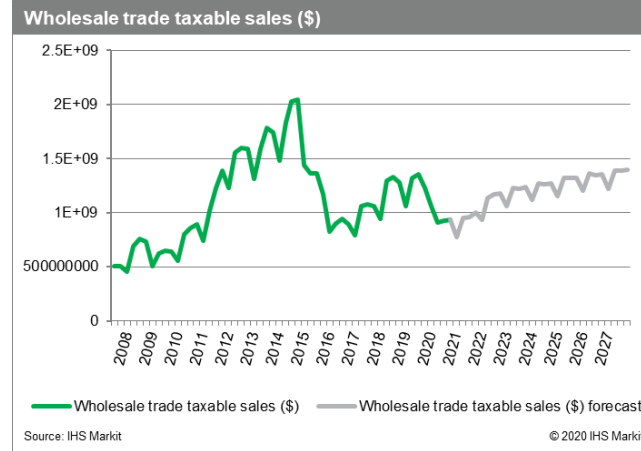
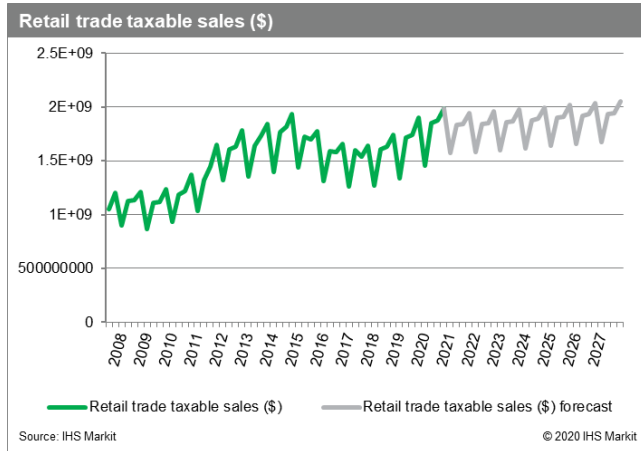
It is estimated that the annual changes of gross income tax collection would be 3.2%, -0.3%, 1.7% in FY20, FY21 and FY22 respectively barring the impacts of the extension.

## Economic indicators used in the tax model

REVENUE SOURCE	ECONOMIC DRIVER	DESCRIPTION
<b>Sales and Use tax</b>	<ul style="list-style-type: none"> <li>•Bakken new producing wells</li> <li>•Employment by sector</li> <li>•Gross state product by sector</li> </ul>	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.
<b>Motor vehicle excise tax</b>	<ul style="list-style-type: none"> <li>•New passenger and light truck registrations (ND state)</li> </ul>	The motor vehicle excise tax base is best captured by the state's new vehicle registrations (including new passenger car and light truck).
<b>Individual income tax</b>	<ul style="list-style-type: none"> <li>•Total wage disbursements (ND state)</li> <li>•Personal income, dividends interest and rent (ND state)</li> </ul>	<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>
<b>Corporate income tax</b>	<ul style="list-style-type: none"> <li>•Bakken new producing wells</li> </ul>	The tax base of corporate income tax is mainly driven by by the Bakken new producing wells, as it affects oil company's profits.

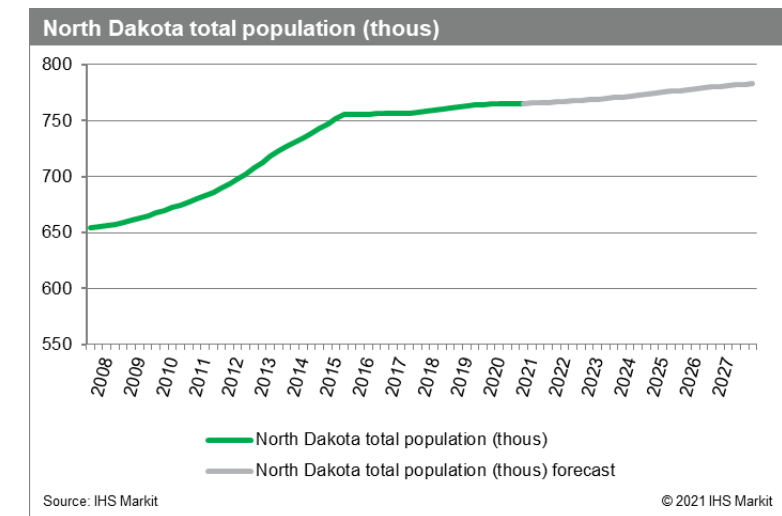
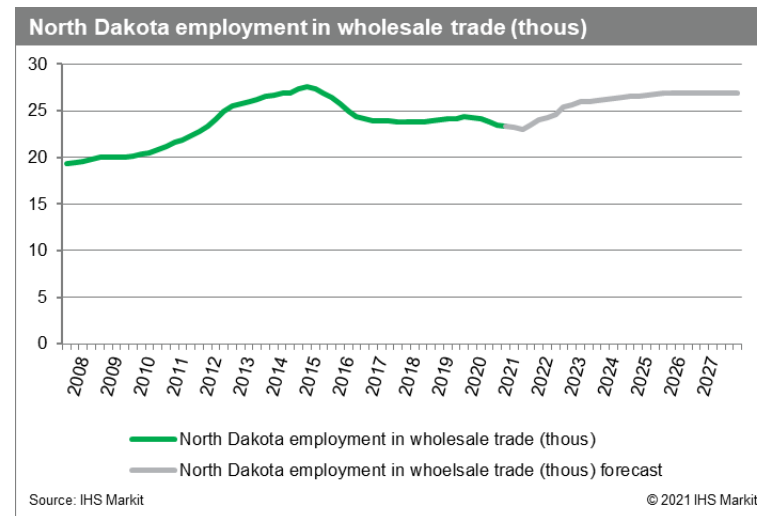
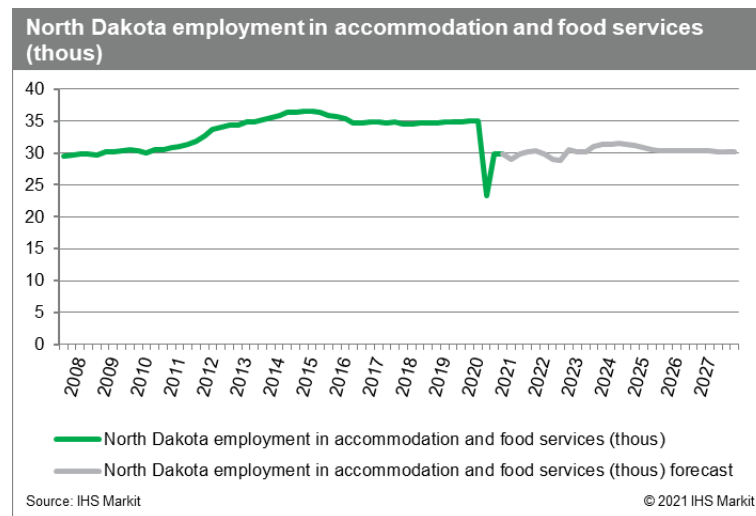
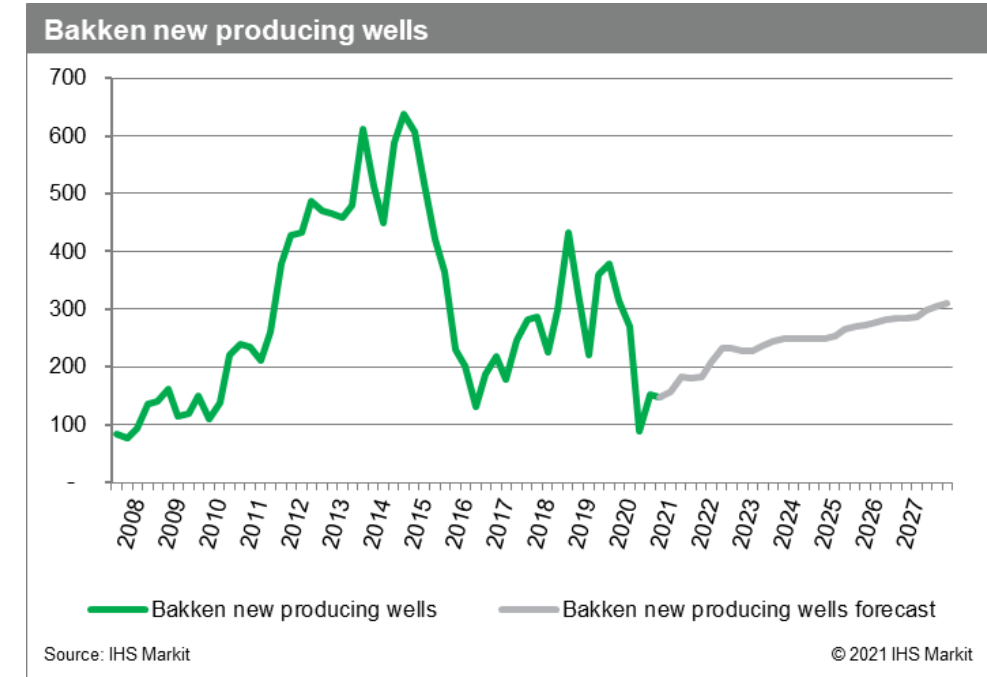
# Taxable sales by sector

- 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.

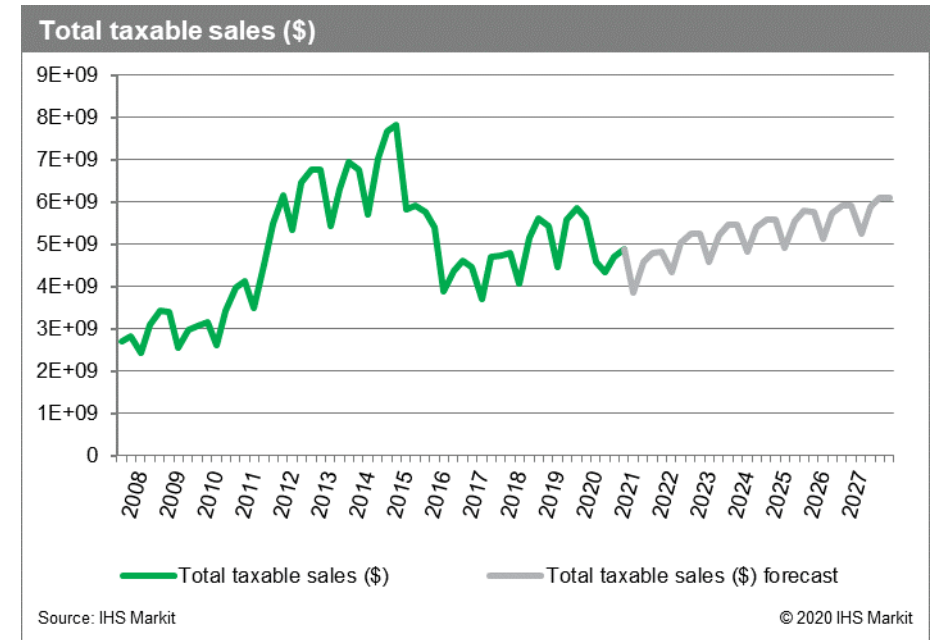
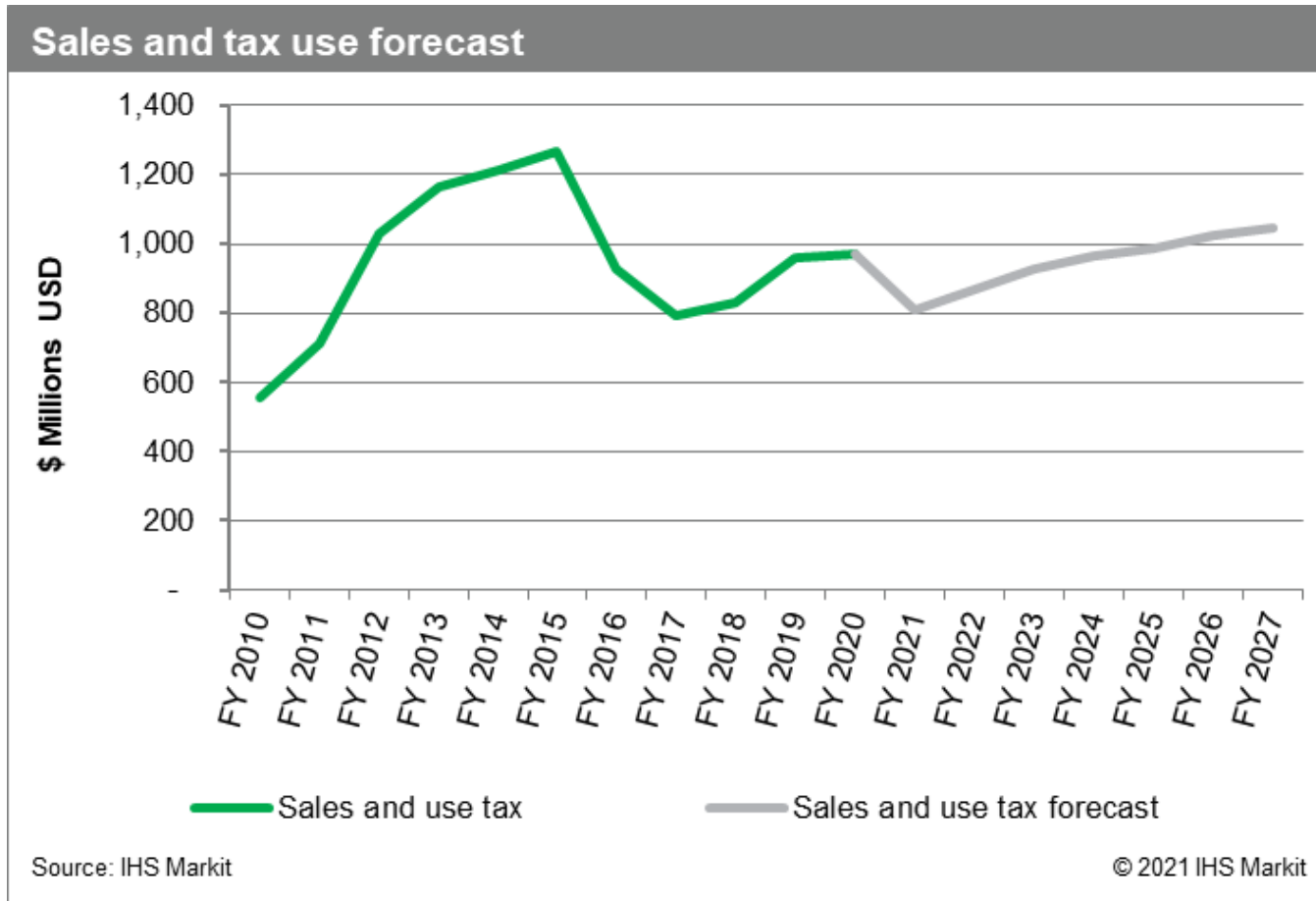


# Drivers of taxable sales sectors

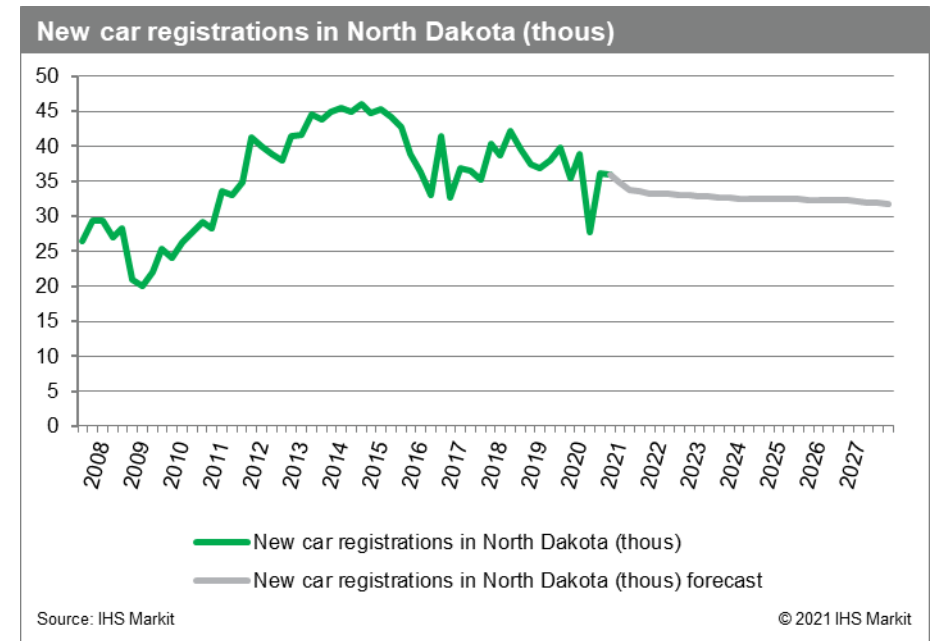
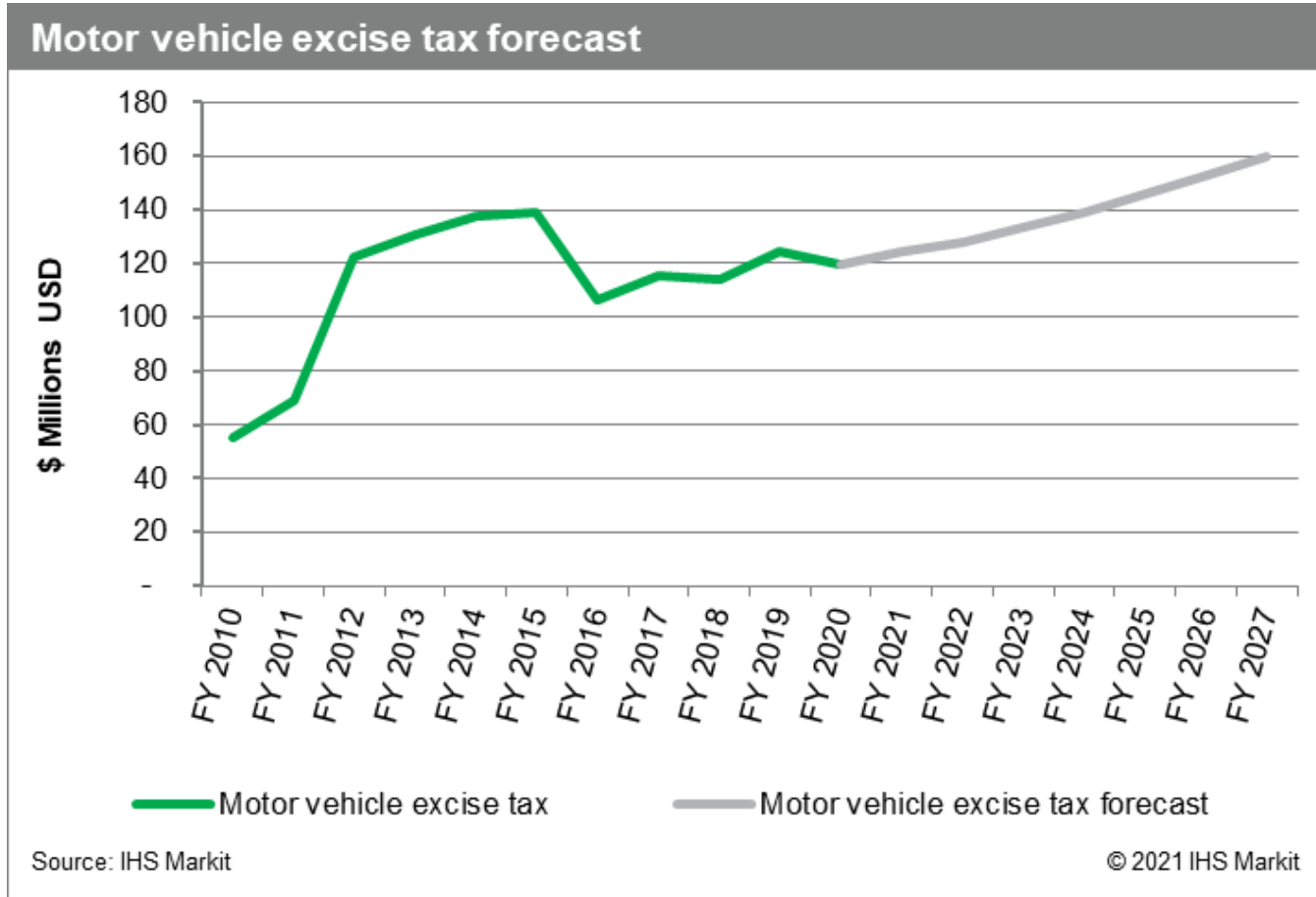
- The number of new producing wells in the Bakken play is the main driver in four of the five largest taxable sales sectors; these sectors are wholesale trade, mining and oil, accommodation and food services, and manufacturing
- Of the fifteen taxable sales models, nine include Bakken new producing wells 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

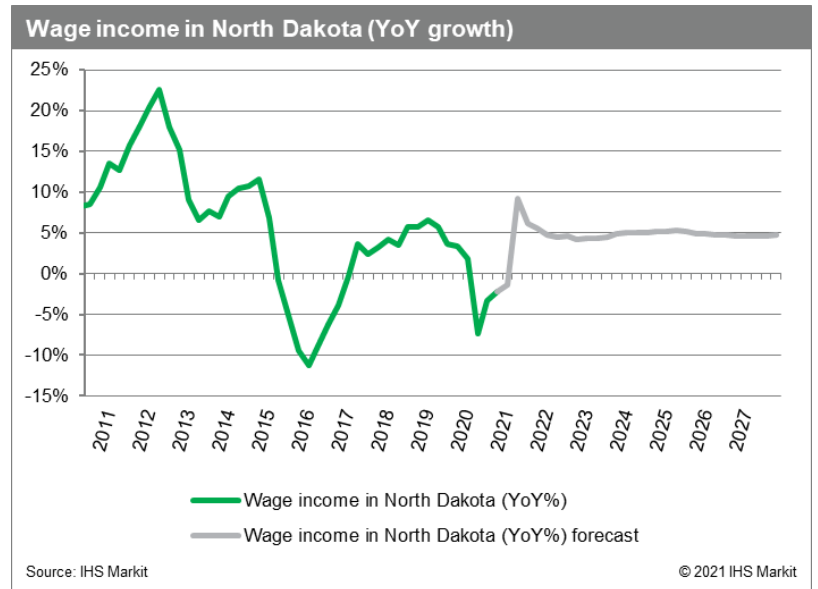
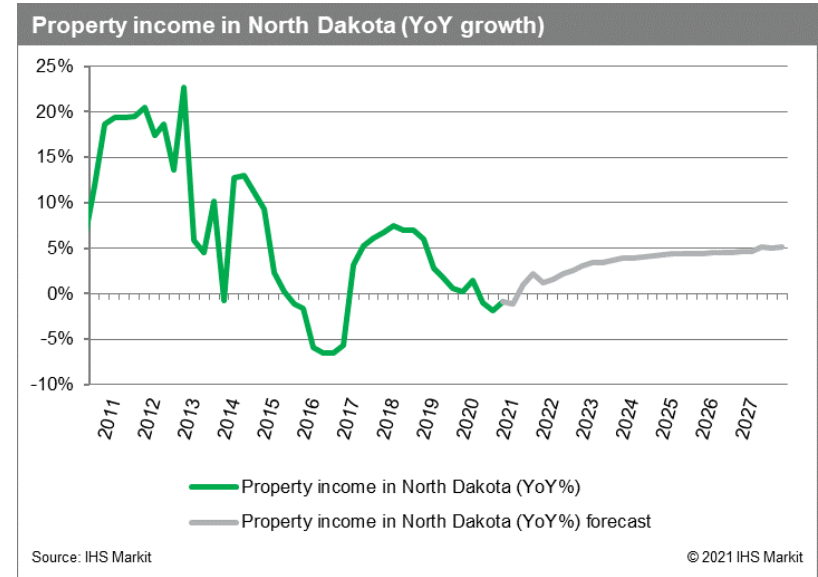
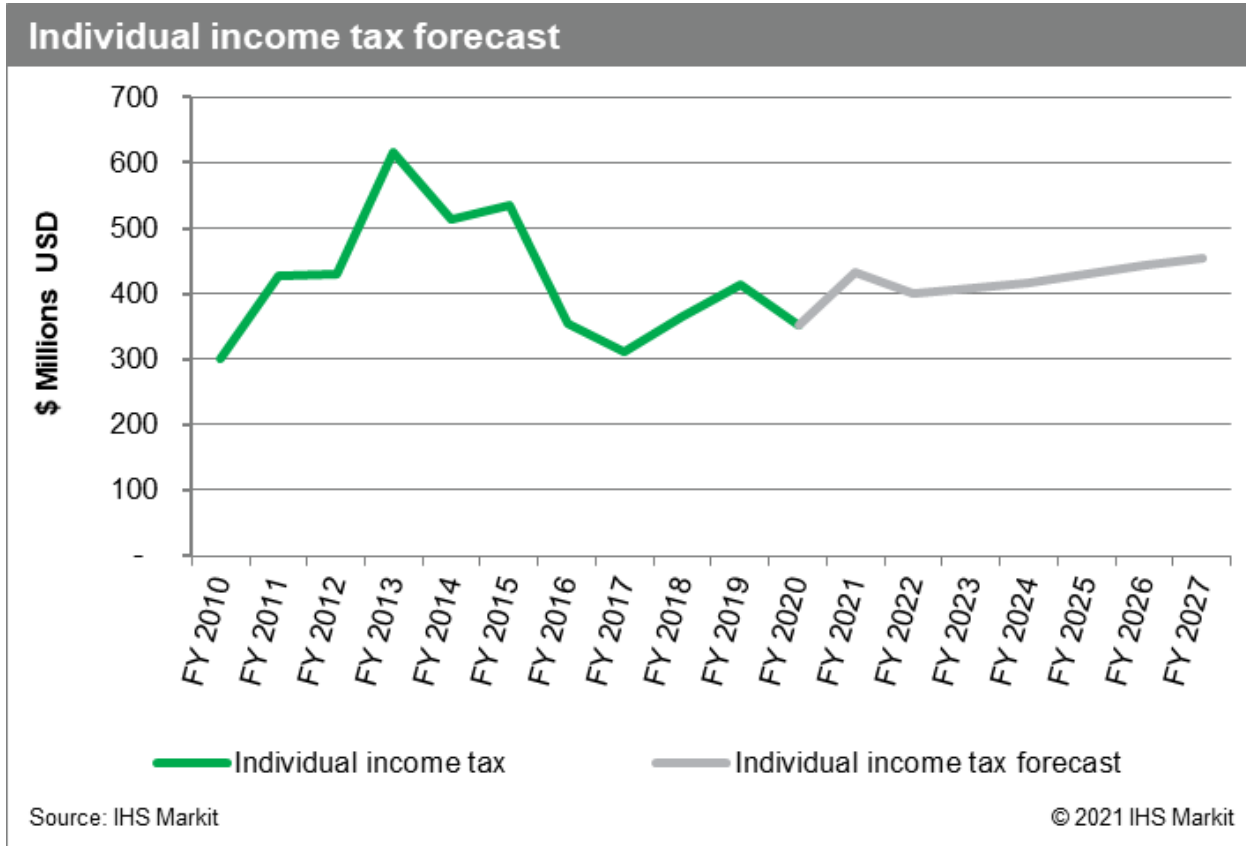


# Motor vehicle excise tax revenue

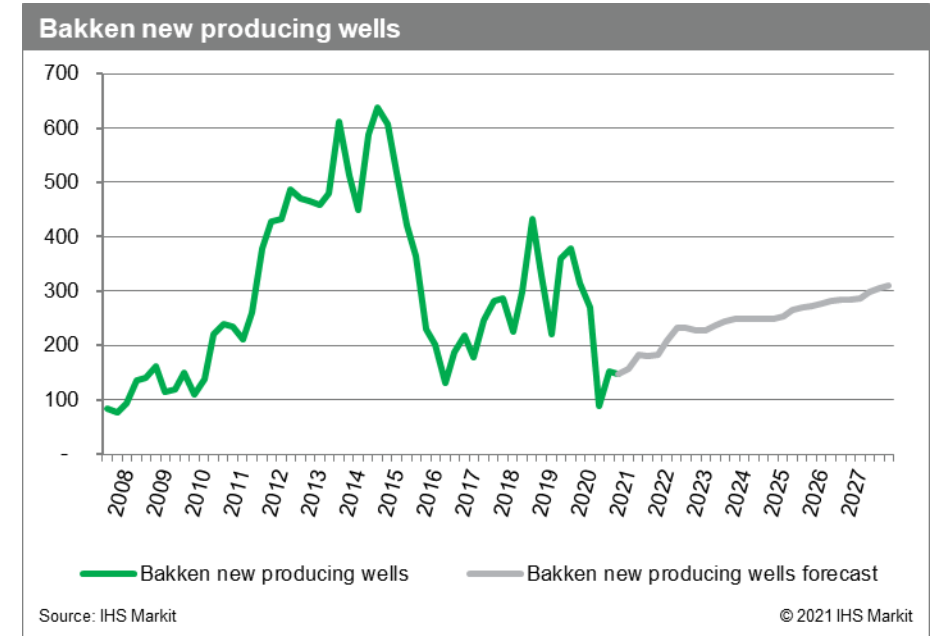
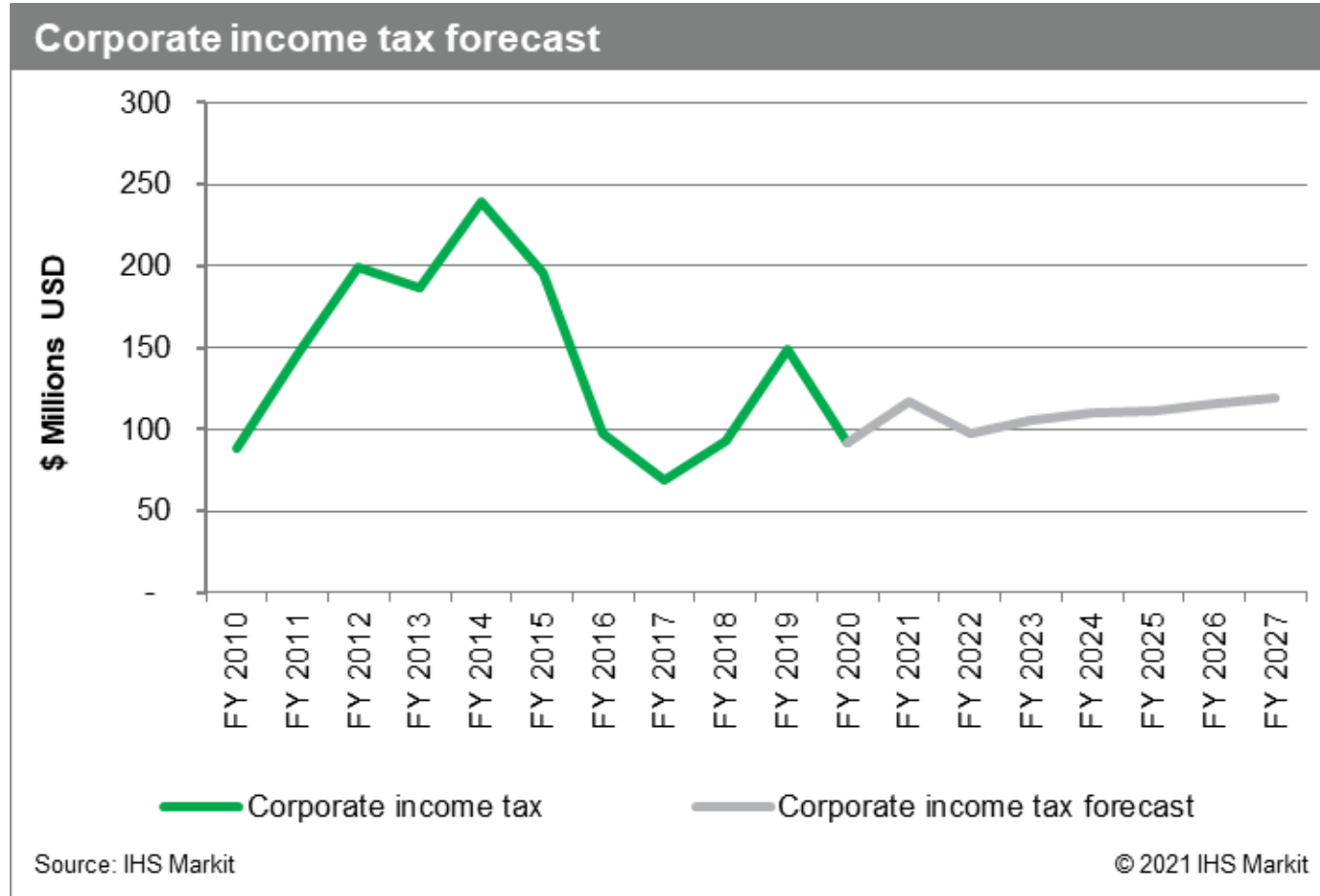




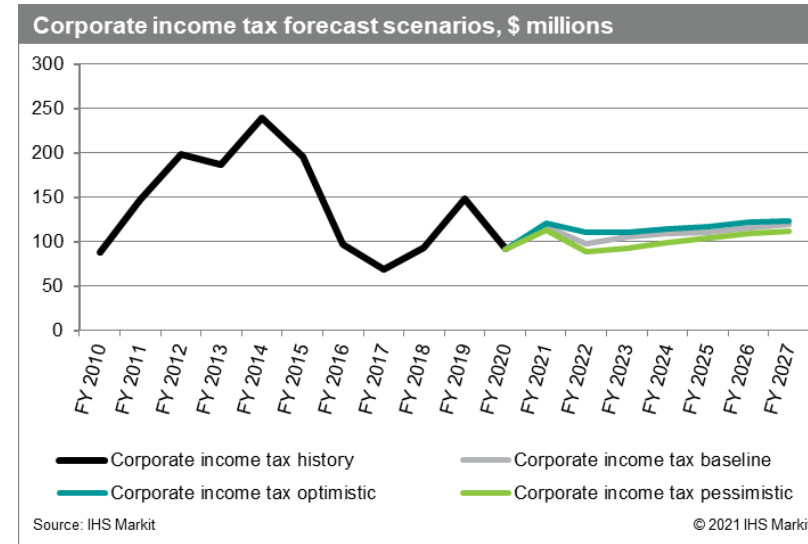
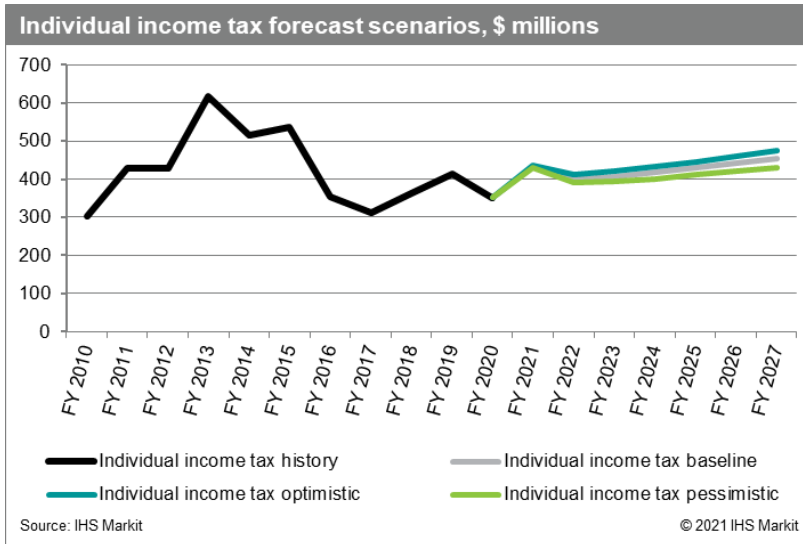
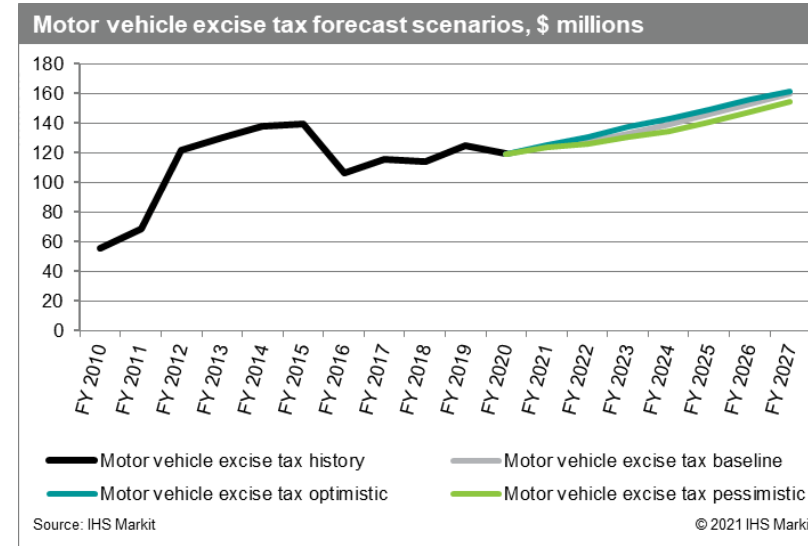
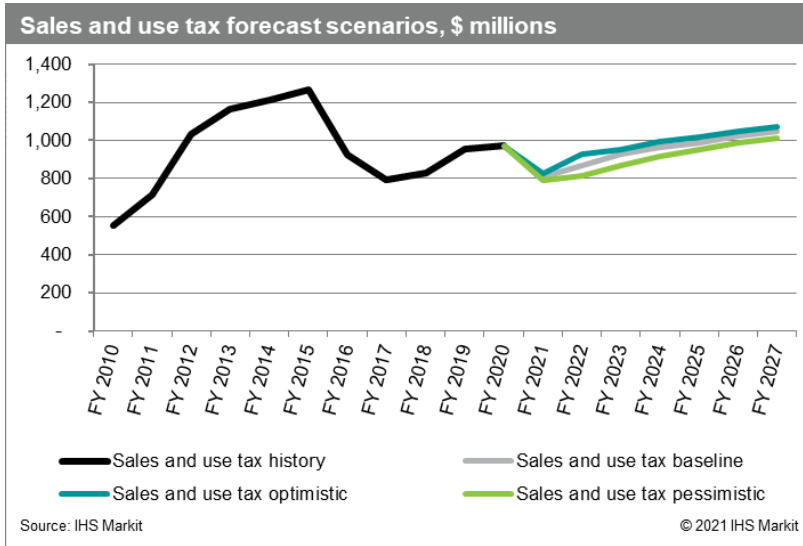
# Individual income tax revenue



# 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	1,779,129,718 -0.4%	1,799,519,085 0.7%	1,760,059,613 -1.5%
Motor vehicle excise tax	244,275,345 2.2%	244,737,333 2.4%	243,510,876 1.9%
Net individual income tax	784,678,144 0.8%	787,200,855 1.2%	780,848,566 0.4%
Net corporate income tax	208,125,376 -13.8%	212,917,229 -11.8%	204,704,966 -15.2%

Revenue Source	2021-23 Biennium Baseline	2021-23 Biennium Optimistic	2021-23 Biennium Pessimistic
Sales and use tax	1,795,249,810 0.9%	1,880,238,002 4.5%	1,682,844,338 -4.4%
Motor vehicle excise tax	260,940,310 6.8%	268,159,108 9.6%	256,423,137 5.3%
Net individual income tax	808,247,861 3.0%	830,978,304 5.6%	784,825,060 0.5%
Net corporate income tax	202,944,529 -2.5%	221,277,843 3.9%	181,014,880 -11.6%

\* The percentages reflect the change from the prior biennium.

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