COMMERCIAL VEHICLES || FORECAST

NORTH AMERICA COMMERCIAL VEHICLE OUTLOOK

REPORT VERSION PUBLISHED NOVEMBER 2019

2019 LAWRENCE R. KLEIN BLUE CHIP AWARD WINNER

Contributor to Blue Chip Economic Indicators and WSJ Economic Forecast Panel

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SAMPLE REPORT OVERVIEW:

Thank you for your interest in ACT Research and our work. The objective of this sample report is to share an understanding of the market, economy, and insight to analysis at the time of publication. We share this report from November 2019 for market context, an assessment of our historical and current data recordings, and a look into the market indicators we gather from various data sources.

N.A. Commercial Vehicle OUTLOOK

This is a monthly report analyzing the North American Commercial Vehicle markets. In the report is a robust review of the North American economy (Canada, United States, Mexico), medium and heavy duty market activity, and the U.S. trailer industry, as well as transportation and equipment briefs.

The ***N.A. CV OUTLOOK*** is a monthly report providing an in-depth overview of current commercial vehicle market activity and factors influencing demand. The report culminates in quarterly (2 years) and annual (5 year) forecasts. Drilling deeper, the ***OUTLOOK*** starts with by-country North American economic overviews, before pivoting to sections on current market activity for MD vehicles, HD trucks and tractors, and the U.S. trailer market. From there, the report examines additional factors influencing demand, including freight market activity, trends in used equipment valuations, and where the industry stands in relation to the regulatory pipeline. The forecasts in the report are broken into the specific segment's vehicle types. For Classes 5-7, market trucks, buses, and Class A recreational vehicles are forecast. For Class 8, the forecast is split into a matrix of vocational trucks and tractors, with and without sleepers. The U.S. trailer market forecast breaks the market into major trailer types, with whole market aggregates for Canada and Mexico.

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FORECAST TABLES

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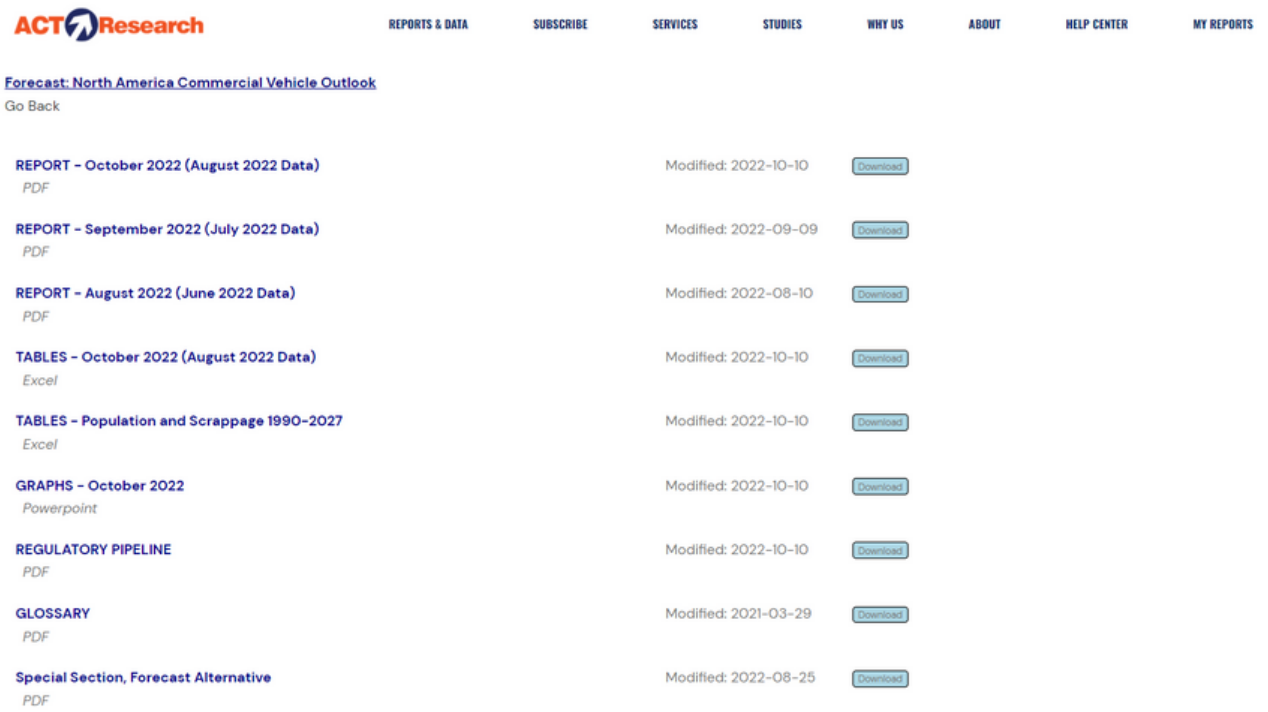
Report Dashboard Overview:

With your subscription to the ***N.A. Commercial Vehicle OUTLOOK***, you will gain access to our report dashboard. Below is a listing, as well as a screenshot, of this dashboard and the support material you will receive with your report.

1. PDFs of previous two months' reports
2. Tables including:
   A. Production summaries of Class 4, 5-7, 8 and Trailers
   B. Classes 5-7, 8 Retail Sales and Production Outlook
   C. Population and Scrappage 1990-2024
3. Graph pack complete with 75 graphs covering:
   A. Economics
   B. ACT's Proprietary Tractor Dashboard
   C. Fuel Analysis
   D. Total Classes 5-7, 8
   E. Class 8 Population Metrics
   F. TL Statistics
   G. Total Trailers
   H. Trailer Population & Age
   I. Forecast Graphs
4. Regulatory Information
5. Glossary of Terms and Definitions



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BUILD LOCATION: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place. Current N.A. OEM build occurs in the United States, Canada, and Mexico.

HIGHLIGHTS

Click paragraphs to zoom to more details

NORTH AMERICAN ECONOMY

- Despite uncertainty, we are not forecasting an economy-wide recession, but are expecting "rolling recessions."
- Real GDP growth is forecast to average 2.3% in 2019, 1.7% in 2020, and slow a bit further in 2021.
- Despite impediments of global economic weakness and trade tensions, the US labor market remains firm.
- Consumer spending continues its robust pace, propelled by positive fundamentals of wage growth, jobs and high sentiment values.
- The housing market has shown some vitality recently that could continue into 2020. Manufacturing remains subject to tariffs. Orders are flat, with little to indicate that an upswing is about to happen.
- Crude oil price movement remains focused on how tariff and trade influence global energy demand.

MEDIUM DUTY

- Activity for the total MD market was mixed in September, with weakness in sequential comparison, but expansion evident in longer-term performance.
- October's preliminary medium duty truck net order intake rose 7% m/m, to 14,300 units (±5%).

HEAVY DUTY

- Even as we face the push and pull of seemingly contradictory market statistics, our outlook remains essentially unchanged for the short- and long-term.
- Our long-stated view is the slowdown in economic activity and freight will result in a soft landing and not turn into a recession. After this pause, the heavy duty truck market is forecast to rebound and see three years of growth from 2021 to 2023.
- The specific forecasts in the near-term show 2019 NA retail sales at 338k and build at 346k, followed by 2020 at 252k (down 25%) and 234k (down 32%), respectively. A classic inventory liquidation, in the face of declining demand, accounts for the wide spread between sales and build in 2020.
- Our view is that 2021 and 2022 will see gradual sales and build increases, to levels at, or slightly above, long-term replacement levels.

TRAILERS

- We would expect some seasonal bump in order activity, and it does appear that the 2019-20 order season is now underway. That being said, the pace seems a bit uninspiring.
- Softer orders shift the pendulum to "advantage fleets," and it is likely that ongoing order negotiations are generating some OEM pricing challenges for the near-to-medium term.
- The industry orderboard ended September at 121k trailers, down 7% sequentially and off 39% versus this time last year. The softness was widespread.

TRANSPORTATION SECTOR

- The freight market remains in mild recession, with loose capacity and aggressive private fleet growth in 2019 pressuring for-hire freight rates.
- Additional tariff threats for December 15th will still have ripple effects, but not enough to firm up the soft spot rate market.
- The consumer continues to produce underlying freight growth.
- We expect these freight conditions to pressure TL and intermodal contract rates in the near term, adversely impacting fleet profitability and commercial vehicle demand.

USED EQUIPMENT

- Same dealer sales of used Class 8 equipment were uniformly weaker in September, falling 5% m/m, with y/y and ytd volumes dropping 18% and 19%, respectively.

FORECAST SUMMARY

- Expectations for the Class 8 and trailer markets anticipate an accelerating pullback in build rates, as freight market conditions remain at a low ebb.
- The key risk to all vehicle market forecasts, and the US economy broadly, in either direction, remains the trade war with China.
- Preliminary MD October net orders slowed to their lowest level since July 2016 nominally and December 2013 on a seasonally adjusted basis.
- Despite a high-side production surprise in September, large new inventories and deteriorating freight and rate conditions keep us cautious into the end of 2019.

PRODUCTION SUMMARY
NORTH AMERICAN CLASSES 4-8 VEHICLES & TRAILERS

	2018	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2019	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2020
N.A. CLASS 4											
US	13,280	2,958	4,273	3,530	3,889	14,650	3,228	4,312	3,553	3,908	15,000
CANADA	2,003	466	622	472	490	2,050	452	604	497	547	2,100
MEXICO & EXPORT	2,564	675	581	510	584	2,350	516	690	568	625	2,400
TOTAL N.A.	17,847	4,099	5,476	4,512	4,963	19,050	4,196	5,605	4,619	5,080	19,500
N.A. CLASSES 5-7											
US	245,508	63,740	70,264	67,559	51,067	252,630	57,970	60,509	55,227	55,429	229,135
CANADA	17,095	4,053	4,935	4,831	5,576	19,395	4,647	4,851	4,427	4,443	18,368
MEXICO & EXPORT	10,118	1,996	2,768	2,051	2,732	9,547	2,565	2,677	2,444	2,453	10,139
TOTAL N.A.	272,721	69,789	77,967	74,441	59,375	281,572	65,182	68,037	62,098	62,325	257,642
N.A. CLASS 8											
US	263,132	74,636	80,214	77,279	59,463	291,592	52,697	46,641	44,832	42,944	187,115
CANADA	36,186	9,611	9,125	9,389	7,274	35,399	6,858	6,070	5,834	5,589	24,351
MEXICO & EXPORT	25,133	5,111	6,601	3,773	3,319	18,804	6,213	5,499	5,285	5,063	22,059
TOTAL N.A.	324,451	89,358	95,940	90,441	70,056	345,795	65,768	58,209	55,952	53,596	233,525
TOTAL CLASSES 4-8											
US	521,920	141,334	154,751	148,368	114,419	558,872	113,895	111,462	103,612	102,280	431,250
CANADA	55,284	14,130	14,682	14,692	13,340	56,844	11,957	11,524	10,759	10,579	44,819
MEXICO & EXPORT	37,815	7,782	9,950	6,334	6,635	30,701	9,294	8,866	8,298	8,141	34,598
TOTAL N.A.	615,019	163,246	179,383	169,394	134,394	646,417	135,146	131,852	122,669	121,000	510,667
N.A. TRAILERS											
U.S. VANS	240,408	63,044	67,498	66,071	56,687	253,300	54,275	51,456	48,384	46,685	200,800
U.S. SPECIALTY	82,549	22,251	22,117	19,281	15,801	79,450	17,296	16,856	15,669	14,579	64,400
U.S. CHASSIES/DOLLIES	62,837	8,253	9,059	9,820	8,168	35,300	8,768	9,344	9,639	10,249	38,000
TOTAL U.S. AXLED	385,794	93,548	98,674	95,172	80,656	368,050	80,339	77,656	73,692	71,513	303,200
TOTAL CANADA TRAILERS	23,375	6,050	5,100	5,750	5,100	22,000	4,900	4,150	4,750	4,250	18,050
TOTAL MEXICO TRAILERS	9,750	2,350	3,000	3,750	3,150	12,250	2,250	2,900	3,600	3,000	11,750
TOTAL N.A.	418,919	101,948	106,774	104,672	88,906	402,300	87,489	84,706	82,042	78,763	333,000

FORECAST CHANGE SUMMARY
(MONTH/MONTH CHANGE)

	2019	2020	2021	2022	2023	2024
U.S. GDP	-10 bps	-	-	-	-	-
PRODUCTION						
CLASS 4	800	400	200	-	-	-
CLASSES 5-7	8,164	(2,815)	-	-	-	-
CLASS 8	762	(4,398)	4,513	666	(3,751)	11,492
TOTAL TRAILERS	3,050	900	500	700	600	-

Note: Historical classes 5-8 production data tie to ACT Research Company's State of the Industry Reports published monthly.
Class 4 historical production data derived from Ward's FS-5S report published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

POSTURE OF THE US ECONOMY

Our view of the US economy remains unchanged. Economic growth is decelerating as the stimulus of the 2017 tax cut ebbs. Despite uncertainty, we are not forecasting an economy-wide recession, but are expecting "rolling recessions." Manufacturing, retail and the energy sectors are most vulnerable. Trade tension continues to be a major source of volatility, globally as well as domestically.

Real GDP growth is forecast to average 2.3% in 2019, 1.7% in 2020, and slow a bit further in 2021. The consumer sector, propelled by the fundamentals of strong employment, rising income and high levels of sentiment, provides the solid base for growth. Business expenditures will be the weak sister, constrained by rising tariff costs and uncertainty. The risks to our forecast are mainly to the downside.

The unemployment rate, currently at 3.6%, should average 3.7% in 2019 and rise a tad to 3.8% in 2020, remaining below the natural rate estimated at 4.5%. Headline inflation measures should average slightly below the Fed's preferred 2% target; measures that eliminate volatile series, such as energy and food, are the core readings, which should remain slightly above the 2% mark.

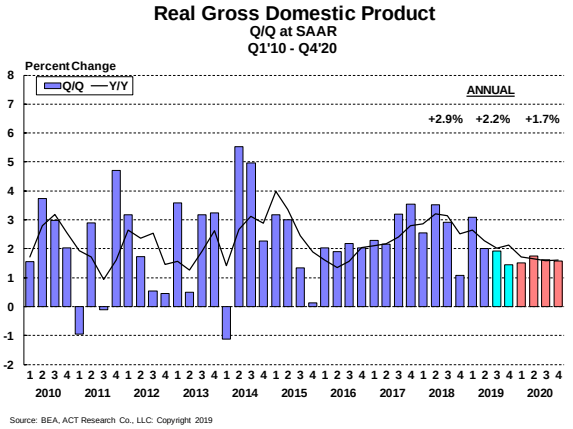
Our view is likely to be tested by economic data volatility in the next several months. It may be spring of 2020 before projections are finally validated. On the positive side, but needing confirmation are:

1. The strong October payroll numbers, which when adjusted for the striking UAW workers and census, implied a monthly rise near 200k.
2. The GM strike settlement is likely to boost output, starting in November and extending into Q1'20, but will this be enough to offset the negative impact of pending tariff increases?
3. Prospects of trade accommodation, President Trump's phase 1, should become clear, if and when the President meets Chairman Xi around November 16 -17. An initial euphoric response is likely, simply because the danger of trade wars might be lessened. Debate about significance, start of a long-term process or just a one-shot deal, will occur. Details are sure to be scarce and a rescinding of tariffs already in place unlikely.

   3.a. Passage of the United States-Mexico-Canada (USMCA) trade agreement should be added to the trade assessment mix.
4. Steady FOMC policy, after three cuts, would be an implicit endorsement for positive economic growth.

On the negative side are:

1. Continued downward economic pressure as the brunt of tariffs impacts 1H'20. Concomitant with this is concern that spillover from the goods side to other segments will occur. To date, this has not been the case.
2. Inventory accumulation has boosted the real GDP figures in 2019, as businesses pre-ordered to avoid incurring tariff fees. Will this process reverse and how quickly now that fees are in place?



Real GDP & Components

Q/Q at Seasonally Adjusted annual Rate

	Real GDP	Personal Consumption Expenditures	Nonresidential Fixed Investment	Residential Fixed Investment	Government Consumption Expenditures	Imports	Exports	Inventory Change ($Bil)	Final Sales
Q3'18	2.9%	3.5%	2.1%	-4.0%	2.1%	8.6%	-6.2%	87.2	0.8%
Q4'18	1.1%	1.4%	4.8%	-4.7%	-0.4%	3.5%	1.5%	93.0	1.0%
Q1'19	3.1%	1.1%	4.4%	-1.0%	2.9%	-1.5%	4.1%	116.0	2.6%
Q2'19	2.0%	4.6%	-1.0%	-3.0%	4.8%	0.0%	-5.7%	69.4	3.0%
Q3'19	1.9%	2.9%	-3.0%	5.1%	2.0%	1.2%	0.7%	69.0	2.0%

3. Will employment growth continue to be robust and will public sentiment remain high? If not, the mainstay of the positive economic outlook, consumer expenditures, becomes vulnerable.

The impeachment inquiry underway in Washington D.C. should not have a direct economic effect, nor is it likely to cause President Trump to resign.

FEDERAL RESERVE: As widely anticipated, the Federal Reserve reduced the federal funds rate target by 25 basis points, to the 1.50% to 1.75% range. Two members dissented, wanting to leave rates unchanged. At his press conference, Chairman Powell seemed to suggest that current monetary policy posture is somewhat accommodative.

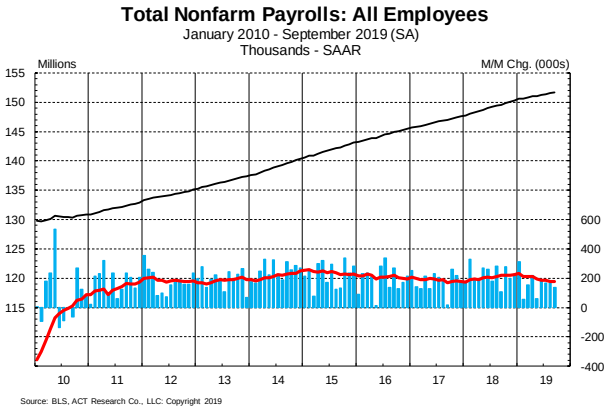
To the Fed the downside costs of a recession are worse than the risk of higher inflation. Thus, the three interest rate cuts since mid-year were a form of "insurance" taken in a world of European economic weakness, trade-related tensions, and a lower inflation environment.

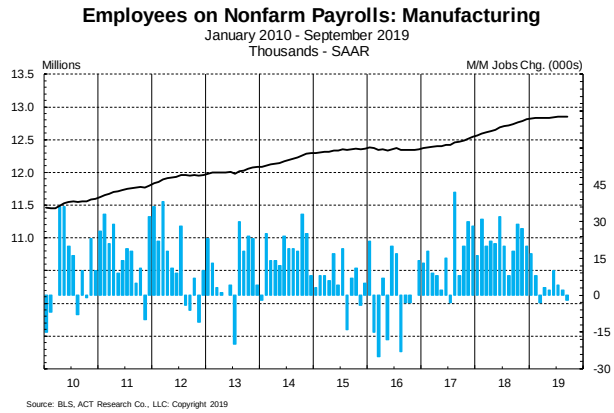
Unless economic activity deteriorates significantly, FOMC policy will remain unchanged, possibly for all of 2020. The strength in the labor market and solid consumer spending were presented as strong underpinnings of US economic strength. Chairman Powell seemed to hint that an increase in the federal funds rate is not likely to occur unless a significant and sustainable acceleration in the inflation rate above the Federal Reserve's 2% measure occurs.

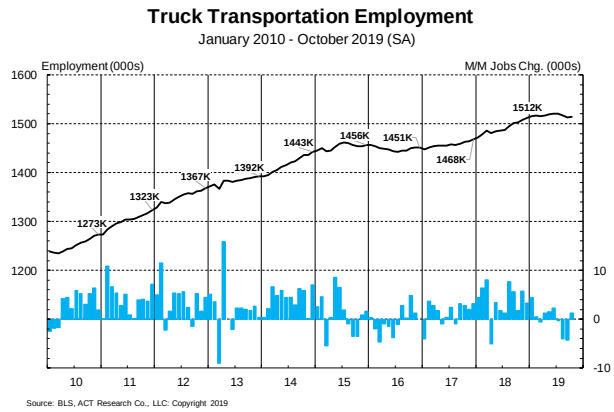
Regarding the Fed increasing its balance sheet to avoid liquidity problems as had occurred in the repo market, Chairman Powell stressed again that these moves are technical in nature and not a hidden attempt at financial stimulation.

LABOR REPORT: Despite impediments of global economic weakness and trade tensions, the US labor market remains firm. Workers who have been on the sidelines are rejoining the work force as indicated by the rising labor force participation rate, 63.3. Wage gains are positive, but subdued, even as the unemployment rate remains at a historically low 3.6%. The report provides support for a steady monetary policy posture, following last week's rate cut.

October non-farm payroll employment rose a greater-than-expected 128k and the prior two months added an additional 91k. The number would have been close to 200k, if the approximately 50k UAW striking workers and 17k laid off census







workers were included. Workers who are on strike are not counted as employed. Although there are pockets of weakness such as manufacturing, the broad labor market remains strong.

Employment in the goods-producing sectors, major drivers of transportation and freight demand, declined 26k, significantly less than the average monthly 16k gain of the past year and even September's 7k increase. The weakness was all in manufacturing, where employment in the motor vehicle segment fell 42k, but rose 5k in the non-

durable sector. Construction added 10k, consistent with its trend, and September's previously reported 7k now stands at 11k. Mining employment was unchanged, but oil-related employment eked out a small rise.

Truck transportation seems to have dodged the manufacturing weakness, with an October employment growth of 1.3k. This segment lost 8.3k in the prior three months, leaving 2019 growth almost flat. Employment in warehouse and related activities climbed 2.9k, about half the average monthly growth of the past year. Railroad employment continues to fall; it lost 0.3k in October as compared to an average monthly drop of 1.4k. Weakness in the markets of coal, oil, and grains, as well as management restructuring of operations, are the explanation for the long-term declines. Air freight added 3.0k employees, possibly a recovery for the surprisingly steep August decline.

The other labor figures were also positive. The unemployment rate is still at a historically low level, 3.6% for the standard measure and 7% for the broader U-6 measure. U-6 includes discouraged workers, as well as part-time employees. Average hourly earnings (AHE) increased 6 cents, making the y/y increase 3.0%. The moderate increase is still greater than the inflation rate, implying that real income continues to grow.

REAL GDP: Real GDP growth is estimated to have risen by 1.9% in Q3'19, similar to the prior quarter's 2.0%. Q1'19's 3.1% would have also been around the 2% mark were it not for a buy-in-advance boost to inventories done to avoid future higher tariffs. The deceleration from 2018's almost 3% pace resulted from the fading impact of the 2017 tax cut and the imposition of several tranches of tariffs. Thus, it appears that US economic growth is returning to the trend 2% pace that was in effect prior to the tax cut.

An examination of components reveals a split in the drivers of growth. Spurred by healthy employment and income, consumer outlays expanded at 2.9%, slower than the second quarter's 4.6%, but a still respectable performance. Residential spending, which had declined for six consecutive quarters, rose 5.1% in Q3'19. A solid labor market, a drop in mortgage rates, and a slowing of the pace of home price appreciation were responsible for the positive outcome.

Business sector activity was the weak segment. Business fixed investment fell 3.0%, only the second decline, after three years of constant increases. Expenditure on structures dropped 15.3%, with more than half of the decline attributable to the energy sector. Spending on equipment also was negative, -3.8%; significant weakness in aircraft (Boeing) caused by a non-economic event was the cause, while truck outlays rose 8.3%. Intellectual property investment eased a bit, but remained a +6.6%. Inventory investment was unchanged, in contrast with the past year's sharp quarter to quarter swings.

Inflation, as measured by headline PCE, averaged 1.5%, below the Fed's preferred 2% rate and a tad lower than our projection. Core PCE, which excludes the volatile food and energy components, averaged 2.2%, above the Fed's preferred target.

Looking forward, we expect real GDP growth to continue decelerating but remain positive. Real GDP is forecast to average 2.3% in 2019, 1.7% in 2020 and 1.6% in 2021. Weakness in business investment, particularly in structures, should be offset by solid consumer expenditures in the 2% range. Headline PCE inflation will remain slightly below the FOMC's preferred 2%, while the core PCE hovers 0.2 above the Fed's target.

CONSUMER INDICATORS: Consumer spending continues its robust pace, propelled by positive fundamentals of wage growth, jobs and high sentiment values.

September retail sales appear soft, but a closer look indicates positive albeit more moderate increases. Sales fell 0.3% (4.1% y/y), while August's 0.4% was raised to +0.6% (4.4% y/y). These figures suggest a third quarter real PCE of 3% and a fourth quarter 2.5% rise. The Trump administration extension of tariffs on remaining Chinese imports could encourage a buy-in-advance boost, extending spending into Q4.

Building materials sales fell 1.0% in September, but revisions raised the level by more than the September drop. Furniture sales rose 0.6%, and last month's decline was erased. Together these segments point to an improving housing sector. Gasoline sales fell 0.7%, after a 1.9% drop, but 3.5% real volumes actually rose. The retail sector exhibited softness. Non-store sales dropped 0.3% (12.9% y/y) and the prior months' growth was lowered a cumulative 0.5%. Department store sales remain in a downward spiral, a pattern also evident

by the segment's employment drops. Automotive sales declined 1.0%, even as the unit sales reported a surprising increase to a 17.2 million SAAR.

September PCE spending rose 0.2% (2.6% y/y) and August's figure was raised to 0.2% (2.4% y/y). Strength was in the goods sector, while services continued advancing at a slow 0.1% monthly pace. Food expenditures dropped a surprising 0.1%, but should rebound next month. Major increases were for motor vehicles and health care services.

September personal income rose 0.3% (4.9% y/y) and August's was raised to 0.5% (4.6% y/y). Given soft labor, wages were largely unchanged, but farm income increased significantly via government subsidies. Real disposable income rose a solid 0.3% (3.5% y/y) and the saving rate climbed to 8.3%, a 0.5% increase from July.

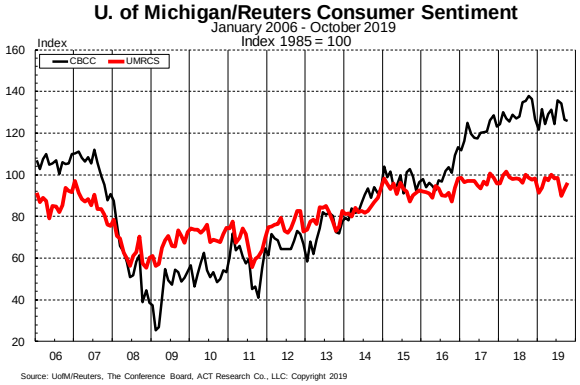
The CPI and PCE inflation figures differ by about 0.5% for two reasons. The components of each index have different weights and the PCE allows for shifts among categories to a greater extent than the CPI measure.

September PCE prices were unchanged m/m for the headline and for the core, while the y/y change were 1.3% and 1.7%, respectively. With reference to components, services are rising at a 2.3% y/y pace, but declines in the goods sector, particularly durables, kept the aggregate below 2%. On a quarterly basis, headline PCE stands at 1.5%, while the core pace is 2.2%. The Federal Reserve continues to expect rates to approach its 2% target.

September core CPI rose 0.1% (2.4% y/y), after an August rise of 0.3% (2.4% y/y). Declines in apparel, commodities, and used cars led to the slowing. Household goods, which fell a surprising 0.1%, increased 0.3% in September, the first sign of the tariff impact. Services continue to climb at a 2.9% y/y pace. The headline CPI was unchanged (1.7% y/y) as energy prices fell 1.4%.

The confidence measures, which dropped sharply in August, continue to recover. The Conference Board's October reading stands at 125.9, slightly less than the upwardly revised September reading. The October current conditions measure, at 172.3, and expectations, at 94.9, remain at respectable levels. The University of Michigan Index tells the same story, but more forcefully. The overall index continues up, and at 95.5 is 5.7 points above the August low. The current conditions, at 113.2, and the expectations measure, at 84.2, are also decent. We remain positive about the consumer outlook, as long as sentiment indicators stay above the critical levels

Consumer Board: Consumer Confidence & U. of Michigan/Reuters Consumer Sentiment



Consumer Indicators

	Real Disposable Income	Non-Farm Payrolls	New Job Growth	Unemployment Rate	Avg. Weekly Hours	Personal Savings Rate	U.of M. Consumer Sentiment	Consumer Price Index	Real Retail Sales	Case-Shiller 20 City Home Price Index
	12m/12m%Chg.	Y/Y%Chg.	M/M, 000s		Hours		Index	Y/Y%Chg.	Y/Y%Chg.	Y/Y%Chg.
Oct.	3.9%	1.8%	277	3.8%	33.7	7.3%	98.6	2.5%	2.2%	5.0%
Nov.	3.9%	1.8%	196	3.7%	33.7	7.2%	97.5	2.2%	1.7%	4.5%
Dec.	4.0%	1.8%	227	3.9%	33.7	8.8%	98.3	1.9%	-0.5%	4.0%
2019	3.9%	1.9%	312	4.0%	33.8	8.3%	91.2	1.5%	1.1%	3.4%
Feb.	3.8%	1.7%	56	3.8%	33.6	8.8%	93.8	1.5%	0.4%	2.8%
Mar.	3.8%	1.7%	153	3.8%	33.7	8.4%	98.4	1.9%	1.9%	2.5%
Apr.	3.7%	1.7%	216	3.6%	33.6	8.1%	97.2	2.0%	1.7%	2.5%
May	3.7%	1.6%	62	3.6%	33.6	8.0%	100.0	1.8%	1.2%	2.3%
June	3.6%	1.5%	178	3.7%	33.6	8.1%	98.2	1.7%	1.6%	2.2%
July	3.5%	1.5%	166	3.7%	33.5	7.8%	98.4	1.8%	1.7%	2.1%
Aug.	3.4%	1.4%	168	3.7%	33.6	8.1%	89.8	1.8%	2.6%	2.1%
Sep.	3.4%	1.4%	136	3.5%	33.6	8.3%	93.2	1.7%	2.3%	-
Oct.	-	-	-	-	-	-	96.0	-	-	-

of 76 for the University of Michigan and 86 for the Conference Board surveys.

The August Case-Shiller Index for national home prices rose 3.2% y/y, a steady and sharp slowing from the year-ago 5.7%. Most cities experienced monthly price changes smaller than 0.5%. Continuing recent trends in the year-over-year pace, to the high side, is Seattle with a 1.3% increase and, to the downside, is Las Vegas with a 1.4% drop. The slowing price pattern is not surprising, given the rapid house price increases in excess of inflation of recent years, changing tax consequences, and the modest pace of housing activity. The deceleration should continue in 2020, as high-priced homes are slow to move without significant price concessions.

FREIGHT METRICS: The housing market has shown some vitality recently that could continue into 2020. Manufacturing remains subject to tariffs. Orders are flat, with little to indicate that an upswing is about to happen.

The weakness of September housing starts is likely to be temporary, for fundamental as well as statistical reasons. Starts fell 130k, to a 1.256M rate, following last month's 182k rise. Almost all of the weakness was in multi-family homes, which dropped from 471k to 338k. With multi-family permits exceeding build for past several months, a rise in future multi construction is likely. Single-family starts totaled 0.919, placing this sector within hailing distance of the one-million mark. The month's weakness occurred in all regions except the West.

The decline of mortgage rates, coupled with slowing house prices, and continued firm labor markets should aid housing activity. The latest pending home sales data are emitting positive signals. September existing home sales totaled 5.380 million (SAAR), a drop of 0.120 from August's upwardly revised 5.5 million pace. The y/y sales pace has finally turned positive, after 16 months of weakness. In July it was 0.6%, August 2.8%, and September 3.9%. New home sales in September totaled 701k, while August was revised slightly downward to 706k. But sales remained above the 700k level and the y/y positive pace is in double-digit territory. Inventory levels have firmed to a 4-month pace, which is still judged tight. Regarding price behavior, existing homes are selling at a 2% to 4% y/y range, while new homes with larger price tags are actually falling.

The September ATA Tonnage Index (SA) rose 0.2% (3.5% y/y), following a downwardly revised August of -4.0% (3.2% y/y). The ytd rate is 4.3%, about half of last year's pace, a clear sign of decelerating, but positive for freight and transportation activity. The tonnage series seems to have a tendency to accelerate in the opening month of a quarter. So, look for a jump in October. Last year's rise was 2.3%, while April's increase was 7.1% and July's was 6.2%.

September industrial production fell 0.4% (-0.1% y/y), after a +0.8% August; all components were positive in August, but the opposite is true for September. Manufacturing declined 0.5% (-0.8% y/y), while durable output fell 0.7% (-0.3% y/y). The

Freight Metrics

	ACT Freight Composite	ATA SA Truck Tonnage	ATA SA Truck Loads	Trucking Employment	ISM Index	ISM: New Orders	Industrial Production MFG	Cap. Goods Orders (ex air, etc.)	Car & Light Truck Sales	Housing Starts
	Q/Q SAAR	Y/Y%Chg.	Y/Y%Chg.	Y/Y%Chg.	Index	Index	Y/Y%Chg.	Y/Y%Chg.	Mil. SAAR	000s SAAR
Oct.	1.7%	7.3%	1.8%	2.7%	57.7	57.4	2.4%	4.1%	17.5	1,211
Nov.		5.6%	0.8%	3.0%	59.3	62.1	2.3%	6.1%	17.4	1,202
Dec.		3.6%	-1.1%	3.0%	54.3	51.3	2.9%	1.9%	17.4	1,142
2019	3.6%	5.8%	2.0%	3.0%	56.6	58.2	2.7%	4.1%	16.7	1,291
Feb.		4.0%	-0.9%	2.6%	54.2	55.5	1.1%	2.4%	16.5	1,149
Mar.		1.8%	-1.1%	2.0%	55.3	57.4	1.0%	3.8%	17.3	1,199
Apr.	2.2%	7.4%	4.5%	2.4%	52.8	51.7	-0.4%	1.1%	16.5	1,270
May		3.1%	0.8%	2.3%	52.1	52.7	0.5%	1.1%	17.4	1,264
June		1.4%	-0.8%	2.3%	51.7	50.0	0.3%	0.9%	17.2	1,233
July	3.7%	6.8%	4.1%	2.2%	51.2	50.8	-0.5%	-0.8%	16.9	1,204
Aug.		3.2%	4.3%	1.4%	49.1	47.2	-0.3%	-0.7%	17.0	1,386
Sep.		-	-	0.8%	47.8	47.3	-0.8%	-0.8%	17.2	1,256
Oct.	2.6%	-	-	0.7%	48.3	49.1	-	-	-	-

main source of weakness was trade tensions coupled with the initial impact of the UAW strike. Further weakness is likely in October as the UAW strike and the impact of tariffs spread. The reverse should happen in November as GM, now that the strike has ended, retools and refills inventory. September utility output rose 1.4% (1.2% y/y), as weather conditions were colder than usual. Mining output declined 1.3% (2.6% y/y), but energy-related output fell 5.5%, the fifth sizable drop in six months and consistent with a reduction in the number of operating rigs.

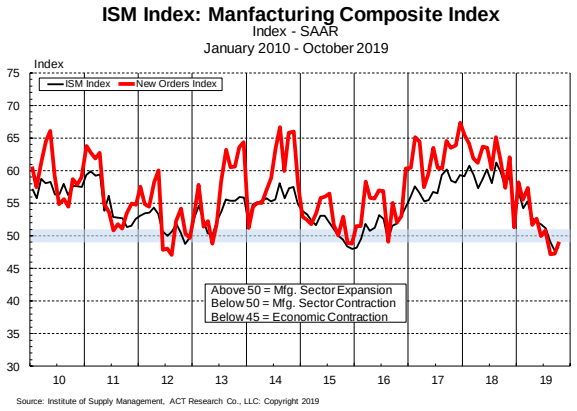
Durable goods orders continue weak, with little to indicate that a pick-up is about to occur. September non-defense capital goods, excluding aircraft, a leading indicator of capital spending, declined 0.5% (-0.8% y/y), while August fell 0.6% (-0.7% y/y). Much of the weakness in September orders was transportation. Total orders fell 1.1% (-5.4% y/y), following three months of increases. Excluding transportation, orders would still be negative 0.3% (0.8% y/y). Sectors with strength included electrical and communication equipment, whose rise may simply be a rebound from past weakness, while computers continued to build on past growth.

Shipments were down, especially transportation and motor vehicles. Non-defense capital goods, ex aircraft shipments, dropped 0.7% (2.6% y/y) and August's increase was revised from up to unchanged. Total durable shipments declined 0.4% for a three-month total of -1.5%.

October light vehicle sales totaled 16.6 million SAAR, a drop from last month's 17.2 million and almost a million less than year-ago levels. Light truck sales averaged 12.1 million SAAR, 73% of the market, while passenger car sales averaged 4.4 million SAAR. Whether the weakness was due to the GM strike or a long-delayed adjustment remains unclear. We expect a vehicle sales pace of 16.8 million SAAR in 2019, the first drop below 17 million in four years, and a 16.5 million figure for 2020.

The Institute for Supply Management (ISM, the purchasing managers association) conducts two surveys: one for manufacturers and the second for all other industries. In October, the two surveys depicted an economy that is improving; manufacturing contracted at a slower pace, while services are advancing.

The manufacturing ISM rose 0.5, to a 48.3 reading, but for the third consecutive time remained under 50.



All components, except exports, (50.4) were below 50, implying activity was dropping. Key components like production and deliveries actually fell further. The non-manufacturing survey was more positive; it rose 2.1, to a 54.7 reading, with all but two components maintaining an above-50 reading.

Interestingly, both surveys reported that inventories were contracting or slowing. For trade, both saw declines in imports and a lack of strength in exports. Regarding employment and orders, service ISM registered positive increases, while manufacturing ISM indicated less weakness (UAW strike settlement effect?).

An alternate measure, the Markit survey, provides a similar description, that is a marginal improvement of activity. In October, the manufacturing activity measure stood at 51.3, up 0.2, while the non-manufacturing index was at 50.6, a 0.3 decline.

PETROLEUM AND NATURAL GAS: Crude oil price movement remains focused on how tariff and trade influence global energy demand. Of course, the vulnerability of supply and geopolitical issues also have an impact. The latter usually are in the background until an event occurs, like last month's attack on Saudi facilities. In recent weeks a rapprochement between China and the US in the matter of tariffs has gained credence. If true, it should lead to higher energy prices because of the anticipated positive impact on global growth.

Even if a deal were to be sealed, the details are likely to be skimpy. Rescinding of tariffs already in place is not likely. Consequently, any price increase will be limited or at least a stepwise pattern, as additional details of an agreement are revealed.

We have assumed that the current range of WTI crude prices was the $50 to $60 range. An

agreement should initially lift prices to the upper end of the range and possibly, over time, an additional $5. The price of gasoline, as well as diesel, should respond by climbing to the $3.00 area for gasoline and $3.30 level for diesel.

Energy prices are still a bargain. At the start of November, WTI prices stood at $55 (Brent was $60.50), $10 and 15% cheaper than year-ago levels. Gasoline prices at the pump are around $2.70, $0.14 and 5% cheaper than last year. Diesel costs $3.06, $0.28 and 8% cheaper than last year.

Natural gas prices have just begun their seasonal upward march. With the exception of a brief uptick in late September, natural gas prices per million BTU have, since the summer, been mainly in the $2.10 to $2.25 range. Increased production and expanding storage capacity have created a large pool of excess product and kept prices low. Historically, the arrival of cold weather and increased seasonal demand have pushed natural gas prices above the $3 threshold. Last winter prices jumped to the $4.50 level, while two years ago the peak rate was $3.66. Unless a disruption of gas distribution occurs, the ample supply may keep natural gas prices close or even below the $3 mark.

The other winter phenomenon is the widening spread between diesel and gasoline prices. In the past two years, the opening of export markets where diesel prices are higher to US producers has presented opportunity of increased profits. The result has been a general widening in the gasoline-to-diesel spread. Additionally during winter, the demand for inputs used for diesel increases, mainly from heating oil, further widening the gasoline-diesel differential. Currently, the price difference is around 30 cents. In the winter the differential should expand to the 40 to 45 cent range. Last winter, conditions caused the spread to be nearly 70 cents wider. Once spring arrives the spread should return to the previous relationship.

ECONOMIC SIGNPOST DEVELOPMENTS

- **Non-Farm Payroll Employment and Initial Unemployment Claims:** Overall growth continues firm, reinforced by the historically low levels of initial claims. The average monthly change should slow to 150k in 2020. The upward march of wages continues, but moderately.
- **Inflation:** The Fed's 2% inflation threshold remains, but increased attention is paid to the low recordings of recent years. The energy price roller coaster may temporarily dampen price pressures and introduce intra-year volatility. Tariffs effect is about to appear in the CPI and PCE measures.
- **Consumer Spending:** Solid income and job growth, as well as increasing wealth and available credit, support consumer spending. A sharp drop in consumer and business optimism, should it occur, would signal concern about the future health of spending.
- **Housing Market:** Recent drops in mortgage rates and a slowing in the rate of home prices should bolster housing activity slightly for the next year or so. The rate of price change should continue to decelerate in 2019.
- **Dollar Value on FX Markets:** The US economy, relatively strong as compared to the rest of the world, should lead to a temporarily firmer dollar.
- **Government Policy:** Application of tariffs seemingly in a haphazard manner has roiled markets, raised uncertainty, and intensified caution. The unpredictability of President Trump's actions continues to be a risk, as recent events prove. Recent rumors of a pending easing of tariff posture have buoyed markets, but remains to be proven true.

Petroleum Price Trend

	West Texas Intermediate Crude Oil	Brent Crude Oil	Retail Diesel (All Grades)	Unleaded Gasoline (All Grades)	Natural Gas Futures: 1 Mo.
	$/Barrel	$/Barrel	$/Gallon	$/Gallon	$/1MmBTU
Oct.	$ 70.16	$ 81.78	$ 3.37	$ 2.92	$ 3.21
Nov.	$ 56.12	$ 67.97	$ 3.27	$ 2.66	$ 4.11
Dec.	$ 49.11	$ 56.55	$ 3.10	$ 2.44	$ 3.90
2019	$ 50.65	$ 58.53	$ 2.98	$ 2.34	$ 3.11
Feb.	$ 54.45	$ 63.26	$ 3.00	$ 2.39	$ 2.68
Mar.	$ 57.84	$ 65.92	$ 3.08	$ 2.63	$ 2.80
Apr.	$ 63.89	$ 71.31	$ 3.13	$ 2.91	$ 2.60
May	$ 60.89	$ 71.27	$ 3.16	$ 2.96	$ 2.59
June	$ 54.66	$ 64.22	$ 3.08	$ 2.80	$ 2.33
July	$ 57.14	$ 63.77	$ 3.04	$ 2.82	$ 2.30
Aug.	$ 54.83	$ 58.75	$ 2.99	$ 2.68	$ 2.17
Sep.	$ 57.03	$ 62.92	$ 3.03	$ 2.69	$ 2.51
Oct.	$ 53.77	$ 59.67	$ 3.05	$ 2.72	$ -

U.S. ECONOMIC ACTIVITY

	2017	2018	2019	2020	2021	2022	2023	2024
	(A)	(A)	(F)	(F)	(F)	(F)	(F)	(F)
Real GDP (bil. US$09)	18108.1	18638.2	19058.9	19391.0	19717.0	20095.7	20624.7	21199.9
	2.4%	**2.9%**	**2.3%**	**1.7%**	**1.7%**	**1.9%**	**2.6%**	**2.8%**
Personal Consumption (bil. US$09)	12566.9	12944.6	13278.1	13585.4	13827.2	14145.2	14484.7	14788.9
Y/Y % Chg.	**2.6%**	**3.0%**	**2.6%**	**2.3%**	**1.8%**	**2.3%**	**2.4%**	**2.1%**
PCE: Durable Goods (bil US$09)	1586.4	1685.7	1755.8	1811.6	1875.0	1940.6	2008.6	2078.9
Y/Y % Chg.	**6.9%**	**6.3%**	**4.2%**	**3.2%**	**3.5%**	**3.5%**	**3.5%**	**3.5%**
Nonresidential Fixed Investment (bil. US$09)	2531.2	2692.3	2778.4	2856.2	2941.9	3015.4	3151.1	3403.2
Y/Y % Chg.	**4.4%**	**6.4%**	**3.2%**	**2.8%**	**3.0%**	**2.5%**	**4.5%**	**8.0%**
Residential Fixed Investment (bil. US$09)	611.9	602.9	589.4	594.7	594.1	609.0	633.3	646.0
Y/Y % Chg.	**3.5%**	**-1.5%**	**-2.2%**	**0.9%**	**-0.1%**	**2.5%**	**4.0%**	**2.0%**
Government Purchases (bil. US$09)	3169.6	3223.9	3296.7	3358.6	3419.0	3466.9	3501.5	3519.0
Y/Y % Chg.	**0.7%**	**1.7%**	**2.3%**	**1.9%**	**1.8%**	**1.4%**	**1.0%**	**0.5%**
Exports (bil. US$09)	2458.8	2532.9	2532.7	2536.9	2592.8	2683.5	2815.0	2950.1
Y/Y % Chg.	**3.5%**	**3.0%**	**0.0%**	**0.2%**	**2.2%**	**3.5%**	**4.9%**	**4.8%**
Imports (bil. US$09)	3308.5	3453.0	3521.7	3623.8	3747.0	3904.3	4041.0	4182.4
Y/Y % Chg.	**4.7%**	**4.4%**	**2.0%**	**2.9%**	**3.4%**	**4.2%**	**3.5%**	**3.5%**
Net Exports as % of GDP	**4.7%**	**4.9%**	**5.2%**	**5.6%**	**5.9%**	**6.1%**	**5.9%**	**5.8%**
Consumer Price Index - All (82-84=100)	245.1	251.1	255.5	260.6	264.8	269.5	274.9	281.0
Y/Y % Chg.	**2.1%**	**2.4%**	**1.7%**	**2.0%**	**1.6%**	**1.8%**	**2.0%**	**2.2%**
Unemployment (%)	**4.4**	**3.9**	**3.7**	**3.8**	**4.5**	**4.6**	**4.4**	**4.3**
Industrial Production	104.4	108.6	109.5	110.6	111.1	113.4	116.8	120.3
Y/Y % Chg.	**2.3%**	**3.9%**	**0.9%**	**1.0%**	**0.5%**	**2.0%**	**3.0%**	**3.0%**
Freight Composite Index (2004=100)	127.2	131.9	135.6	138.6	141.3	145.2	150.4	60.3
Y/Y % Chg.	**3.4%**	**3.7%**	**2.8%**	**2.2%**	**2.0%**	**2.7%**	**3.6%**	**4.5%**

Source: ACT Research Co., LLC

U.S. ECONOMIC ACTIVITY
Real GDP & Components

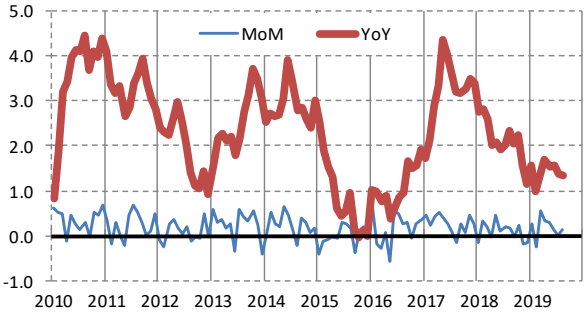
	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
	(A)	(A)	(I)	(F)	(F)	(F)	(F)	(F)
Real GDP (bil. US$09)	18927.3	19021.9	19104.6	19197.3	19269.7	19353.9	19432.2	19508.0
Q/Q % Chg. @ SAAR	**3.1%**	**2.0%**	**1.8%**	**2.0%**	**1.5%**	**1.8%**	**1.6%**	**1.6%**
Personal Consumption (bil. US$09)	13103.3	13250.0	13339.5	13419.5	13483.3	13554.0	13618.4	13685.8
Q/Q % Chg. @ SAAR	**1.1%**	**4.6%**	**2.7%**	**2.4%**	**1.9%**	**2.1%**	**1.9%**	**2.0%**
Nonresidential Fixed Investment (bil. US$09)	2765.6	2758.5	2785.5	2803.8	2828.0	2846.0	2867.4	2883.4
Q/Q % Chg. @ SAAR	**4.4%**	**-1.0%**	**3.9%**	**2.6%**	**3.5%**	**2.6%**	**3.0%**	**2.2%**
Residential Fixed Investment (bil. US$09)	591.4	587.0	588.4	590.7	592.9	594.4	595.8	595.8
Q/Q % Chg. @ SAAR	**-1.0%**	**-3.0%**	**1.0%**	**1.5%**	**1.5%**	**1.0%**	**1.0%**	**0.0%**
Government Purchases (bil. US$09)	3258.1	3296.6	3308.2	3324.1	3335.8	3354.1	3366.7	3377.6
Q/Q % Chg. @ SAAR	**2.9%**	**4.8%**	**1.4%**	**1.9%**	**1.4%**	**2.2%**	**1.5%**	**1.3%**
Net Exports as % of GDP	**5.0%**	**5.2%**	**5.3%**	**5.4%**	**5.5%**	**5.5%**	**5.7%**	**5.8%**
Freight Composite Index (2004= 100)	134.2	135.0	136.2	137.1	137.8	138.5	32.1	31.9
Q/Q % Chg. @ SAAR	**3.6%**	**2.2%**	**3.7%**	**2.6%**	**2.3%**	**2.0%**	**1.1%**	**0.8%**

(A): ACTUAL, (I): Initial, (P): Preliminary, (F): Forecast
Source: ACT Research Co., LLC

CANADA

Our formal view on prospects for Canada for the foreseeable future has remained steady – slow growth ahead but no recession. However, we do think that global trade tensions are adding to risk on the downside. They seem to be a contributing factor that is weighing more heavily, particularly in manufacturing and energy sectors. That said, it is important to remember that provincial performance varies across the board; the commodity-dependent west will yield different data results than the more services-oriented eastern provinces. And, undeniable cautionary signals support our prediction that Canada's growth track will remain sluggish, at a pace below the 2% mark.

CANADA: Real GDP
January 2010 - August 2019
% Change SAAR



Source: Statistics Canada, ACT Research: Copyright 2019

POLICY: On October 30th, the Bank of Canada announced it would maintain the overnight policy interest rate at 1.75%, where it has been since October 24, 2018. The bank rate is 2%, while the deposit rate is 1.5%. At the same time, the Bank released its quarterly monetary policy report (MPR), and during a related press conference the Bank's Governor, Stephen S. Poloz, commented on the Bank's deliberations, including the protracted rebound in Canada's energy-producing provinces, sources of resilience for the country's economy (consumption and housing), and "the worsening global situation," the primary issue. He stated, "Economic forecasts have been marked down further in most countries, largely as a consequence of the escalation of trade actions and uncertainty around what may be next." Poloz added, "Heightened uncertainty about future trade policies is directly reducing business investment, and there is a risk that this will spread to households as well."

Inflation risks to the Bank's MPR outlook included:

- Sharp tightening of global financial conditions
- Strong consumption in Canada
- Stronger residential investment and rising household vulnerabilities in Canada
- Weaker growth in emerging-market economies
- Global disinflation

While not mentioned as part of the Governor's opening statements, reporters attending the press conference asked about the impact of fiscal policy. Governor Poloz and Senior Deputy Governor, Carolyn A. Wilkins, acknowledged that the Bank's governing board will look for fiscal policy changes now that the elections are concluded, and any changes will be factored into their monetary policy models accordingly.

Canada's federal election was held on October 21st, with Prime Minister Justin Trudeau being re-elected, but with only 157 seats, forming a minority government. This means that Trudeau's new administration must depend on support from the other parties of parliament. A minority government, in general, is considered less stable than a majority government, as Trudeau has had since taking office on November 4, 2015.

The next interest rate announcement will be published on December 4, 2019.

GDP: Canada's GDP rate of change gained 0.1% m/m in August and remained on the plus side when compared to August 2018, up 1.3% y/y, which was a slight decrease from the 1.4% y/y expansion recorded in July.

Goods production returned to the positive side of the ledger in August, up 0.2% m/m, following negative returns in June and July. Y/Y, goods producing sectors have been subpar since December of 2018, ending August 2019 down 1.2%, still an improvement from the -1.5% reported a month earlier. Manufacturing see-sawed through 2019's first six months, and after two months on the downswing, returned to an upswing in August, gaining 0.5% m/m (-0.0% y/y). The construction sector grew 0.3% m/m (-2.0% y/y), both comparisons improving from the previous month, while mining, quarrying, and oil and gas extraction returned to the positive side of the ledger in August, up 0.1% m/m, but still down y/y at -4.3%.

Service-producing sectors (which provide lesser support to trucking relative to goods-production) rose slightly again in August (+0.1% m/m) and up a more significant 2.3% y/y from August 2018.

Small business confidence, measured by the Canadian Federation of Independent Business (CFIB), saw a slight uptick in October, now at 59.8, from 59.3 recorded in September and down from August's 60.6 reading. According to the CFIB's Vice-President and Chief Economist, Ted Mallett, "Business owners are in okay shape….This month's findings indicate that they're holding back for better conditions before they make major investments in their buildings, equipment or vehicles." The reading, above the neutral 50 mark, remains below the 65-70 range that indicates growth at potential.

INDUSTRY: Manufacturing sales continue to see-saw, ending August at +0.8% m/m. Longer term, however, they have been negative for the past three months, now down 0.5% y/y, an improvement from the -1.9% registered in July. The latest data (57.6 billion) have now been below 2018's top sales of 58.5 billion for the past three months. At 51.2 in October, the Markit Canada Manufacturing PMI remained in above-neutral territory for the second consecutive month, up from 51.0 in September, which was its first significant rise about the 50-point break-even marker since the 52.6 reading recorded in February.

CONSTRUCTION: Housing starts continued to see-saw in September, down 2.5% m/m. This was enough to move the y/y needle higher, to nearly 16% growth from August's 14% expansion, which was the second double-digit positive reading in more than a year. Comparisons aside, this means almost 221k (SAAR) units broke ground in September, a decrease of about 6k units from the previous month. The 6MMA pace of housing starts (SAAR) maintained momentum in September, now at 223,507 units, from the 218,782 in August.

Looking at future construction, Canadian building permits, which lag in reporting by a month, recorded more than a 6% m/m expansion in August. Longer term, permits improved even more significantly, growing more than 11% compared to the previous August. Regardless of the comparison, August building permits represent about $9.0 billion in future construction, of which $5.8 billion comes from the residential sector and $3.2 billion represents non-residential permits.

CANADIAN ECONOMIC INDICATORS

	2017	2018	2019	2020	2021	2022	2023	2024
Real GDP (bil. C$07)	1745.2	1778.4	1805.0	1835.7	1868.8	1904.3	1940.5	1977.3
y/y % chg.	**3.0%**	**1.9%**	**1.5%**	**1.7%**	**1.8%**	**1.9%**	**1.9%**	**1.9%**
Personal Consumption Expenditures (bil. C$07)	1056.6	1078.8	1096.0	1113.6	1131.4	1150.6	1170.2	1190.1
y/y % chg.	**3.6%**	**2.1%**	**1.6%**	**1.6%**	**1.6%**	**1.7%**	**1.7%**	**1.7%**
PCE: Durable Goods (bil. C$07)	136.2	137.6	138.7	140.5	142.9	145.4	147.9	150.4
y/y % chg.	**7.1%**	**1.0%**	**0.8%**	**1.3%**	**1.7%**	**1.8%**	**1.7%**	**1.7%**
Business Fixed Investment (bil. C$07)	292.3	297.9	288.3	287.2	290.9	293.8	296.7	299.7
y/y % chg.	**2.5%**	**1.9%**	**-3.2%**	**-0.4%**	**1.3%**	**1.0%**	**1.0%**	**1.0%**
BFI: Equipment (bil. C$07)	78.7	83.5	83.2	81.7	80.9	80.0	80.8	81.7
y/y % chg.	**4.7%**	**6.1%**	**-0.4%**	**-1.8%**	**-1.0%**	**-1.0%**	**1.0%**	**1.0%**
Residential Fixed Investment (bil. C$07)	121.3	119.5	117.1	117.8	119.0	120.2	120.8	121.4
y/y % chg.	**2.4%**	**-1.5%**	**-2.0%**	**0.6%**	**1.0%**	**1.0%**	**0.5%**	**0.5%**
Net Exports ($ bil.)	**-60.1**	**-58.5**	**-35.1**	**-12.9**	**-35.3**	**-36.3**	**-37.5**	**-40.9**
Consumer Price Index (02=100)	132.2	135.2	137.8	140.6	143.2	146.1	149.0	152.0
y/y % chg.	**1.6%**	**2.3%**	**1.9%**	**2.0%**	**1.9%**	**2.0%**	**2.0%**	**2.0%**
30 Year Gov't. Bonds (%)	2.3	2.2	1.5	1.8	2.2	2.2	2.3	2.3
3 Month T. Bill (%)	0.7	1.4	1.7	1.7	1.7	1.8	1.9	1.9
Exchange Rate (US$ per C$)	**0.77**	**0.77**	**0.75**	**0.76**	**0.78**	**0.78**	**0.77**	**0.77**
Unemployment Rate	6.3	5.8	5.7	5.9	5.8	5.8	5.8	5.8

Sources: Statistics Canada, TD Bank, Bank of Montreal, Royal Bank of Canada, Scotia Bank, ACT Research Co., LLC

MEXICO

The Mexican economy continued to struggle in the third quarter, with analysts indicating the economy grew at a seasonally adjusted rate of 0.1% from the second quarter. Some sectors may already be in a recession. The economy contracted 0.4% compared to the same quarter last year, marking the first decline since 2009. Weak foreign demand and the UAW strike against GM in the US were likely contributors to the weakness. Given the sluggish economic growth and stable inflation numbers, it is likely that the Central Bank will lower interest rates by another quarter point, to 7.5%, during their November meeting, marking a third straight reduction.

Positives

- The peso gained some ground.
- Inflation remained on target.
- September remittances were best on record.

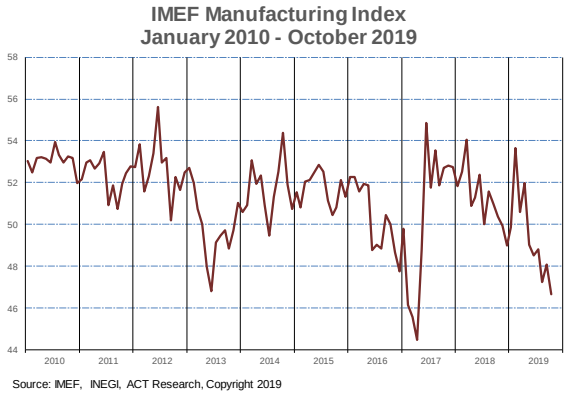
Negatives

- Manufacturing remained weak.
- Unemployment ticked up.
- Consumer confidence declined.

Economic Highlights

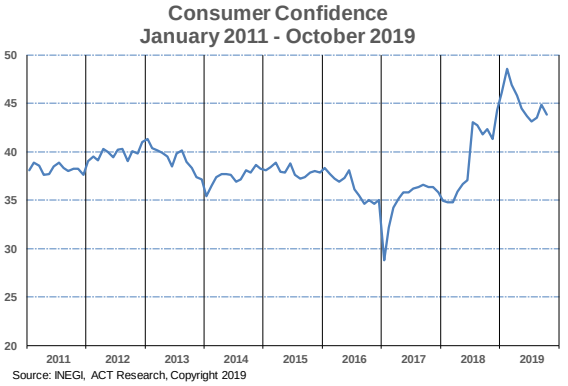
Manufacturing sector business conditions changed course to kick off the fourth quarter. Following four straight months of deteriorating conditions, the manufacturing sector showed some signs of life in October. According to the latest available manufacturing data from the Markit Mexico Purchasing Managers' Index (PMI), business operating conditions expanded mildly in October, with an index reading of 50.4 points, up from the previous month's reading of 49.1. The rise was primarily attributed to an increase in sales and new order flows. Despite the overall sector improvement, production contracted for the fifth straight month. Input cost inflation fell to its lowest reading since the beginning of the series tracking in 2011. The IMEF Manufacturing Index, an indicator of expected short-term economic activity, dipped 1.4 points in October, falling to 46.7 and remaining below the 50-point breakeven threshold for the fifth consecutive month.

Data posted by INEGI (Instituto Nacional de Estadistica y Geografia) indicated manufacturing expectations dipped in October, falling to 50.2, down 0.8 points from September's mark of 51.0. Two of the index's five subcomponents rose, while the other three indicated declines. The production component fell 3.2 points, to 49.4. The other four remained above the 50-point break-even mark that indicates a positive outlook.



The Conference Board's Leading Economic Index, a short-term forecasting metric, declined in August, falling to 101.7, down 1.6 points month-over-month from July's revised reading of 103.3. The Coincident Economic Index, a measure of current economic activity, indicated a slight improvement, rising 0.2 points, to 106.4.

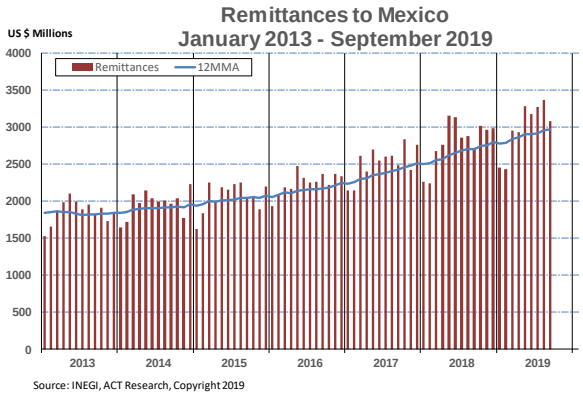
The unemployment rate ticked up in September, following a flat August. Unemployment continued to suffer from subdued production and new orders as well as tough economic conditions. Given the mild new order increase in October driving hiring, we might expect a decline in October. The net participation rate posted a decline, falling 0.3 points, to 60.1.



Consumer confidence declined in October, following two sequential months of improvements. Consumer confidence fell 0.9 points in October, dipping to 43.9, following two straight improvements. All five of the index's subcomponents indicated declines, with the subcomponent comparing the expected economic conditions of the household in 12 months to the current economic situation showing the largest decline, falling 2 points, to 55.0, and reversing a 1.5-point improvement in September. Consumer's view of the country's current economic situation, compared to that of a year ago also showed a decline, falling 1.7 points, to 49.1.

Remittances sent to Mexico by Mexicans living in the United States declined 9% month-over-month in September, following two consecutive increases. Remittances totaled $3.080 billion US dollars in September, down from August's record high of $3.374 billion. Despite the short-term decline, remittances were up 13% year-over-year compared to last September and marked the best September on record. Over the past few years, remittances showed a tendency to dip in the early fall, before rising in early Q4. Remittances were 9% higher year-to-date when compared to the same time period in 2018 and they continue to benefit from a strong US economy and the weakened state of the peso. The full-year total for 2018 came to a record setting $33.481 billion, and with thee months left in the year, 2019 is on pace to break that record.

The peso steadily improved as the month progressed. The peso marked a second straight month of improvements in October, after falling below the 20-peso mark in August. The peso averaged 19.30 pesos per US dollar in October, a 1.4% month-over-month improvement over September, but was 0.9% lower year-over-year compared to last October. Year-to-date, the peso has averaged 19.25, down 1.2% compared to the same time period last year. The peso was its weakest on the 2nd, at 19.81 pesos per US dollar, before strengthening to 19.03 by the 26th. Optimism regarding the possible ratification of the USMCA trade agreement by the US Congress this month and apparent progress in ending the US-China trade war are primary drivers behind the rally.



Inflation was seen holding steady in October. The key exchange rate was essentially flat month-over-month, holding at 3.0%, following a 16bps month-over-month decline in September, staying directly in line with the Central Bank's target rate of 3%, plus or minus 1%. Analysts had predicted inflation would be below 3% by the end of the year and expect it to continue to ease as the year closes. The Central Bank voted to lower the key interest rate in back to back August and September meetings, both by 25bps, bringing it to 7.75.

U.S. – Mexico Trade: The value of total trade by all modes between the US and Mexico in August totaled $53.1 billion US dollars, up 2% month-over-month, but down 3% year-over-year. The total value of goods transported by truck totaled $37.1 billion, and equated to 69.9% of the total surface mode trade, a 2% month-over-month and 1% year-over-year improvement.

MEXICAN ECONOMIC INDICATORS	2017	2018	2019	2020	2021	2022	2023	2024
Real GDP y/y % chg.	2.1	1.4	0.7	1.4	2.0	2.2	2.4	2.4
Private Consumption y/y % chg.	2.2	1.0	1.8	2.3	2.5	2.6	2.7	2.6
Fixed Investment y/y % chg.	0.6	-2.8	0.3	1.6	2.0	2.1	2.3	2.4
Consumer Price Index - All Urban y/y % chg. aop	5.6	4.5	3.8	3.5	3.2	3.2	3.2	3.2
Industrial Production	0.2	-1.4	0.5	1.2	1.8	2.2	2.6	2.4
Interbank Target Rate (% eop)	8.3	7.3	6.6	6.3	6.0	5.8	5.6	5.5
Exchange Rate (Pesos per U.S.$) average	19.2	19.4	20.1	20.2	20.2	20.4	20.6	20.3
Unemployment %	3.4	3.5	3.6	3.6	3.6	3.5	3.5	3.4

Source: Latin Focus, IMF, BNP Paribas and ACT Research Co., LLC

CURRENT MARKET ACTIVITY

NOTE: The medium duty Classes 5-7 market indicator section includes all major North American (NA) domestic manufacturers and represents all their markets (US, Canada, Mexico, and export). Historically, medium duty demand is made of three components: medium trucks at about 74% of the market, school/urban buses at 18%, and recreational vehicles at 8%. In 2018, the segments held a 76%, 16%, and 8% split, respectively.

TOTAL MARKET

Activity for the total MD market was mixed in September, with weakness in sequential comparison, but expansion evident in longer-term performance. Customers clearly remain concerned about the near-term future, as demonstrated by the continuing pullback in order activity. Simultaneously, they continue to demand and purchase vehicles, driving build and sales to near-record levels of performance. It is not entirely clear how the recent announcements of production slowdowns and layoffs at several of the manufacturers will impact the situation, but logically, production should slow, putting an end to the current cycle.

TRUCKS

Medium Duty Truck Current Market Activity	% Change		
September 2019	**M/M**	**Y/Y**	**12 MMA**
Build	-16%	16%	19,021
units/day change	(80)	87	
Sales	-2%	15%	17,807
Backlog	-9%	-29%	
unit change	(5,105)	5,307	
BL/BU ratio	2.7	4.3	
Inventory	1%	31%	
IN/RS ratio	3.5	3.0	
Net Orders	-11%	-29%	16,964

PRODUCTION: Truck chassis production faltered in September, even more than indicated by normal seasonality. Output of 18,828 units was 17% lower than August's activity. The m/m decrease in final build was the result of an 80 upd lower build rate and two fewer build days. OEM build plans currently call for 860 upd in Q4'19 and 880 upd in Q1'20. For context, the Q1'19 upd rate was 872 units, with Q2'19 at 951 upd and 1,020 upd in Q3'19.

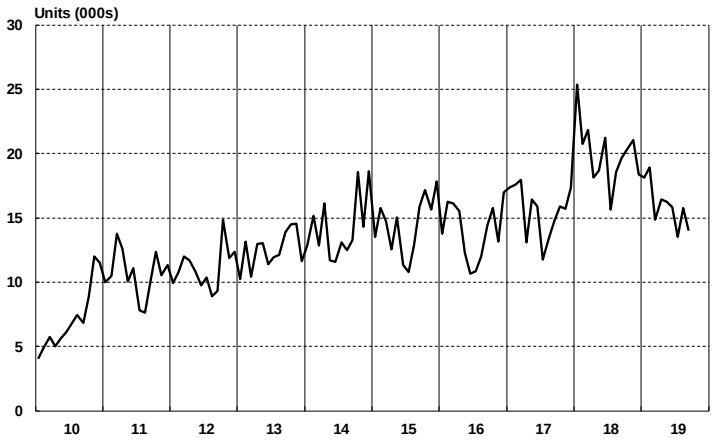
BACKLOG: Build in excess of orders for the seventh consecutive month in September resulted in a 5,100-unit drop in the backlog, to just under 50,000 units. Linking the smaller backlog and higher per-day build resulted in a BL/BU ratio for medium duty trucks of 2.5 months. The reading, in the middle of the expected 2.0 to 3.0-month target range, suggests that build rates are appropriate.

INVENTORY: Similarly, build outpaced retail sales in August, adding just over 800 units to inventory. Together, the two metrics yielded an inventory-to-sales ratio of 3.1 months, near the middle of the target range of 2.5 to 3.5 months. As OEMs have accumulated more than 13,500 units of additional inventory since the beginning of 2019, downward pressure on production is mounting.

NET ORDERS: A total of 14,000 net orders for trucks was placed in September. Sequentially, orders declined 11%, belying seasonal expectations for a similar move in the opposite direction. October's preliminary medium duty truck net order intake rose 7% m/m, to 14,300 units (±5%). Just under 190,000 orders have been booked in the last 12 months. The combination of excess production in 2019 and softening order intake necessitated a reduction in the 2020 production forecast.

RETAIL SALES: Retail sales slipped 2% m/m in September, not quite as much as expected based on seasonality. Similar to last month, sales extended their ytd growth streak (+9.7%), albeit at a slightly hotter pace. Historically, truck sales are typically weakest in Q1 and Q3. As such, sales appear to be following their traditional pattern.

Classes 5-7 Truck: N.A. Net Orders
January 2010 - September 2019



Source: ACT Research Co., LLC: Copyright 2019

BUSES

Despite meaningful slowing, the bus market tied the truck market for first place in September, based on a simple count of red/green performance of market indicator time period comparisons. In general, short-term performance improved, but market performance continued to lag behind last year's robustness.

A recently released study by the US Public Interest Research Group (PIRG) extolls the virtues of electric buses and makes recommendations from lessons learned by early adopters. Seneca, SC; Chicago, IL: King County, WA; Albuquerque, NM; Twin Rivers, CA; and the Massachusetts Department of Energy have been testing electric buses during the past five years. Knowing that "The benefits of a transition to electric buses could be massive, but taking this new technology to scale will require us to learn the lessons of early adopters," each of these communities has contributed suggestions to facilitate that learning. Although there is no "easy button" to ensure successful or widespread adoption, the recommendations are pragmatic, centering on realistic goal setting, planning and communication as their cornerstones.

BACKLOG: Combining orders and production, the backlog rose less than 1% in September, climbing to just over 8,400 units. At September's 180 upd build, the backlog would last about 2.2 months, if no new orders were received.

PRODUCTION: Owing to a slightly higher build rate (+8 upd) and two fewer build days, sequential output fell 5% compared to the previous month. The drop was in line with seasonal expectations. Combining the changes, actual build totaled nearly 3,600 units. On a ytd basis, build fell below the same period in 2018 (-2.4%).

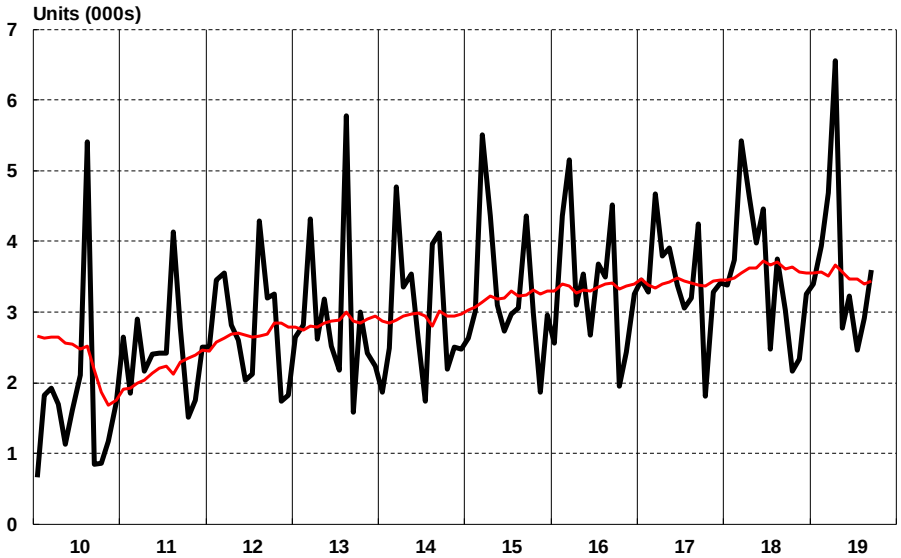
INVENTORY: Combining September build and retail sales, inventory was trimmed by about 325 units (-6%), putting the total at 5,500 buses. Dividing September's inventory by retail sales results in an IN/RS ratio of 1.1 months. The reading, on the low end of the one to two-month expected range, suggests that current build rates are seasonally appropriate.

NET ORDERS: Order activity continues to defy tradition, jumping 23% sequentially, opposite the expected direction, but of a similar magnitude. The ongoing mismatch appears to be the result of a departure from traditional order patterns. As a result, ytd order intake cut its lag from last year by 4%.

RETAIL SALES: Retail sales returned from deep space in September, shedding 27% sequentially. The drop erased the ytd gain, with sales now flat ytd compared to the same period last year. August and September are typically very strong sales months, so weakness is in the offing. Regardless of the apparent shifts in timing, sales seem well positioned relative to the forecast.

Classes 5-7 Bus: N.A. Net Orders

January 2010 - September 2019



Source: ACT Research Co., LLC: Copyright 2019

RECREATIONAL VEHICLES

It seems that no matter where one looks in the commercial vehicle industry, the buzz is about electrification, so the recent $60M investment by RV maker Winnebago in Motiv Power Systems should come as no surprise. The two companies have been working together for more than a year, developing specialty vehicles such as mobile health care units. While current battery technology does not necessarily lend itself to long-range RV trips, do not discount the possibility of an electric-powered RV in the not-too-distant future. Given recently announced proposed legislation in California, that might be sooner rather than later. The California Air Resources Board (CARB) has just proposed a new law requiring OEMs with sales of certain types of vehicles, including RVs, of more than 500 units in California to start selling electric vehicles by 2024.

ACT Research tracks Type A RVs that fall into the Classes 5-7 vehicle weight range. There are two other types of self-propelled RVs, Types B and C. Type B units are van conversions, while Type C are mini-motor homes. The vast majority of these units are below the Classes 5-7 vehicle weight range. In addition, there is a growing offering of Type A RVs that fall into the Class 8 space. There is also a host of towable units. As the industry has adapted, it has seen a preference for smaller, less expensive units, hence, the slower relative growth of Type A units.

BACKLOG: Combining production and orders, the backlog fell by more than 200 units in September, finishing the month at just over 1,800 units. At the current rate of production, the backlog would last 1.6 months, if no new orders were received.

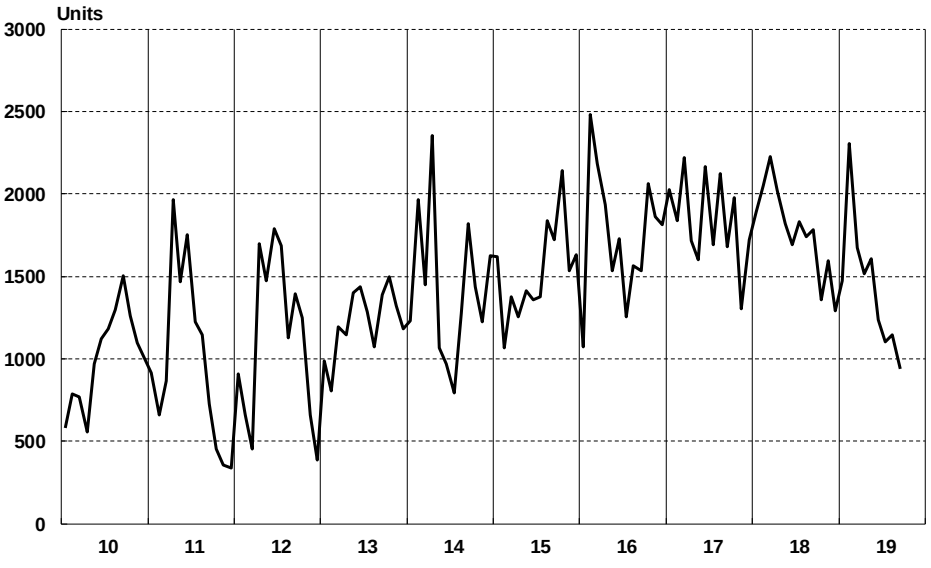
PRODUCTION: Two fewer build days during the month, combined with a slightly lower per-day build rate, caused RV output to fall 12% m/m. Owing to the decline, completed units through September 2019 lag the same period last year by an increasing margin (-25%). Though surveys report confident consumers, there is lingering uncertainty about the economy and financial and trade policy, challenging demand for discretionary purchases such as RVs.

NET ORDERS: September RV orders also saw a decline, falling 18% m/m. Longer term, the segment remains even more depressed, with the ytd order gap increasing (-24%). The current forecast reflects the pressure the market is facing. Higher interest rates and material cost increases resulting from tariffs are the primary detractors.

RETAIL SALES: Retail sales slowed, counter to expectations, in September, shedding 5% m/m. Longer-term comparisons show a starker picture, with the ytd deficit at 29%. Potential RV buyers appear to be subscribing to the “wait and see” approach, not surprising given the uncertainties of the current economic market.

Classes 5-7 RV: N.A. Net Orders

January 2010 - September 2019



Source: ACT Research Co., LLC: Copyright 2019

CURRENT MARKET ACTIVITY

Hurts so bad – Even as we face the push and pull of seemingly contradictory market statistics, our outlook remains essentially unchanged for the short- and long-term. Sales and build volumes are now assured of reaching cyclical peak levels in 2019. But this year's weak order intake dictates a substantial correction in 2020. Our long-stated view is the slowdown in economic activity and freight will result in a soft landing and not turn into a recession. After this pause, the heavy duty truck market is forecast to rebound and see three years of growth from 2021 to 2023. However, the far years of this forecast face the headwind of stringent emission controls in 2024, triggering a 2023 prebuy, followed by payback in the next year.

The specific forecasts in the near-term show 2019 NA retail sales at 338k and build at 346k, followed by 2020 at 252k (down 25%) and 234k (down 32%), respectively. A classic inventory liquidation, in the face of declining demand, accounts for the wide spread between sales and build in 2020.

This regression-to-the-mean for 2020, after a near all-time record 2019, has been a staple of our forecasts since March 2018. As a result, our *OUTLOOK* subscribers have had almost seven quarters of yellow-light signals on the upcoming correction.

A mix of recent indicators on freight and in the heavy duty statistics has triggered questioning and push back from some clients. They point to a revival in consumer spending and residential construction in the economy; some surprisingly robust measures on freight tonnage and loads from the American Trucking Association over the summer and early fall; and finally in our industry statistics, a spike in Class 8 tractor sales in September to the second highest level ever, plus preliminary October orders climbing above 20k. All these are cited to suggest truck operators are still intent on adding equipment to expand freight hauling capacity.

However, we believe that this represents the final stage of the Q4'17 to Q4'19 two-year boomlet. October is a seasonally strong order month, and even with this inflow, backlogs will decline once more from September to October. More importantly, we believe the signs of a freight revival are a head fake. Inventories are building in large part because of supply chain management – pipeline stuffing – to escape or minimize the impact of trade policy and tariffs – further insights on these dynamics can be found in the Transportation section of this *OUTLOOK.*

We do want to distinguish the 2020 "correction" from a recession. The 23% falloff in NA Class 8 retail sales forecasted for 2020 aligns well with the 2016 experience (down 19%). It's not as severe as the past recessions suffered in 2009 (down 39%), 2001 (down 34%) or the EPA-triggered cycle in 2007 (down 36%).

Extending the time horizon beyond 2020 to the end of our forecast horizon in 2024, the outlook brightens. Our forecast anticipates an extended North American expansion cycle for the economy, recession-free through 2024. We recognize that we are in record territory for duration, with this upcycle already having lasted for 126 months. Even with that, judicious policymaking combined with good luck can extend economic growth for another five years. If so, that should enable the heavy duty market to achieve modest gains for a few years, after the 2020 pause. Our view is that 2021 and 2022 will see gradual sales and build increases, to levels at, or slightly above, long-term replacement levels.

In 2023, emissions regulations and compliance costs, and related uncertainties will probably bring about a prebuy. Demand could lift volume to levels that will approximate the highs reached previously in 2019. Then in 2024, the implementation year, there would be a typical "payback." This is something the industry has experienced previously, with an emissions-compliance driven peak in 2006, followed by a payback in 2007 (see Appendix B and Table 14 for annual forecast specifics to 2024).

Focusing again on 2020, three drivers that are critical in shaping near-term market dynamics include:

- *Inventory discipline* – Joined at the hip with almost every market boom is an inventory overshoot. For heavy trucks, 2019 is no exception. While most of 2020's retreat in build is due to weaker final demand, our projections show a reduction in new unit inventory next year of 18k.
- *Volatility in tractors, stability in vocational* – The upside market dynamics of the past two years has come mainly from tractors, especially sleepers. Straight trucks have been fairly stable. For 2020, the direction changes to downside, but volatility aspects – tractors having a steep drop, straight trucks a modest drop – will be the same.

- *The US market bears the brunt of the correction* – 2020's forecast retail sales decline in heavy duty will be centered on the US (down 29%), then Canada (down 19%). Having already taken its hits in 2018 (down 19%) and 2019 (down 10%), Mexico is forecast to have an up 2020 with a 12% sales gain.

Spotlighting the fundamentals that are driving our heavy duty forecasts:

- Manufacturing – This sector is an important freight generator. It has also been the most significant "swing sector" in the last two years. After posting the strongest growth year of the 126-month long expansion in 2018, the momentum evaporated; in 2019, output has been on a downward slide.
- Construction – Through mid-year 2019, residential spending was weak. But due in part to lower mortgage rates, new home building and remodeling has turned and now seems to be on an upswing. If our forecast for 2020 is too conservative, construction activity (residential and non-residential) could be the cause.
- Consumer – After an early-year pause, consumers have come on strong. One sign: the National Retail Foundation sees 2019 holiday sales up 3.8% to 4.2% versus 2018's tepid 2.1%.

Truck transportation metrics again gave mixed signals in September and October:

- Weak: DAT freight rates continue to trend down, with September spot rates for dry van, flatbed and reefers 14% under prior year. The Cass Freight Index declined 3.4% in September.
- Strong: ATA Truck Tonnage notched a solid increase in September, up 3.8%; a 4.0% gain was posted by ATA's Truckload Loads Index. Our ACT For-Hire Volume Index was 59.6 in the September survey, well above the 50 breakeven point.

Our interpretation of this mixed array of signals is that a typical pre-holiday-shipping season boost is being amplified by a pre-tariff spike in goods movement. This implies the strong indicators cited above are likely to settle as we approach year-end.

Over the last few months we have recommended that *OUTLOOK* subscribers factor in a major slump in Class 8 business as they prepare their 2020 budgets and business plans. At the very least, customers should be building a sizable downturn as one scenario in their forward planning for 2020. Production adjustments, headcount reductions, capacity rationalization, supply chain reassessment and new product pricing strategies may be appropriate responses to reduced business volumes.

Looking long-term at-risk elements and factors that would drive alternatives around our baseline forecast, the most substantial one is a recession. Our five-year view calls for an ongoing, if slowing, expansion. Pushing ahead five more years would extend the record by 50%. Furthermore, surprises (downside ***and*** upside) could come from trade and geopolitical developments, energy price movements, regulations, taxes, 2020 US elections, and Fed policy.

SEPTEMBER DATA: NA Class 8 net orders came in at 12,692 (14,782 SA) units for the month. October preliminary net orders were 22,100 (17,800 on a seasonally adjusted basis). October's order volume aligns with where orders need to be to reach ACT's 2020 forecast.

CANCELLATIONS: September cancellations were 3,351 (3,363 SA). This was the second straight month below the year-to-date run rate (averaging 3,700). Cancellations constituted 2.5% of the backlog and 20.9% of new (gross) orders.

BACKLOG: The Class 8 backlog dropped in September to 132,799 (148,122 SA) units, the eleventh consecutive monthly decline from last October's peak. Using preliminary net orders and OEM build plans, the backlog should be near 127k units in October 2019.

BL ANALYSIS: Based on OEM build plans and ACT estimates as of October, Q4'19 has 71,948 slots available and 61,823 filled, so 14.1% remain open. Q1'20 has 79,262 units in the build plan and 29,783 filled, leaving 62.4% open. The potential for down production weeks in early 2020 is high.

SALES & INVENTORY: September Class 8 retail sales were reported at 32,739 (32,530 SA). Inventories of new Class 8 vehicles declined from the August all-time record, falling almost 5k, to 81,002 (78,922 SA). The benchmark inventory metric of days' supply stands at 52 days (51 days SA) at September's retail sales pace. Strong retail sales and the low level of calculated days' supply has given some degree of comfort in 2019. But a stumble in sales will transform conditions from manageable to critical.

Category	ACT Research Class 8 Tractor Dashboard Metric	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	RED LIGHT SIGNAL	GREEN LIGHT SIGNAL
	Green Minus Red Tally	**2**	**-4**	**-6**	**-5**	**-5**	**-8**	**-10**	**-10**	**-11**	**-8**	**-5**	**-5**	**-3**	**-3 or less**	**3 or more**
	Positive Indicators (Green)	6	3	3	4	3	1	0	0	0	1	3	3	4		
	Neutral Indicators	5	5	3	2	4	5	5	5	4	5	4	4	4		
	Negative Indicators (Red)	4	7	9	9	8	9	10	10	11	9	8	8	7		
Macro & Financial	ISM-PMI Index	55.6	55.7	55.3	53.8	54.9	53.0	52.4	52.6	50.5	50.6	50.4	50.3	51.1	Value under 50	Value over 53
	Non-Auto Durables Mfg Output**	3.7	3.9	4.2	4.4	4.3	3.6	3.2	2.3	1.7	0.9	0.1	-0.2	-0.3	Value under 0	Value over 3.5
	Consumer Spend, Goods only**	3.7	3.6	3.8	3.0	3.1	2.5	2.5	2.5	2.8	3.4	3.9	4.4	5.0	Below 2.5% growth	Above 4% growth
	Residential Const Expend (real) **	-4.9	-8.7	-11.8	-13.0	-14.0	-14.5	-13.4	-12.8	-11.6	-10.3	-8.8	-6.8	-4.7	Below 2% growth	Above 8% growth
	Dow Jones Trucking Stock Index	878.8	774.9	799.0	700.0	769.0	812.4	780.4	759.6	692.5	761.4	812.5	816.3	836.2	-10% from recent peak	+10% from recent trough
Freight	ATA TL Loads**	1.1	0.7	0.5	-0.4	-0.1	-0.8	-1.1	0.7	1.1	1.4	3.5	4.8	4.0	Below 1%	Above 2.5%
	DAT Loads/Truck	3.9	2.8	3.7	4.0	3.8	3.5	2.3	2.1	2.1	3.2	2.9	3.3	2.9	Below 2.75	Above 4.75
	DAT Aggregate Contract/Spot Spread	19	25	22	22	32	37	38	41	41	31	33	33	33	Above 20	Below 15
	DAT Dry Van Spot Rate*	8.2	0.1	-1.3	-2.7	-12.8	-9.8	-13.2	-16.4	-18.5	-19.2	-19.0	-15.6	-14.1	Below 0	Above 8
	ATA TL Loads/US Cl8Tractor Pop Growth Gap	-6.9	-7.9	-8.6	-9.9	-10.1	-10.9	-11.1	-9.2	-8.5	-7.8	-5.2	-3.4	-4.0	Below -4	Above 4
ACT data	Cl 8 Cancellations (SA)	7085	6534	6976	5589	4887	5566	2420	2578	3645	6394	4599	3182	3363	Over 3000	Under 2000
	Cl 8 I/S ratio (SA)	1.89	2.36	2.38	2.10	2.50	2.29	2.47	2.66	2.88	2.63	2.98	3.23	2.43	Over 2.6	Under 2.1
	Class 8 Inventory Level (000 SA)	61.2	59.7	61.9	62.6	69.5	70.4	73.2	75.5	78.2	80.3	82.4	84.6	78.9	Over 57K	Under 30K
	Class 8 Net Orders to Build (6mma,SA)	1.79	1.77	1.62	1.44	1.18	0.92	0.72	0.59	0.51	0.49	0.47	0.45	0.45	Under 1.00	Over 1.15
	ACT For Hire - Volume less Capacity	50.5	55.5	46.0	45.3	45.6	42.7	46.7	45.3	42.1	41.4	58.6	50.4	62.4	Under 48	Over 58

All measures are levels, except *=Year/Year % Change and
**=12 month CAGR Rate of Change

ACT CLASS 8 TRACTOR DASHBOARD: The top line on our dashboard lead indicator moved in a positive direction, from negative 5 in August to minus 3 in September. This continued the sequence of improvements since the indicator top line bottomed at a low point of negative 11 in May.

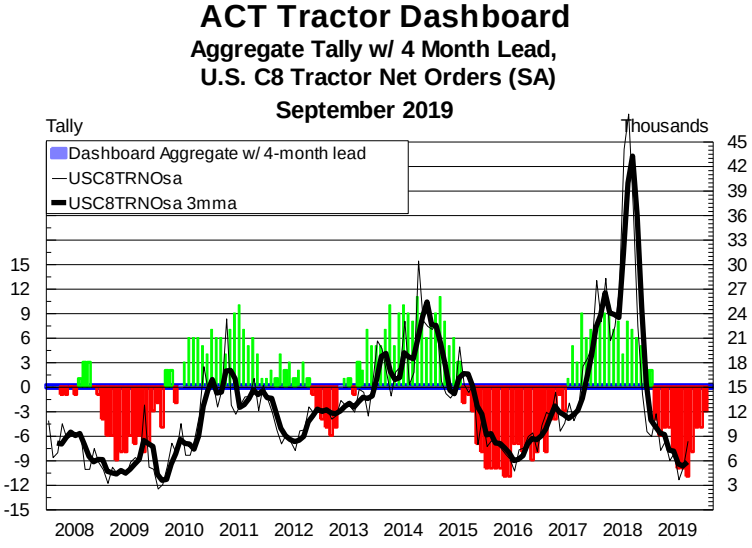
The net result represented the sum of 7 negative indicators, 4 neutral indicators on the sidelines, and 4 positive indicators (The top line tally comes from simply taking the positive indicator count and subtracting the count of negative indicators, with a zero for the neutrals – we choose not to weight the contributing row items).

The improvements in the top line of the dashboard since the double-digit negatives of last spring support our contention that we are in store for a Class 8 correction but not a rout. Top line values in the neighborhood of where we are now at minus 3, or slightly better, suggest demand at replacement levels, which is where we forecast the market to be in 2020.

For readers who are new to this indicator or want a refresh, we believe the dashboard offers a three to six-month forward-looking metric for conditions in the tractor market.

Going back a year, we believe that the negative readings on the dashboard (starting in October 2018) gave us a well-in-advance heads-up on the developing Class 8 tractor market weakness that played out this year.

We always warn that it's never wise to forecast on the basis of just one indicator, or even an aggregate of indicators. That said, the *Green Minus Red Tally* did successfully signal the inflection point from peak to decline. Now the message to watch for is where and when reaching the bottom will turn out to be.



CURRENT MARKET ACTIVITY

SEPTEMBER INDUSTRY HIGHLIGHTS:

- The 2019-20 order season start has been subdued.
- While new orders were up 44% versus August, and net orders surged 73% m/m, new orders were down 64% y/y, with net trailing last year by 68%.
- Y/Y order comparisons are very tough since they compare to the strongest order month in industry history.
- While down for two straight months, inventory levels continued to be near the all-time high posted in July.
- BL/BU edged into February. The 4.2-month horizon at the end of September was the lowest since Oct'17 and 2.3 months below this time last year.
- Industry backlog slid 7% sequentially and is down 39% y/y, with 121k trailers on the orderboards at month-end.
- While total production was slightly off sequentially, the daily rate rebounded from August.
- Build of 1,384 upd was off 83 upd versus last year.
- Y/Y order comparisons will continue to be challenged by last year's massive order surge.
- Although order volume has improved, it continues to be solidly outpaced by production. Expect lower build rates as OEMs seek to bring production and order activity into better balance.

ORDERS: We would expect some seasonal bump in order activity, and it does appear that the 2019-20 order season is now underway. That being said, the pace seems a bit uninspiring, as order volumes continue to fall well short of current production levels. When viewed against this time last year, the perspective is even more disappointing, although to be fair, that comparison is to the highest order levels in industry history.

Let's take the shorter-term perspective to verify the start of the order season. New orders were up 44% m/m, while net volume was up 73%. That's a dramatic difference in new/net performance, driven by less significant cancel volume in September. August's cancellations were potentially driven by some cancel/re-order activity, likely shifting some delivery times into next year. Given the combination of a relatively thin orderboard (extending just into February) and the length of the material component order pipeline (basically extending 14 to 16 weeks, i.e. into early 2020), we would expect that cancel volumes will continue to ease. That certainly occurred in September, although the rate was still higher than normal targets suggest.

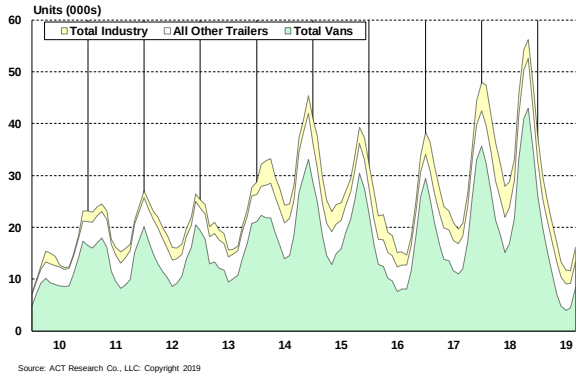
Total Trailers

Category	Actual Sep-19	Actual Last 13 Mo	Seasonally Adj. Sep-19	Seasonally Adj. Last 13 Mo
Backlog	121,080		135,745	
Build	27,689		26,448	
Inventory	29,305		28,290	
New Orders	21,605		20,855	
Cancellations	2,976		2,305	
Net Orders	18,629		18,125	
Shipments	29,138		25,631	

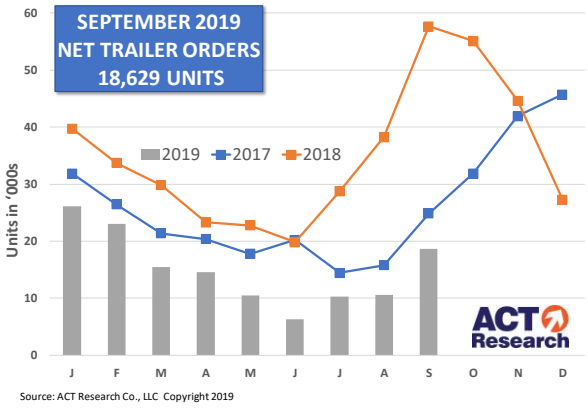
Source: ACT Research Co., LLC ©2019

Trailer Industry Net Orders

January 2010 - September 2019, 3 Month Moving Average



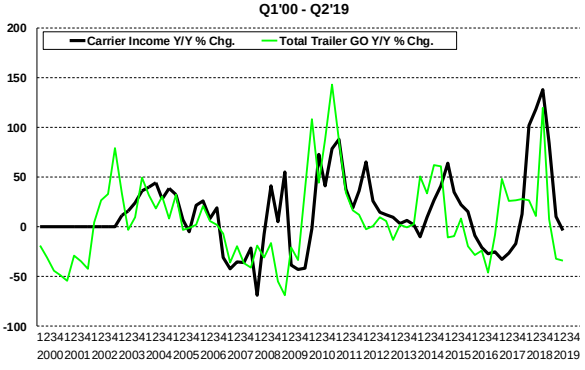
Source: ACT Research Co., LLC: Copyright 2019



Source: ACT Research Co., LLC Copyright 2019

TL Carrier Database:

TL Carrier Net Income & New US Trailer Orders
Q1'00 - Q2'19



Source: ACT Research Co., LLC: Copyright 2019

Perhaps we've returned to a more normal order season timing, last seen in 2017. However, it seems that if the normal timing is there, the enthusiasm is lacking. Fleets continue to move cautiously, as they carefully balance numerous factors. Freight rates, which are still being buffeted by soft demand, are generating financial headwinds. In the midst of softer demand, the strong production of both trucks and trailers is generating a continuous flow of new equipment to the fleets. Adding capacity in the face of softer freight volumes, while financial pressures build, is resulting in a serious reassessment of equipment investment plans.

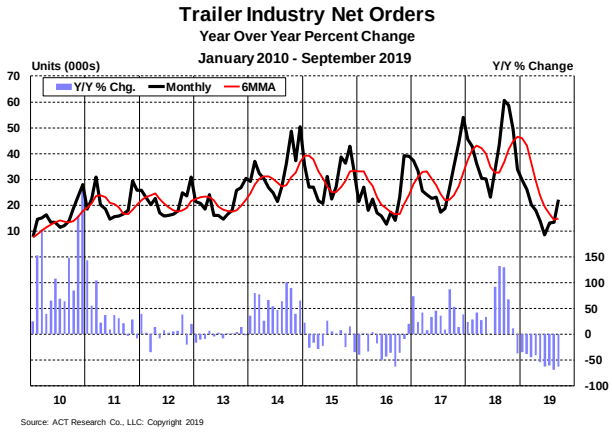
Softer orders shift the pendulum to "advantage fleets," and it is likely that ongoing order negotiations are generating some OEM pricing challenges for the near-to-medium term.

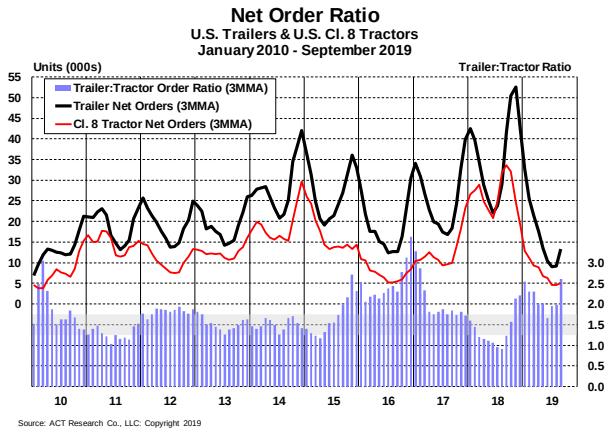
A "safety valve" that has been available in the past is dealer stocking orders; while some of that may be occurring, the market pressures there are also concerning. While we don't receive direct reports on dealer inventory, anecdotal reports indicate that channel is full. The ongoing string of fleet bankruptcy stories confirms the continual financial pressures occurring. The impact on the small to medium fleet, the dealer channel's prime customer, appears significant.

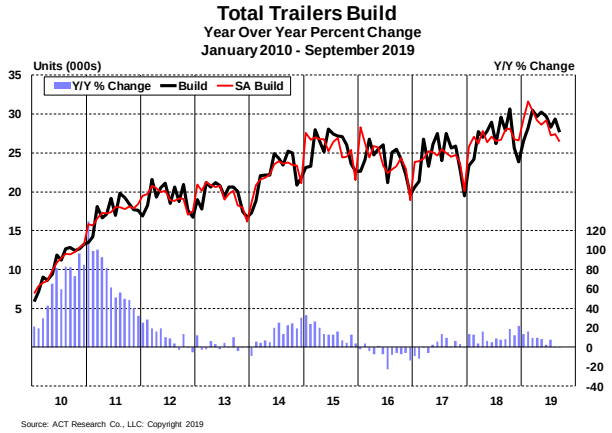
BACKLOG: The industry orderboard ended September at 121k trailers, down 7% sequentially and off 39% versus this time last year. The softness was widespread, as all trailer categories were lower for both time comparisons. After peaking at just under 246k units in December, an all-time record, backlog has now declined for nine straight months.

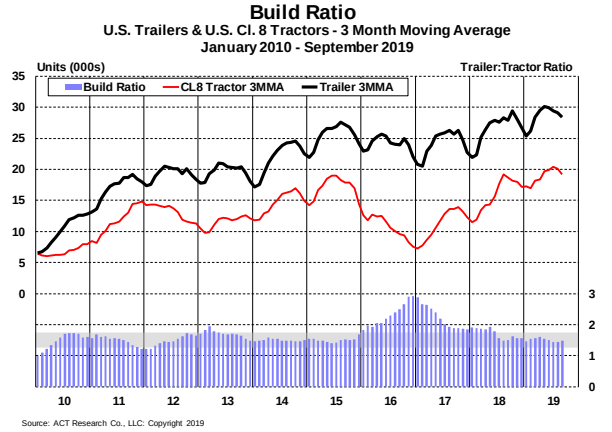
Being the industry's major categories, dry vans and reefers were responsible for about 85% of the y/y decline. However, the largest y/y percentage decline occurred in flatbeds. Including those in the analysis, the industry's three largest categories are responsible for more than 95% of the y/y delta.

Despite this long-term backlog decline, OEMs continue to produce at strong rates; we would expect that production must quickly be brought more in line with ongoing order volumes. That can be accomplished by lower build rates, fewer days in operation, or likely some combination of the two. The approaching year-end holiday impacted schedules provide a prime opportunity to extend planned downtime, which would result in a slower burn of the current backlog. That would help set a better foundation as the industry heads into the new year.









The accompanying table and graphs successfully demonstrate backlog status. At 121k NSA, the orderboard is the lowest since Nov'17. Seasonally adjusted backlog, at just under 136k, is the lowest since Nov'17 as well. The difference is the SA and NSA orderboard was on a growth trend in Nov'17; we're still seeking the orderboard trough this year.

At this point, reporting for October is minimal, but early indications are that a meaningful surge is unlikely. So, even if there is a significant order rebound before year-end, the industry is likely to enter the new year with a lackluster backlog.

BUILD: The long-anticipated slowing in total production continued in September, but the pace of adjustment is very mild. Total build of 27.7k trailers was down 6% m/m, but less than 1% behind last year. That was the second straight month with a negative y/y comparison. With seasonal adjustment in play, results were down 4% to 5% for both measures.

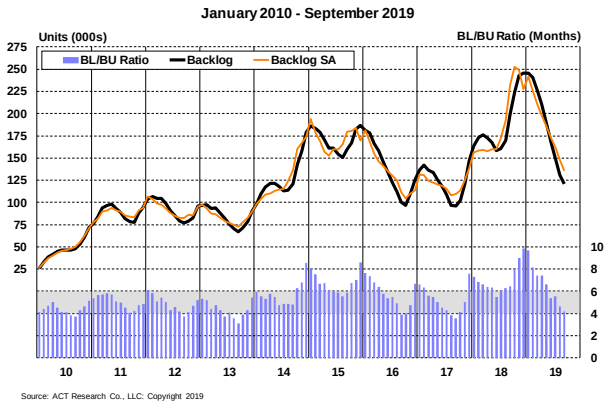
While Labor Day-impacted schedules helped dampen totals, build rates did increase 4% versus August. We anticipate that production will continue to ease as the year closes; expect this to be accomplished by a combination of extended holiday shutdowns and slower build rates.

Backlog burn has averaged almost 15k/month over the last four months (27.6/mo average production from June through September versus 12.9k average net orders over the same timeframe). History shows that OEMs normally continue high production levels longer than the support provided by the underlying demand. After getting "over the tips of their skis," fewer days in operation and slower line rates tend to be the next adjustments. Staffing reductions, which would include canceling production shifts, are delayed for as long as possible. Given the challenges OEMs have had hiring staff in the past couple of years, reticence to reduce headcounts seems very strong this time around.

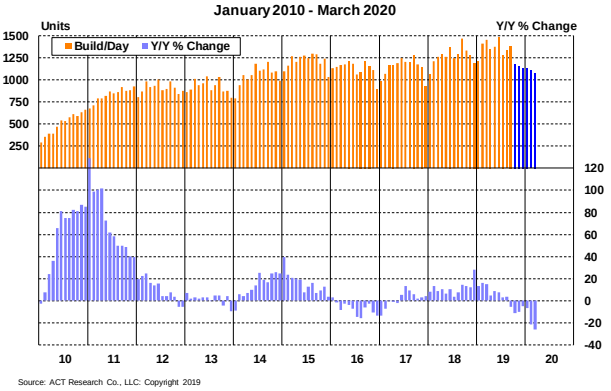
YTD production of more than 262k trailers is 7% better than last year. As has been the pattern, box trailers are providing the majority of the gain, with reefers up 16% through the third quarter and dry vans up 8%. Although a smaller market segment, liquid tank production is up 28% ytd; expect meaningful softening as the year closes, in response to a soft orderboard. Even with the anticipated production slowdown as the year closes, we still project that total trailer production will set an all-time record in 2019.

BL/BU: The orderboard horizon extends into early Feb'20; the 4.2-month BL/BU ratio at the end of

Total Trailers Backlog & Backlog/Build Ratio



Total Trailers: Build Per Day



September was the shortest since Oct'17. After breaking into 2020 in July, the orderboard end-point has remained stubbornly ensconced in January or February ever since.

Dry vans closed the month with a 4.3-month BL/BU, equivalent to the total industry measure, with reefers at a somewhat longer 5.3-month horizon. Flatbeds closed the quarter at an extremely snug 2.2 months, roughly half the level this time last year. Flats have averaged a 2.4-month BL/BU for the last four months.

There has been little comment regarding component issues in recent months; with the length of BL/BU approaching normal material/component lead-times and production starting projected to slow, it is likely that the supplier headwinds have eased. However, we have heard some comments that the quest to "meet a number" for the year could well be helping prop up production levels in the near-term.

While some concerns regarding tariff impacts on component and materials supplies and pricing have been heard, there appears to be less impact than many anticipated.

CANCELLATIONS: It's been a bit of a rollercoaster ride for cancellations this year. After averaging 1.3% of the backlog for the first four months of 2019, cancellations averaged more than double that, at 2.7% for the latest five months. September closed with a 2.5% rate, down from August's 3.2% level. That August measure was the highest since Dec'09, when the industry cancel rate surged into double-digits.

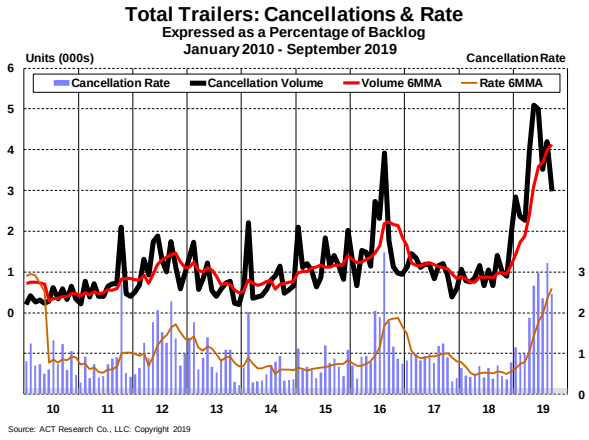
The September improvement would have been even better on a sequential basis without upward pressure from dry vans; their 2.8% rate, while an improvement from August, still drove the overall industry result. Dry vans accounted for more than 75% of the September industry cancellations, and have been meaningfully above their target rate since April. While some fleet-driven impact is obviously occurring, churn also appears to be resulting from adjustments in dealer commitments, placeholder orders, and some shift of volume into next year.

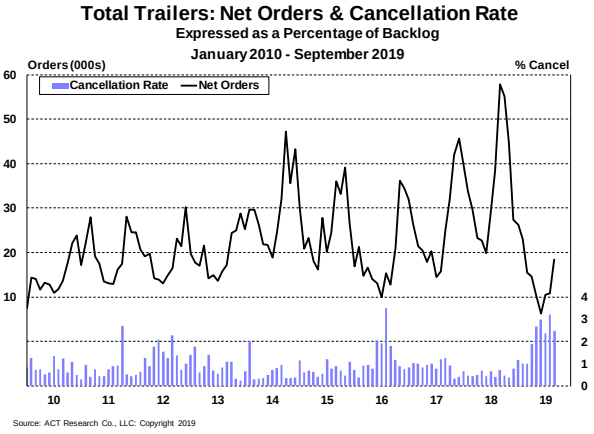
More than 32k orders have been canceled so far in CY'19, a volume well above an average month of production. That compares to just over 12k cancellations for all of 2018. Obviously, some of that massive order surge of Q4'18 was a bit speculative, as fleets raced to obtain production slots while availability quickly evaporated. However, some of that exuberance has reversed in response to current market conditions. Expect the pace of cancellations to slow as the year concludes, although some cancel/re-order activity may still occur. Some units could be pushed into Q1 from a combination of fleet requests as well as OEM re-scheduling.

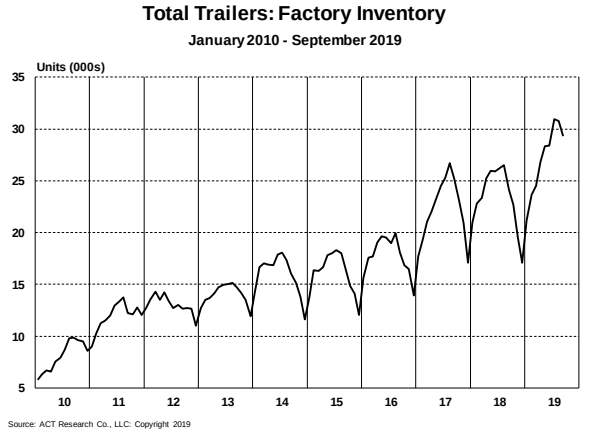
INVENTORY: Better…but still too high: Levels fell sequentially for the second straight month, but remain robust at the factory. On a seasonally adjusted basis, factory inventory actually grew slightly in September. With anecdotal information indicating dealer stock is also high, full system inventory remains an issue.

Six of ten trailer categories are up y/y. While reefer inventory reached an all-time high in August, it did fall sequentially in September, the first m/m inventory decline in reefers since last November. Despite that contraction, reefers still have the highest y/y increase of any trailer category; it will take some significant downstream demand to bring them back into line.

We expect the industry to follow its normal year-end pattern, so anticipate a significant inventory drawdown as the year closes. OEMs will make a major effort to move completed units to fleets. While high freight volumes resulting in fleets being too busy to pick up







completed trailers in the past, softer freight volumes pretty much removes that argument from the equation.

SHIPMENTS: September volume of 29.1k trailers were down 1% sequentially and off 4% y/y. Seasonal adjustment results in more disappointing statistics, with the volume of 25.6k trailers off 6% m/m and 4% lower y/y. Although production will slow as the year closes, expect the normal year-end inventory drawdown surge to support solid December shipments.

FREIGHT MARKET SUMMARY

The freight market remains in mild recession, with loose capacity and aggressive private fleet growth in 2019 pressuring for-hire freight rates. In further evidence of inventory building, the freight volume rebound of July and August has softened since the September 1st tariffs. But even the modest volume improvement in Q3 wasn't broad-based, as LTL and rail declines worsened in September and October. Some coincident indicators, such as carrier margins and OEM build rates, are starting to fall modestly from record levels, though equipment purchasing remains near record highs. Peak new truck buying since mid-2018 has pushed the supply-demand balance past equilibrium, setting up a loose environment even as we head into the high-volume holiday season.

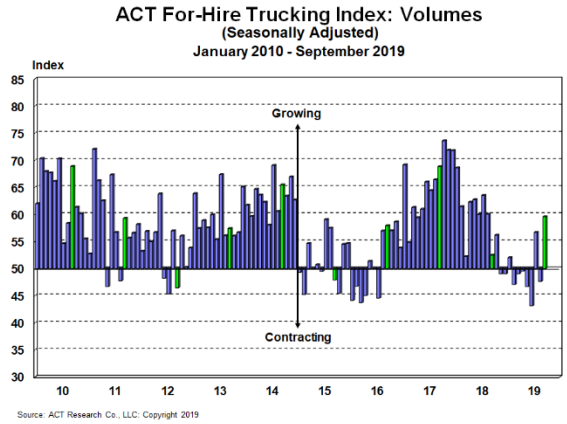
Additional tariff threats for December 15th will still have ripple effects, but not enough to firm up the soft spot rate market, in our estimation, because capacity continues to grow. More concerning is the risk that the supply-demand balance loosens again in seasonally slow Q1, if freight softens again from a post-tariff inventory drawdown.

The consumer continues to produce underlying freight growth, though obscured by material private fleet expansion and weighed by the industrial downturn. We think the soft freight environment has been driven primarily by the trade war and its effects on inventories, industrial activity and financial conditions.

We expect these freight conditions to pressure TL and intermodal contract rates in the near term, adversely impacting fleet profitability and commercial vehicle demand, with effects growing through the year. This will lead to a lower and more normal Class 8 tractor market in 2020. For more analysis of transportation economics, please see our Freight Forecast report, which provides forecasts for volumes and rates for TL, LTL and intermodal freight transportation.

ACT FOR-HIRE TRUCKING INDEX: The supply-demand balance reading spiked for the second time in three months in September, to 62.4, after returning to a balanced level in August (SA). The sequential increase was mainly from the higher Volume Index, with the decline in the Capacity Index adding some upward pressure on the industry balance.

While this increasingly looks like "green shoots" for the next up-cycle, there is still likely some inventory building supporting the demand side, and ongoing private fleet capacity additions argue it overstates the tightness in the for-hire market. That said, this is



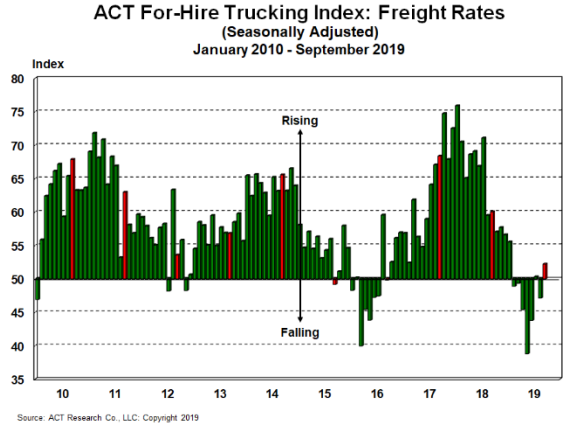
certainly a more positive direction for now, and may bode well for a more balanced environment next year on lower Class 8 tractor demand.

We measure market balance by comparing the freight and capacity indices; if freight grows faster, it indicates tightening conditions, and vice-versa.

The Volume Index (SA) roared back into positive territory in September, to 59.6 (SA), from 47.6 in August, only the fourth positive result in the past year. The unadjusted Volume Index of 57.7 jumped from 48.0 in August.

While the industry strength was not broad-based in September, the ACT For-Hire Volume Index hit its highest level since August 2018. We remain cautious about how much inventory building is happening ahead of tariffs, but this may also be led by strong consumer trends. With still-aggressive private fleet growth and a weak US manufacturing sector, choppy results will likely continue, but the past few months suggest a bottoming process is underway.

ACT's For-Hire Pricing Index recovered with volumes in September, if to a lesser degree, rising to 52.2 (SA), from 47.1 in August. This improved the full-year average to 47.9. After a rough start to the year, this



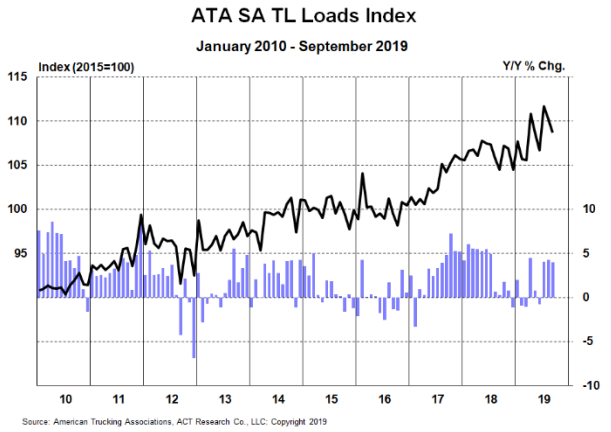
indicates the pricing environment stabilized in two of the past three months. Rates have been under pressure in 2019 from weak for-hire freight volumes and strong capacity growth. The volume improvement appeared to help the pricing picture in September.

Seasonally adjusted, capacity contracted in September for the third straight month, to 47.1, from 47.3 in August. This is inconsistent with ACT's ongoing reporting of robust US Class 8 tractor retail sales, suggesting private fleets may continue to be responsible for the capacity additions.

It is more indicative of increasingly disciplined capital spending by for-hire carriers. However, with industry production cuts still in early stages, industry capacity growth will continue into 2020. This suggests our Capacity Index is ahead of the industry curve. In September, the capacity reading was 47.6 on a nominal basis, down from 48.0 in August.

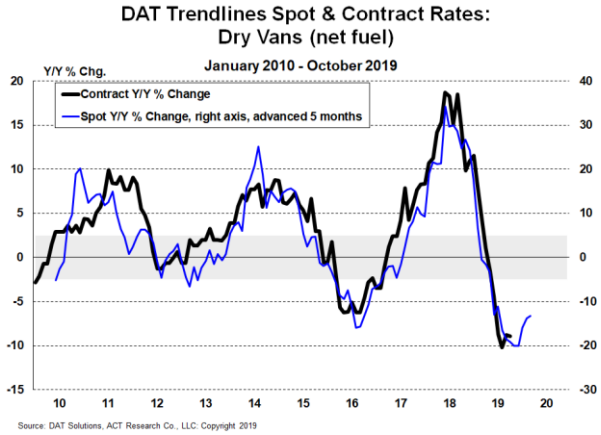
ATA MARKET INDICES: The ATA's For-Hire Truck Tonnage Index (SA) grew 3.5% y/y in September, from 3.2% y/y in August and 4.1% ytd versus the full-year 2018 growth rate of 6.6%.

The ATA's TL Loads Index (SA) rose 4.0% y/y in September, from a 4.3% y/y increase in August. We attribute much of the increase to inventory building ahead of List 4 tariffs, and we expect growth to slow from here. On a m/m basis, the ATA Loads Index fell 1.5% in September.

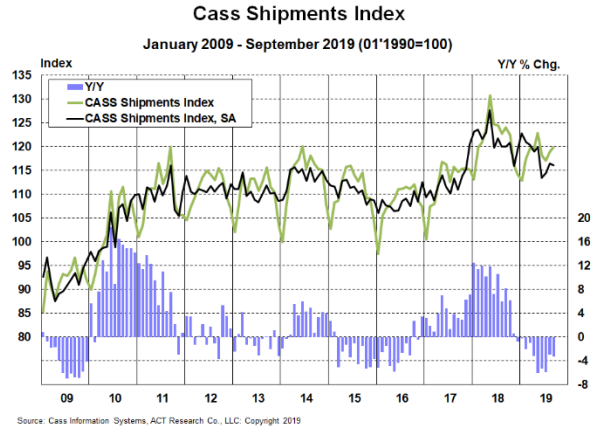


DAT TRENDLINES: DAT's dry van spot rate per mile, net fuel, fell 13.3% in October, less negative than the 13.9% drop in September. Seasonally adjusted, dry van spot rates were down 3.1% m/m from September and were the weakest since May. DAT's dry van contract rate per mile, net fuel, fell 8.9% y/y in October after an 8.8% y/y decline in September.

Reefer spot rates, net fuel, fell 13.2% y/y in October, after a 14.4% y/y drop in September. Reefer contract rates, net fuel, fell 3.6% y/y in October after falling 3.6% y/y in September (revised from -2.2%). Flatbed spot rates fell 11.7% y/y in October, less negative than the 14.0% y/y drop in September. Flatbed contract rates declined 3.1% y/y in October, after a 4.7% drop in September (revised from -3.6%).



CASS FREIGHT INDEX: The Cass Shipments Index, declined 3.3% y/y in September, the tenth straight month of declines averaging -3.1%. Seasonally adjusted, the index fell 0.3% m/m. Culprits include private fleet growth pulling freight from for-hire markets. The Cass indices measure freight movement and spending across all transport modes, with a broader scope than just road freight but are about 80% truck (76% of spend, 83% of shipments).



INTERMODAL AND RAIL: The worsening trend in NA Class I rail volumes accelerated in October, which bore the brunt of the GM strike, falling 7.2% y/y, worse

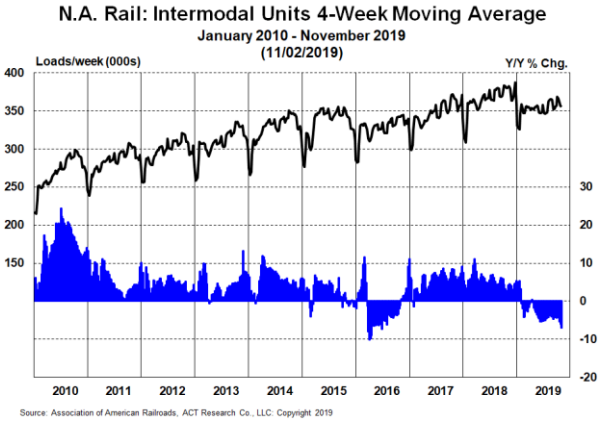
North American Rail Volumes by Segment
y/y % change

	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19	4Q19TD*
Intermodal	2.6%	5.3%	6.2%	6.6%	5.5%	5.3%	4.8%	3.6%	-1.3%	-4.6%	-4.7%	-6.8%
Chemicals	0.6%	4.2%	2.3%	2.3%	1.7%	3.5%	6.1%	4.3%	-0.3%	1.1%	-2.3%	-3.3%
Metals	8.7%	12.0%	9.8%	8.7%	2.8%	5.1%	5.2%	5.4%	0.7%	-2.1%	-4.6%	-12.6%
Automotive	1.1%	-0.5%	-6.4%	-1.7%	-4.6%	0.7%	4.0%	0.1%	-1.9%	0.1%	-0.4%	-12.4%
Petroleum	-7.7%	-6.9%	-6.7%	8.2%	6.4%	16.4%	35.8%	29.0%	18.8%	24.2%	9.8%	1.4%
Minerals/Sand	13.7%	17.1%	14.4%	17.1%	3.4%	6.3%	-1.9%	-11.3%	-5.8%	-9.7%	-4.4%	-5.5%
Paper/Lumber	-3.8%	-0.6%	-0.5%	1.3%	-0.8%	4.5%	5.4%	1.2%	-0.8%	-4.9%	-8.2%	-7.1%
Grain/Food	4.0%	7.5%	-9.3%	-6.9%	-5.3%	3.4%	6.8%	0.2%	-1.7%	-1.0%	-3.4%	-3.2%
Coal	14.3%	17.2%	1.6%	-3.9%	-2.4%	-1.0%	-3.1%	2.0%	-6.4%	-0.9%	-8.7%	-13.3%
Total	4.3%	6.7%	3.0%	3.5%	2.0%	4.2%	4.4%	3.0%	-1.5%	-2.4%	-4.2%	-7.2%
Carloads, ex-Intermodal	5.8%	7.9%	0.3%	0.9%	-1.0%	3.2%	4.0%	2.5%	-1.6%	-0.5%	-3.8%	-7.6%

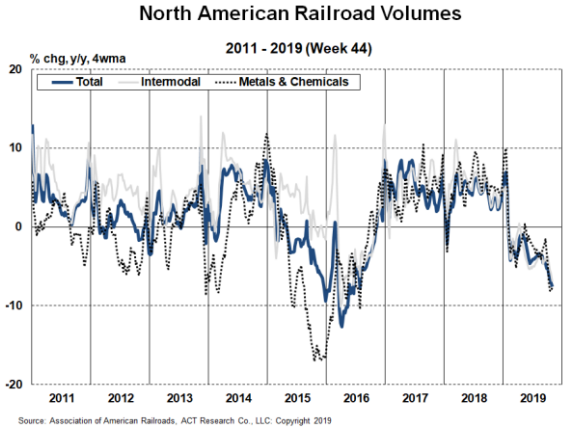
Source: Company reports, ACT Research Co. LLC. Copyright 2019
*Through week 44

than the 5.5% and 3.4% respective declines in September and August. If there is good news here, this is about as bad as it typically gets for rail volume recessions, so further deterioration is less likely.

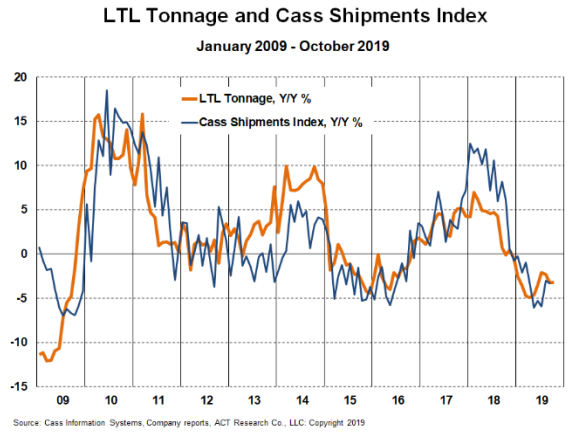
NA intermodal volumes fell 6.8% y/y in October, worse than the 4.4% drop in September and the 3.9% y/y decline in August. We expect volumes to remain down near-term, with some help from pre-tariff inventory building, though most of this benefit appears to be going to truck as intermodal is no longer offering the cost savings it once did.



Metals and chemicals rail carloads fell 7.6% y/y in October, deteriorated from down 3.4% in September and -3.2% for Q3. The GM strike clearly had an impact, but the industrial sector was weakening prior to the strike, so the rebound as auto manufacturing ramps back up is not likely to be strong. As inputs to production, metals and chemicals tend to lead truck volumes by a few weeks. Comparisons remain tough all year, so this is a cautious leading indicator.



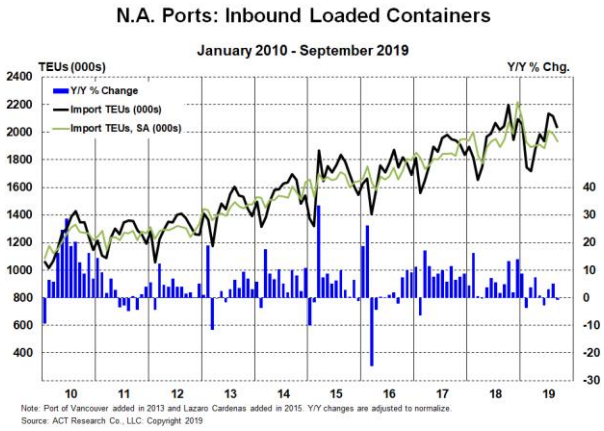
LESS THAN TRUCKLOAD: LTL tonnage worsened to 3.3% and 3.5% respective y/y declines in September and October after moderating over the summer. We see the industrial cycle, GM strike and excess TL capacity as the main factors in the



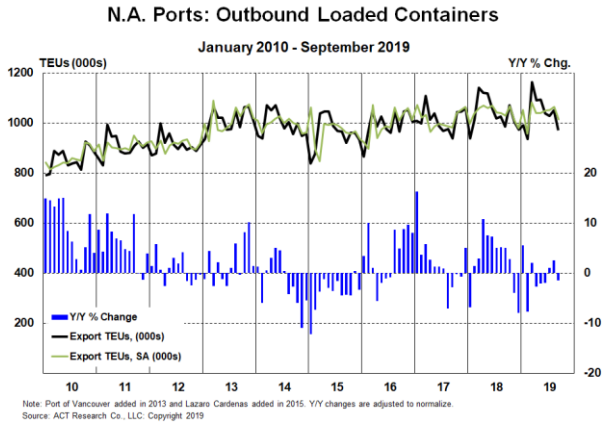
deterioration. October marked the thirteenth straight month of y/y declines.

AIR AND OCEAN: According to IATA, global air cargo volumes fell 4.5% y/y in September, a bit worse than the 3.9% y/y drop in August and the average 3.4% y/y drop year to date.

NA container imports at the top twelve ports fell 0.8% y/y in September after a 5.0% increase in August. On a seasonally adjusted basis, import TEUs fell 2.8% m/m in September from August, after a 1.1% drop in August. After surging in August, container imports fell y/y at half of the major ports in September, with the weakness concentrated on the West Coast. While not as large as last year, this is likely evidence of pre-tariff inventory building.



Exports from the top NA ports fell 1.5% y/y in September after rising 2.5% y/y in August. On a seasonally adjusted basis, exports fell 4.7% from August. YTD, container exports are down 0.5% y/y, while imports are up 2.4%, suggesting growing trade deficits as higher tariffs and the stronger dollar make US manufacturing less competitive globally.



REGULATION & LEGISLATION: The latest status report on the GHG-2 case in the Federal Appeals Court in the District of Columbia was recently posted. The 90-day update from EPA continued the "more of the same" issue responses seen since the Court ordered the regular 90-day updates in October 2017. Expect the next update in early February.

They can haul it; they just can't smoke it. Well, that's not entirely true, since industrial hemp has extremely low THC content and is really not THAT product, but it's an easy riff on the latest ruling posted by USDA addressing the interstate transportation of hemp. With the growing popularity of CBD oil, the transportation of hemp to processing facilities has grown significantly. The variations in state laws and enforcement affected transport differently depending on what state borders were being crossed. So, USDA stepped in on October 31st, instituting Federal control over interstate commerce. The process was a bit unusual, however, as USDA published the "interim" rule on 10/31/2019, making it immediately effective until 11/1/2021 while overlapping that implementation with a commentary period that closes on 12/30/2019. As you are likely well aware, commentary usually comes well before the rule implementation. Industry stakeholders indicated this was a surprisingly quick rulemaking at USDA.

The end of AOBRD grandfathering in the US rapidly nears, with ELDs required on or before December 16th. A recent presentation by an Administration member indicated a "zero chance" of any extension of that deadline. However, in a surprise move, FMCSA indicated on Oct 29th that it will reconsider a petition from the Small Business in Transportation Coalition (SBTC) that they denied back in July. SBTC requested that trucking operations with fewer than 50 employees be exempted from the ELD rules. The public comment docket closing is Nov 29th. See details here.

The next major deadline in HOS tracking technology will occur in Canada, as Transport Canada has set a 6/12/2021 ELD implementation date. While the US and Canadian ELD rules are quite similar, there are two meaningful differences. The first is that there will be no "grandfather" period in Canada for old or non-compliant technology. The second is a requirement for third-party verification that the ELD equipment and software meet the country's regulations. That's a significant change from the self-certification in place in the US. Also note that the full certification process, as well as the licensing of those third-party testers, remains under development. Given the effort to change over equipment, along with software systems and interfaces to other existing systems, perhaps this may shift the advantage to smartphone, "cloud-based" systems with minimal equipment installation challenges and a more straightforward testing/verification process. Counter to some of the challenges in the US, expect minimal impact on fleet operation in Canada from this regulation.

FMCSA's Drug & Alcohol Clearinghouse goes into operation on 1/6/2020. One of the things the Clearinghouse will identify is drivers with CDLs in various states, linking the history of those licenses to provide an accurate background of those drivers. The system will only contain violations that occur on or after 1/6/2020, so it will take a few years to build an effective behavior history pattern for CDL holders. All employers of CDL drivers must purchase a query plan and use the system as part of any pre-employment driver investigation and at least annually for any employed driver. Queries will cost employers $1.25 each. While there are no volume price breaks, query "bundles" can be purchased to simplify system usage. Employer/user registration is currently underway; see system details here.

Finally, implementation of California Phase 2 trailer standards rapidly approaches. Trailer OEMs must certify to California standards and receive an Executive Order from CARB to legally sell trailers in California built after 1/1/2020. Impacted trailers include box-type trailers (dry vans and reefers), flatbeds, tank trailers, and container chassis. Methods to meet the requirements include aerodynamics, LRR tires, tire pressure systems, and/or weight reductions. See the full details here. Note that CARB webpage also has a place to show the list of Executive Orders granted for trailers, the operative phrase being "place to show." As of 11/5/2019, the list is "coming soon," so either CARB is slow posting the info or no OEM has yet filed for approval.

ACT Research

Public For-Hire Truckload Carrier Database	Current Financial Conditions						
	1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19
Transportation Revenue, net fuel	**7,167**	**7,785**	**8,077**	**8,314**	**7,556**	**7,655**	**7,690**
y/y	16%	19%	17%	14%	5%	-2%	-5%
Additions/Acquisitions	224	238	233	175	65	79	66
Organic revenue, y/y	12%	16%	14%	11%	5%	-3%	-6%
Fuel Surcharge	**804**	**898**	**907**	**914**	**762**	**816**	**785**
y/y	34%	46%	40%	21%	-5%	-9%	-13%
Other Revenue	116	121	127	113	110	223	213
Total Revenue	**8,086**	**8,804**	**9,111**	**9,341**	**8,428**	**8,694**	**8,688**
y/y	17%	21%	19%	14%	4%	-1%	-5%
Total Operating Expenses	7,552	8,081	8,353	8,425	7,847	7,997	8,058
Operating Income	**534**	**722**	**758**	**916**	**581**	**698**	**630**
y/y	58%	58%	67%	47%	9%	-3%	-17%
q/q	-14%	35%	5%	21%	-37%	20%	-10%
Operating Ratio (OR)	**93.4%**	**91.8%**	**91.7%**	**90.2%**	**93.1%**	**92.0%**	**92.8%**
Margin change, y/y	171bp	195bp	241bp	221bp	29bp	(18bp)	(107bp)
OR, net fuel	**92.6%**	**90.7%**	**90.6%**	**89.0%**	**92.3%**	**90.9%**	**91.8%**
Margin change, y/y	198bp	229bp	279bp	249bp	24bp	(16bp)	(120bp)
Pretax Income	484	669	713	855	535	647	580
Taxes	115	164	164	202	126	160	141
Tax Rate	23.7%	24.6%	22.9%	23.7%	23.6%	24.7%	24.3%
Net Income	**368**	**502**	**547**	**651**	**407**	**485**	**438**
y/y	102%	119%	139%	84%	11%	-3%	-20%
Net Income Margin	**4.55%**	**5.71%**	**6.01%**	**6.96%**	**4.83%**	**5.58%**	**5.04%**
Margin change, y/y	191bp	256bp	302bp	267bp	28bp	(13bp)	(97bp)
Net Income Margin, Core Carriers	**5.71%**	**6.76%**	**7.24%**	**8.59%**	**6.28%**	**6.97%**	**6.19%**
Margin change, y/y	179bp	214bp	301bp	322bp	57bp	21bp	(105bp)
Fleet Statistics							
Tractors (period average)							
Celadon*	3,924	3,824	3,774	3,699	3,699	2,774	2,699
Covenant	2,576	2,632	3,077	3,154	3,103	3,101	3,071
Daseke*	5,211	5,651	6,022	6,147	6,141	6,200	6,150
Heartland*	3,929	3,629	3,429	3,229	2,906	2,881	3,481
JB Hunt	16,328	16,432	16,887	17,588	18,072	18,323	18,367
Knight-Swift	20,131	19,761	19,445	19,423	19,627	19,636	19,524
Landstar	9,868	10,155	10,443	10,599	10,637	10,587	10,441
Marten	2,787	2,830	2,773	2,766	2,828	2,981	3,111
PAM	1,783	1,876	1,916	2,029	2,039	2,065	2,084
Schneider	13,054	12,868	12,875	13,049	13,080	13,145	12,463
Universal	3,653	3,544	3,653	3,234	3,302	3,414	3,389
US Xpress	6,245	6,299	6,201	6,295	6,275	6,285	6,533
USA Truck	1,654	1,668	1,672	1,913	1,954	1,945	2,020
Werner	7,427	7,548	7,728	7,787	7,887	7,937	8,010
Total Tractors	**98,570**	**98,717**	**99,895**	**100,912**	**101,550**	**101,274**	**101,343**
y/y	2.9%	3.0%	2.5%	1.7%	3.0%	2.6%	1.4%
Additions/Acquisitions	3,853	3,355	2,368	1,497	1,057	1,057	1,091
Organic fleet change, y/y	**-1.1%**	**-0.5%**	**0.0%**	**0.2%**	**2.0%**	**1.5%**	**0.4%**

* Celadon estimated since 2Q17, Heartland estimated based on FMCSA and company data, Daseke estimated for Q3.

Source: ACT Research's Publicly Traded Truckload Carrier Database. Includes Celadon, Covenant, Daseke, Heartland, JB Hunt, Knight-Swift, Landstar, Marten, PAM, Schneider, Universal, USA Truck and Werner. Data for Celadon are estimated based on limited company disclosures since calendar Q2 2017 due to delayed filings. For more information about this database, click here.

Public Less-Than-Truckload (LTL) Industry Database

Current Financial Conditions

$ in millions, except as noted	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18	1Q19	2Q19	3Q19
Transportation Revenue, net fuel	**6,297**	**6,771**	**6,952**	**7,077**	**7,213**	**7,692**	**7,675**	**7,621**	**7,225**	**7,577**	**7,508**
y/y	2%	3%	5%	9%	15%	14%	10%	8%	0%	-1%	-2%
Acquisitions/(Divestitures)	(112)	(120)	(118)	(39)	0						
Organic revenue, y/y	3%	5%	7%	10%	15%	14%	10%	8%	0%	-1%	-2%
Fuel Surcharge	**432**	**464**	**475**	**508**	**544**	**628**	**652**	**632**	**566**	**632**	**641**
y/y	33%	21%	18%	29%	26%	35%	37%	24%	4%	1%	-2%
LTL Revenue, net fuel	5,354	5,881	5,962	5,854	5,852	6,502	6,576	6,223	6,017	6,585	6,468
y/y	4%	6%	6%	9%	9%	11%	10%	6%	3%	1%	-2%
Total Revenue	**6,728**	**7,235**	**7,427**	**7,585**	**7,757**	**8,321**	**8,327**	**8,254**	**7,791**	**8,209**	**8,149**
y/y	3%	4%	5%	11%	15%	15%	12%	9%	0%	-1%	-2%
Total Operating Expenses	6,484	6,751	6,958	7,222	7,407	7,705	7,724	7,771	7,442	7,573	7,565
Operating Income	**245**	**484**	**469**	**363**	**351**	**615**	**603**	**483**	**349**	**636**	**584**
y/y	19%	13%	13%	33%	43%	27%	29%	33%	0%	3%	-3%
Operating Ratio (OR)	**96.4%**	**93.3%**	**93.7%**	**95.2%**	**95.5%**	**92.6%**	**92.8%**	**94.2%**	**95.5%**	**92.3%**	**92.8%**
Margin change, y/y	48bp	52bp	44bp	81bp	88bp	71bp	93bp	107bp	(4bp)	36bp	(7bp)
OR, net fuel	**96.1%**	**92.9%**	**93.2%**	**94.9%**	**95.1%**	**92.0%**	**92.1%**	**93.7%**	**95.2%**	**91.6%**	**92.2%**
Margin change, y/y	57bp	62bp	51bp	92bp	97bp	86bp	111bp	121bp	(3bp)	40bp	(8bp)
Pretax Income	123	350	346	256	260	571	521	441	259	538	482
Taxes	38	124	121	(81)	40	150	131	108	69	146	116
Tax Rate	30.4%	35.3%	35.1%	-31.7%	15.2%	26.3%	25.1%	24.6%	26.7%	27.1%	24.0%
Net Income	**99**	**244**	**230**	**189**	**222**	**394**	**396**	**339**	**197**	**383**	**351**
y/y	56%	23%	22%	49%	125%	61%	72%	80%	-11%	-3%	-11%
q/q	-22%	147%	-6%	-18%	18%	77%	1%	-14%	-42%	94%	-8%
Net Income Margin	**1.5%**	**3.4%**	**3.1%**	**2.5%**	**2.9%**	**4.7%**	**4.8%**	**4.1%**	**2.5%**	**4.7%**	**4.3%**
Margin change, y/y	50bp	51bp	42bp	65bp	140bp	136bp	166bp	162bp	(33bp)	(6bp)	(45bp)
LTL Operations											
Total Revenue, incl fuel	**5,774**	**6,325**	**6,401**	**6,324**	**6,373**	**7,103**	**7,179**	**6,811**	**6,552**	**7,183**	**7,115**
y/y	6%	7%	6%	10%	10%	12%	12%	8%	3%	1%	-1%
Total Revenue, net fuel	**3,321**	**3,608**	**3,589**	**3,490**	**3,556**	**3,887**	**3,848**	**3,691**	**3,616**	**3,906**	**3,884**
y/y	4%	6%	5%	8%	7%	8%	7%	6%	2%	0%	1%
Total Revenue Per CWT, incl fuel	**$19.59**	**$19.83**	**$20.26**	**$20.50**	**$20.71**	**$21.17**	**$22.04**	**$22.25**	**$22.05**	**$22.33**	**$22.94**
y/y	3%	4%	3%	4%	6%	7%	9%	9%	6.4%	5.5%	4.1%
Total Revenue Per CWT, net fuel	**$16.61**	**$16.94**	**$17.29**	**$17.28**	**$17.24**	**$17.61**	**$18.31**	**$18.45**	**$18.38**	**$18.60**	**$18.88**
y/y	1%	2%	2%	2%	4%	4%	6%	7%	7%	5.7%	3%
Total Tonnage	**14,738**	**15,950**	**15,799**	**15,422**	**15,385**	**16,776**	**16,285**	**15,303**	**14,859**	**16,083**	**15,506**
y/y	3%	4%	3%	6%	4%	5%	3%	-1%	-3.4%	-4.1%	-4.8%
Total Shipments	**23,336**	**25,333**	**24,974**	**24,130**	**23,545**	**25,805**	**25,607**	**24,125**	**23,113**	**25,243**	**24,911**
y/y	2%	3%	1%	3%	1%	2%	3%	0%	-2%	-2%	-3%
Average Weight per Shipment (lbs)	**1,242**	**1,243**	**1,248**	**1,263**	**1,291**	**1,289**	**1,262**	**1,254**	**1,257**	**1,255**	**1,242**
y/y	-0.2%	0.1%	1.4%	1.9%	3.9%	3.7%	1.1%	-0.7%	-2.6%	-2.6%	-1.6%
Revenue per Shipment, net fuel	**222**	**225**	**232**	**234**	**239**	**243**	**249**	**248**	**250**	**251**	**253**
y/y	2%	2%	4%	5%	8%	8%	7%	6%	4.4%	3.3%	1.8%

Source: ACT Research Publicly Traded Less Than Truckload Carrier Database includes ArcBest, FedEx Freight, Forward Air, XPO Logistics, Old Dominion, Saia, UPS Freight and YRC Worldwide. For more information about this database, click here.

MARKET CONDITIONS

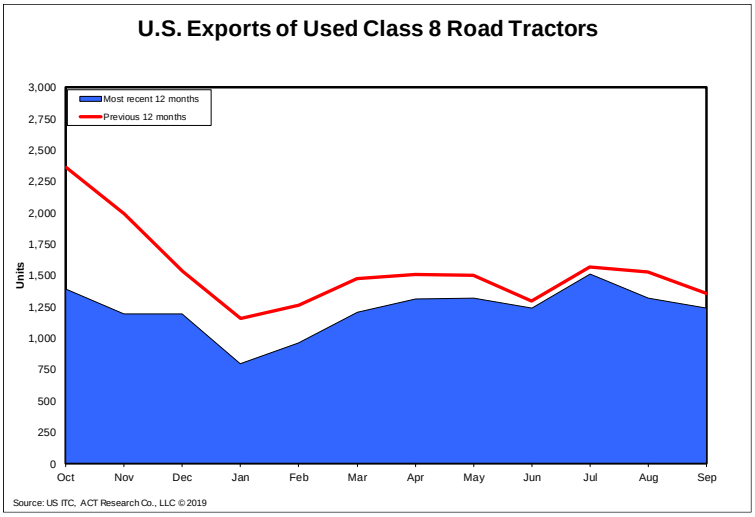
Same dealer sales of used Class 8 equipment were uniformly weaker in September, falling 5% m/m, with y/y and ytd volumes dropping 18% and 19%, respectively. It is not unusual to see September volumes decline from August; however, the decay is generally smaller, based on seasonal analysis. Compared to September 2018, retail and wholesale activity was softer. On a ytd basis, all three segments were weaker, though to varying degrees. Looking ahead to next month, volumes in October typically swell relative to September.

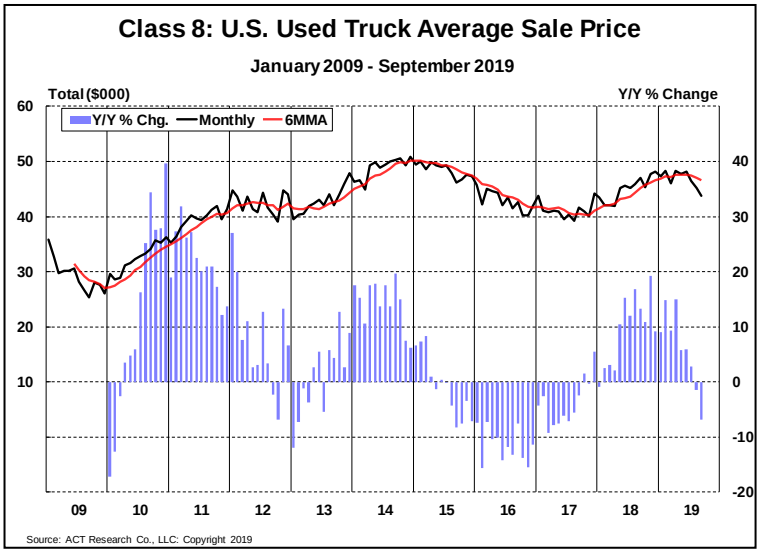
September average sale prices declined 3% sequentially. Longer term, prices remained mixed, with y/y prices marking their second consecutive sequential decline (-7%), something that last happened in September 2017. Year-to-date, pressure continued to mount in August, with prices now up by 6%, the smallest margin of the year. Tough comparisons against strong prices in the latter half of 2018 are now making it difficult for prices to show improvement. In addition, and more importantly, weakness in the freight markets, excess freight hauling capacity, and an increasing used truck inventory are combining to push used truck prices lower for the remainder of the year and well into 2020.

While the slowdown in the used truck market may have taken a little longer to materialize than expected, there is no denying that it has arrived. At the core of the issue is an oversupply of sleeper tractors. The most ubiquitous configuration in the Class 8 market, this segment has been hit hard by the dynamic freight cycle, which is well into retreat. Typically, peak trucker profitability lags the freight cycle, which explains why even now, truckers are adding capacity to their fleets. As the cycle progresses naturally, slowing demand for both new and used trucks will pare fleet growth, while marking time as the freight market returns to growth. The good news in the current cycle is that we expect it to be relatively shallow and short in duration. New truck sales are expected to bottom in Q3'20. As they start to increase, the same factors that will drive their recovery, namely the return to an expanding freight environment, should come into play for the used truck market, lagged by perhaps a quarter or so. And as volumes begin increasing, pricing should respond to the tipping supply-demand equilibrium. It is worth noting that the vocational market is expected to perform in a similar, but less volatile fashion.

Exports fell sequentially for a fourth time this year in September (-6.1%), but continued to narrow the ytd gap (-13.8%). Government trade data through September show 10,905 Class 8 road tractors have been exported so far this year. Slowing global economic expansion, largely the result of tariffs and trade uncertainty, continues to have a tangible impact on used truck exports. That said, the leading countries of destination are unchanged, with Mexico at the top of the list. We expect exports to total 14,500 units in 2019.

More detailed analysis of the used truck industry, including specific OEM truck models, can be found in ACT Research's *U.S. Classes 3-8 Used Truck Report*. The analysis is based on a monthly average of more than 6,000 reported used truck sales and covers trends in unit volumes, pricing, mileage, and age of units being sold.





FORECAST SUMMARY: Given that only three months remain in this year, there were some particularly noisy changes to 2019 forecasts triggered by three one-off events.

1) Class 8: The nonlinear and all-time record month for US Class 8 tractor retail sales. That surge led to an-over 6,000 unit increase in US Class 8 sales expectations in 2019. Despite the sharp jump in sales expectations, the 2019 build forecast was little changed, owing to a sharper-than-previously-expected inventory drawdown.

2) Tank Trailers: An OEM revised 6 months of data, resulting in materially higher history and forecasts for liquid and pneumatic tank trailers. While the trailer topline rose by only 0.9%, the changes to the tank market were substantive.

3) Chassis: New chassis reporting led to an 1.8% decline in the total US-axled products forecast. Positively, this heretofore opaque segment will see material improvements in historical and forecast accuracy.

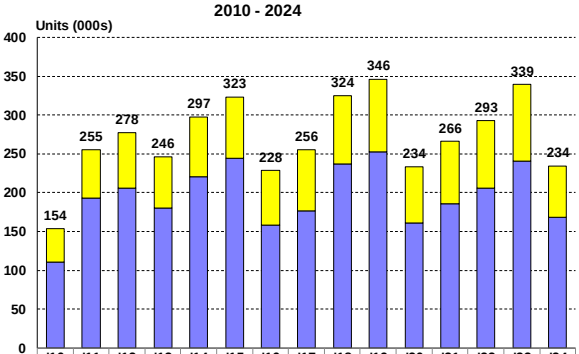
Those changes aside, the pattern of the forecasts in this month's report remain, for all intents, unchanged: Expectations for the Class 8 and trailer markets anticipate an accelerating pullback in build rates, as freight market conditions remain at a low ebb. While less cliff-like, MD market indicators continue to support a modest correction into 2020.

Economy: With ~80% of the NA Class 8 market and ~90% of the NA Classes 5-7 and Trailer markets beholden to the US economy, it is little wonder that this summary focuses almost exclusively on said economy. This month, it is worth touching on the weaker-than-anticipated activity in the economies of Canada and Mexico. In April, Canadian GDP expectations were pared back 50bps to 1.5%. Through Q3, the Mexican economic outlook deteriorated, falling 110bps to 0.6% GDP growth in 2019. The sharply lower Mexican economic outlook took small bites from both NA Class 8 and trailer expectations into the medium-term. Comparatively, US growth expectations, at 2.2%, are now 40bps below start-of-the-year levels. Looking to 2020, GDP growth in all three NA economics is anticipated to fall below 2%, with the US and Canada at 1.7% and Mexico rebounding to 1.4%.

Not surprisingly, the primary driver(s) of this devolution in NA economic activity and expectations are broadly the same in all three cases and can be succinctly summed up in just a few words: Trade War; Threats; Tariffs; Trump. More broadly, the slowdown in global economic activity in large part represents the fallout from the clash of economic titans that began in early 2018. The US-China trade war was cited as the trigger for recent cuts in 2019 expectations for global growth from the IMF (3.0%), OECD (2.9%), and World Bank (2.6%) – the slowest growth rate(s) since 2009.

N.A. Class 8 Production

2010 - 2024



	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24
Trucks/Rigids	43	62	72	65	76	79	70	79	87	93	72	80	87	99	66
Tractors/Artics	111	193	205	181	221	244	159	177	237	253	161	186	206	240	168
Total NA C8	154	255	278	246	297	323	228	256	324	346	234	266	293	339	234

Expanding on our five-word economic synopsis, the slowdown in global growth has impacted key industrial commodity prices, which in turn have triggered a pullback in investment/machinery demand. Owing to the freight intensity of building things, falling machinery demand negatively impacts freight volumes, leading [always] to a turn in the heavy CV demand cycle. When the freight cycle rolls over, it is typically an 18-month to 2-year trough. We date the start of the current downturn to Q4'18.

The key risk to all vehicle market forecasts, and the US economy broadly, in either direction, remains the trade war with China. If the President doubles-down from here, a greater global downturn could ensue, with the worst outcomes spreading beyond the impact of tariffs and into a global currency war. If Schedule D tariffs are put in place in December, the likelihood of recession rises.

By the same token, recent headlines suggest President's Xi and Trump are concluding that trade wars are neither good, nor easy to win, and there may be some positive movement in the offing. While it is too much to believe that either side is willing to concede, a cease-fire would be a step in the right direction and corresponds with ACT's base-case forecast. A resolution to the trade war, or at least

real progress on rolling back tariffs, would set the table for stronger growth into the end of 2020, by removing uncertainty and thereby spurring growth into 2021. China appears to have the upper hand in this ongoing situation, so "victory" would likely require some degree of capitulation of US principles.

With US manufacturers and farmers struggling to compete on the tilted global playing field, the key driver of growth in the mid-term outlook is the US consumer, who remains well positioned to keep the economy out of the ditch. Job and wage growth and savings rates are all at healthy levels, supporting consumer confidence and spending.

Classes 5-7: Preliminary October net orders, at 16.4k, slowed to their lowest level since July 2016 nominally and December 2013 on a seasonally adjusted basis. The drop appears to be a signal that MD vehicle buyers are stepping back from the torrid pace of demand the space has enjoyed over the past year and a half. Backlogs remain elevated, but if the order softness persists, there is potential downside risk to the 2020 production and retail sales forecasts.

In the near term (2019), better-than-expected retail sales and persistent upward pressure on production have necessitated increases to both the production and retail sales forecasts. Because the industry is still accumulating inventory, a portion of the increase to build this year was pulled from 2020 build expectations.

Class 8: Despite a high-side production surprise in September, large new inventories and deteriorating freight and rate conditions keep us cautious into the end of 2019. That said, we add an incremental bump to 2019 expectations, with the Class 8 build forecast rising 800 units, to 345,800. Looking toward next year, a drop in Mexico and a slightly quicker inventory drawdown domestically lower the 2020 forecast 3.500 units, to 233,500 units. The change to the 2020 forecast was modest, but we believe it better positions expectations between high and low-side risks in a 1.5% to 2% GDP economic scenario. Two considerations will dictate the timing and speed of the market in 2020:

- The timing and speed of the rebound in freight rates: Slower and longer adds to downside risk.
- The TCO desirability and secondary market value of today's "must have" spec'd tractor provides upside potential.

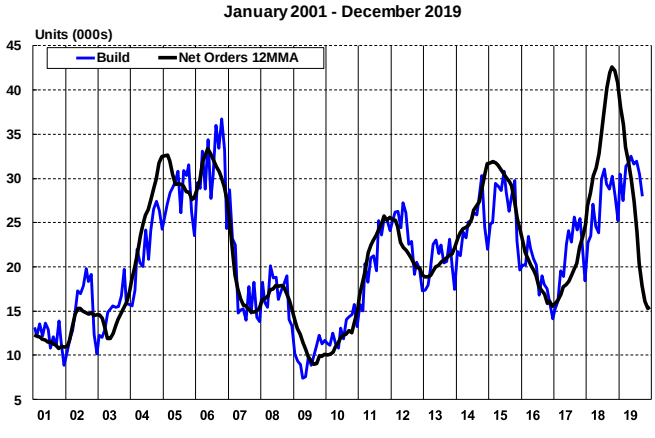
Given the cure for weak demand is reduced supply, September's near-record sales number was a step away from equilibrium. Sales into year-end are expected to continue adding to the overhang, before slower sales take hold in Q1.

Trailers: Beyond the already discussed changes to actual and forecast tank trailer (+1.3k) and chassis data (-10k), underlying adjustments were perhaps predictable, gravity-defying dry van production offsetting even weaker flatbed demand. At the top-line, the changes to the trailer forecast this month were small: The outlook for 2019 rose by 3k units, to 332,700 units, on continued strength in van production. Driven by adjustments to the tank trailer forecasts, the 2020 aggregate rose 1k units, to 265,200k units.

CHART OF THE MONTH: They say a picture is worth 1,000 words. One of our favorites is an overlay of the 12MMA of Class 8 net orders and actual production data. As 20 years of history show, where the order trend goes, builds follow. We took the liberty of assuming a 22k/mo. average for orders through Q4. Positively, you can see the beginning of a turn in the 12mm order average in December. With less backlog cushion, Class 8 orders in 2020 should handily outperform 2019, allowing the order average to move higher.

On the downside, we would note that every trough in the order average the past 20 years has been met with a corresponding drop in builds. In November and December, the average sits at ~15,500 units. Given the unanswered surge in orders at the end 2018, and the already lagged build downturn, perhaps there's an "it's different this time" case to make. Perhaps.

Total Class 8 N.A.: Net Orders 12 Mo. Avg. & Build



MEDIUM DUTY

Demand for Classes 5-7 vehicles is primarily driven by replacement of existing vehicles. Overall economic growth and, more specifically, consumers exert influence. Consumer spending, interest rates, new and used home sales, demographics, and government budgets constitute the primary demand drivers. Other factors, such as regulatory changes and changes in the competitive landscape, can also influence medium duty vehicle demand.

CONSUMER CONFIDENCE & SPENDING: Consumer confidence is a measure that reflects consumers' attitudes, which heavily influence their buying habits. Consumer confidence softened slightly in October (125.9), after pulling back sharply in September. Regarding the drop, Lynn Franco, Director of Economic Indicators at The Conference Board, said, "Consumer confidence was relatively flat in October, following a decrease in September. The Present Situation Index improved, but Expectations weakened slightly as consumers expressed some concerns about business conditions and job prospects. However, confidence levels remain high and there are no indications that consumers will curtail their holiday spending." Based upon the high level of confidence and relative stability, it appears that consumers are largely taking the developments in tariff announcements and the trade war in stride. Implicit in consumers' expectations appears to be a lack of concern that the economy will slip into recession, at least not anytime in the near term.

Consumer buying behavior is a key driver of medium duty vehicle demand because consumer goods and services purchases drive demand for Classes 5-7 vehicles. Consumer spending accounts for roughly 70% of the nation's GDP. In the Bureau of Economic Analysis' (BEA) Q3 GDP "initial" estimate, consumer spending grew at 2.9%. The majority of expansion took place in the purchase of goods, which climbed 5.5%. Services spending gained by a much tamer 1.7%. Regarding the lower overall economic growth estimate of 1.9%, the BEA said, "The deceleration in real GDP in the third quarter reflected decelerations in PCE, federal government spending, and state and local government spending, and a larger decrease in nonresidential fixed investment. These movements were partly offset by a smaller decrease in private inventory investment, and upturns in exports and in residential fixed investment."

HOUSING/CONSTRUCTION ACTIVITY: Following two consecutive months of better-than-expected performance in August, the overall housing market faltered in September. However, for perspective, in August starts notched their highest since June 2007, new home sales experienced their third best month since October 2007, and sales of existing homes hit a 17-month high. According to Lawrence Yun, National Association of Realtors' (NAR) Chief Economist, the problem is an insufficient inventory. Yun said, "We must continue to beat the drum for more inventory. Home prices are rising too rapidly because of the housing shortage, and this lack of inventory is preventing home sales growth potential." The lack of inventory, along with low mortgage rates and solid job growth, contributed to a 20-month high in home builder confidence in October (71). National Association of Home Builders (NAHB) Chief Economist Robert Dietz simultaneously affirmed the markets' current condition, but warned that "builders continue to remain cautious due to ongoing supply side constraints and concerns about a slowing economy."

Existing home sales shrank 2.2% m/m, but were 3.9% stronger y/y in September. Compared to a year ago, existing home sales growth ranged from flat in the Midwest to up 6.0% in the South. Marking their 91st consecutive month of year-over-year gains, the national average price rose 4.2% y/y. The South saw the largest move, up 5.0% y/y. The West was the most conservative region, slowing to 3.1% y/y. The 4.1-month supply of existing homes in inventory at the end of September was 2.5% higher m/m, but 6.8% lower y/y. At its current level, activity in the sector drives diminished demand for vehicles driven by contractors and builders, building material suppliers, retail stores, utility companies, lease/rental and moving companies.

September 2019 Housing Statistics

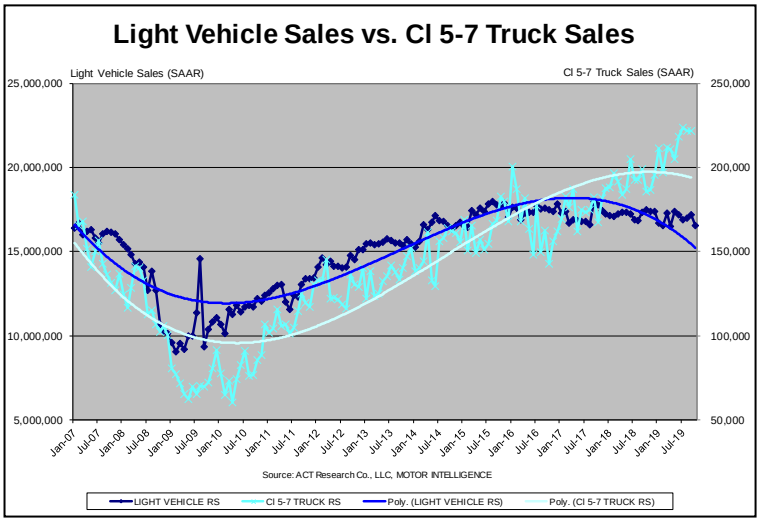
	Permits	Starts	New Sales	Existing Sales
M/M % Change	-2.7%	-9.4%	-0.7%	-2.2%
Y/Y % Change	7.7%	1.6%	15.5%	3.9%
SAAR (000s)	1,387	1,256	701	5,380

Total construction, a broader measure of MD vehicle demand, was once again mixed in September, eking out a month-over-month gain (+0.5%), but weaker y/y (-2.0%). Spending in the short run was uniformly positive, rising 0.6% higher in the residential sector and 0.5% for non-residential projects. Longer-term, residential outlays were weaker (-3.5%), with non-residential investment also turning down (-0.9%). On the public-private continuum, public construction gained 6.6% y/y. In contrast, private spending retreated (-4.6%) y/y in September.

Sector analysis shows that eight of the 16 non-residential end markets experienced y/y gains. Highway and street construction topped the list for absolute growth, despite accounting for 12.7% of September's non-residential spending. On a percentage basis, water supply enjoyed the largest gain in September, expanding 20% y/y.

AUTOMOTIVE SALES: The automotive sector also has a symbiotic relationship with consumer spending and medium duty demand. Light auto and truck sales fell below the 17M-unit mark in October, posting a 16.55M SAAR. At that level, sales were down 3.4% m/m and 5.5% y/y. Nominally, sales rose 5.5% m/m, but are down 1.2% ytd. Although sales were generally expected to decline, October's performance was weaker than expected. It is unclear what impact the GM UAW strike had, since GM has been in an excess inventory situation. Some analysts cite buyers' support of the union as a reason for lower sales. Slowing sales were attributed to lower government and rental fleet activity and higher prices. While vehicle content, and therefore base prices, continue to escalate, it is widely believed that incentives were lower in October, relative to September, yielding less demand.

Exhibiting the strong connection between light automotive and truck sales, the following chart plots the retail sales SAARs for light vehicles against that of Classes 5-7 truck sales. The correlation is 80% for the period displayed. That is a full ten percentage points above any comparison from the housing market menu of variables. In terms of their absolute contribution to the economy, housing historically comprises about 5% of GDP, while light vehicle sales add 3.0% to 3.5%. On balance, both data series wield sufficient influence to bear ongoing monitoring and inclusion in any discussion of medium duty vehicle demand.



INTEREST RATES: As expected, the Federal Open Market Committee (FOMC) voted at its October 29-30 meeting to reduce the federal funds rate by 25 basis points, putting the target rate between 1.50 and 1.75 percent. The reduction was the third such move in as many meetings. With 2019 drawing to a close, the Fed signaled and the market consensus is for no rate reduction at the group's final meeting of the year. Instead, attention is now shifting to 2020. Chairman Powell's remarks suggest the FOMC will most likely take a wait-and-see approach in early 2020, giving the enacted cuts time to take effect. At the same time, the group stands ready to act should slowing economic growth, rising inflation or an escalation in trade tensions necessitate such an action. Regardless, Chairman Powell is precariously poised on a tightrope.

DEMOGRAPHICS: Two of the three MD vehicle segments are impacted by two separate but distinct demographic segments. The population of school-age children, expected to grow at an average of 0.4% through 2030, according to current US Census Bureau projections, provides a base for modest growth in school bus demand. A core-level school bus demand results from the de facto mandatory vehicle age standards. It is evident that more students and the desire for cleaner (i.e. greener) buses are helping offset unfavorable demand trends spurred by fiscal woes. Financial constraints continue to lessen in a growing number of areas around the country where real estate values, and hence property tax revenue, have largely recovered.

The target population of RV buyers, who have historically been baby boomers, is poised to enter a new era as Generation Xers cross the threshold as the demographic group to watch. The transition is a logical one, given that the boomer generation is in decline. To counteract the effect of this shift, the industry modified its target demographic to include younger families with children. The move continues to pay dividends, resulting in additional sales. Though the gains have been comprised of smaller, less expensive models, they helped the industry recover. In addition, as home values continue to improve, demand for RVs, which are largely purchased with money made available from home equity loans, help support demand.

GOVERNMENT SPENDING: Although orange barrels abound and construction dollars are flowing like water, Congress has yet to advance much needed infrastructure legislation since returning from its summer recess. Prior to breaking, the Senate Environment and Public Works Committee unanimously approved its effort, dubbed America's Transportation Infrastructure Act of 2019. However, numerous committees in both the House and the Senate have yet to reach similar accord, so the timing, amount, and most importantly, the funding schema for any future legislation remain in question. Inspired by previous cycles of impending deadlines band-aided by short term extensions, infrastructure stakeholders are joining forces in urging Congress to act sooner rather than later to avoid disruption to improvement plans and projects. However, given all of the energy being expended on impeachment proceedings, it goes without saying that passage of any infrastructure spending legislation has taken a back seat.

The lack of progress is disheartening for many states, as they are likely to be shouldering an increasing portion of the spending. And the additional burden comes at a time when many states are experiencing uncertainty with respect to their revenue streams. Growing concerns about a general recession and its subsequent impacts on employment, earnings, and income tax revenue form the bases of these concerns. Even though states tax revenues have recovered from the Great Recession, policy makers are still dealing with the fallout of tough decisions they were forced to make during and after the downturn.

FUEL PRICES: The ongoing fluctuations in oil and fuel prices make it difficult to understand the impact on medium duty commercial vehicle demand. Medium duty operators are not nearly as concerned with fuel prices as their Class 8 counterparts, but even at more than $3.00/gal., diesel prices remain below year-ago levels. They are also about $1.00/gal. higher than the $2.00 price low reached in February 2016. The bottom line is that current energy prices, be they WTI crude, diesel or gasoline, lack gravitas to change new medium truck demand. Within the bus market, there has been a long-standing budget trade-off between fuel expenses and new equipment purchases. While fuel prices are now on the low side of a volatile trading range of the past five years, they are on a flattish trend over the last three to four months. So, context and comparison benchmarks become important in making decisions on bus fleets, or for consumers' discretionary spending, which may determine demand for medium duty vehicles.

MISCELLANEOUS: Aside from the impact of rising fuel prices and potential differences in how the medium and heavy duty markets will react, there are several other factors that will also result in Classes 5-7 being less volatile than their big brother. The overriding consideration is that, unlike the Class 8 truck, which IS the business, medium duty vehicles are tools used to SUPPORT operations. Therefore, fleet profitability does not normally enter into the purchase decision. Clearly MD buyers are less inclined to buy when profits are squeezed, but buying more trucks is not the first consideration when times are good.

Capacity is also a somewhat foreign concept to the medium duty buyer. While there may be a correlation, the efficient utilization of smaller vehicles is not nearly as critical as it is to for-profit freight haulers. Lastly, the Class 8 market is a pretty homogeneous concern. Roughly 75% of heavy duty trucks do one job: haul freight. In contrast, the medium duty market is remarkably diverse, participating directly in nearly every facet of the economy. As such, counter-cyclicality between various segments comes into play. While the Classes 5-7 segment tends to cycle at the same inflection points as the Class 8 market, the magnitude of the cycles is not nearly as spectacular.

HEAVY DUTY

Class 8 vehicles are the primary haulers of freight in North America (and the world), and the residue of much economic activity is freight to be hauled. Hence, freight generated by the economy creates demand for new equipment, making it no fluke that Class 8 demand generally follows the path of the broader economy. Of course, dollars of economic output are not equal in terms of freight generated: Even though consumer spending on nondurable goods and services represents the majority of US economic activity, it is durable goods consumption, manufacturing, and residential and business investment that are the primary drivers of Class 8 market cyclicality.

Flexibility, timeliness, reduced damage claims, and often, an absence of transportation alternatives, make Class 8 trucks the choice for nearly all domestically manufactured finished goods, now and through the forecast horizon. Per ACT's analysis of DoC data, trucking was responsible for about $610 billion, or 76%, of the US economy's $803 billion freight bill in 2018. From a tonnage standpoint, truckers haul around 2/3 of the freight. A couple decades back, the ATA had a bumper-sticker saying, "If you bought it, a truck brought it." Despite all of the changes that have occurred in the composition of the economy, those words still ring true today.

Except for a couple of bouts of non-market driven buying and until this exceptionally long economic cycle, there has been a very tight correlation historically between US GDP and the total Class 8 population. This linear relationship was maintained for three decades even in the face of an ever-evolving economic landscape. Consider that from the 1970s to the 2000s, the US economy transitioned from

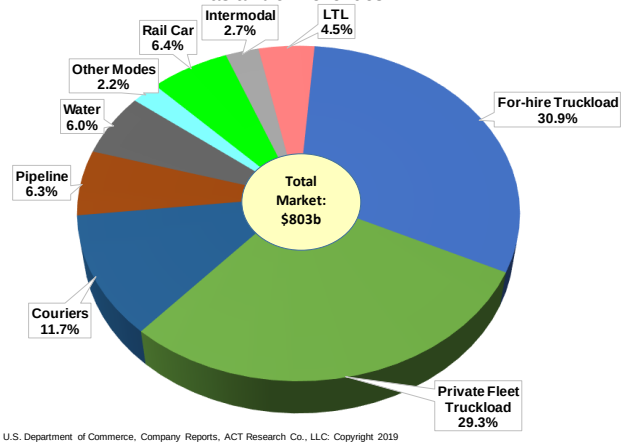
- regulated to deregulated,
- low to high tech,
- heavy manufacturing to outsourcing,
- inventory holding to just-in-time (JIT),
- a regional to a national to a global focus, and
- brick-and-mortar to e-commerce.

Arguably, the one constant through the long period of relative economic and Class 8 fleet growth was disinflationary transportation costs. That value-add was a key factor that allowed the truck fleet growth to generally mirror the rate of economic growth for nearly three decades (chart). Much of the productivity explosion that began around 2007 is directly attributable to freight rate inflation as transportation providers were beset with rapidly rising bottom lines. While technology would have driven utilization efficiency regardless, we would argue that it was rising freight rates, starting in late 2003, which drove much of the freight density revolution. That revolution continues to impact Class 8 fleet requirements relative to economic activity as shippers work to offset higher transportation costs. [Productivity is discussed later in this section.]

Former Federal Reserve Chairman Alan Greenspan provided some common-sense insight into the long-term relationship between economic growth and the need for transportation when he set forth the notion that freight generated by the US economy has grown in volume (cube), but has remained relatively stable in terms of tonnage on a per capita basis. To paraphrase, even with more stuff today, people still consume about the same amount of weight on a per capita basis as they did 50 or even 100 years ago.

U.S. Freight Market: 2018

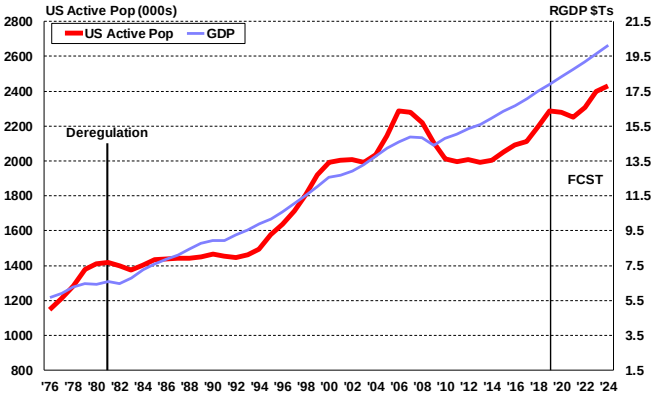
as a % of Revenues



Source: U.S. Department of Commerce, Company Reports, ACT Research Co., LLC: Copyright 2019

Class 8 Active Population & U.S. Real GDP

1976 - 2024



Source: ACT Research Co., LLC: Copyright 2019

APPENDIX A – POPULATION METRICS & LONG-TERM DEMAND DRIVERS

At its most basic level, each person consumes about the same amount of "stuff" (food, clothes, etc.) per year as they always have. More people = more stuff.

MARKETS WITHIN MARKETS: We tend to discuss the Class 8 market in monolithic terms: NA orders and build and US retail sales are the go-to data points. Given four geographies, two primary vehicle categories, one with a major subdivision, keeping the analysis aggregated simplifies the discussion.

By country market share based on sales:

Percent	15 Yr.	10 Yr.	5 Yr.	2018
US	76.2	76.8	79.7	81.3
Canada	10.6	10.5	10.1	10.9
Mexico	7.2	7.4	7.3	5.8
Exports	5.9	5.4	2.9	2.4

While the market is typically discussed in aggregate terms, there are two primary Class 8 types: tractors, used for pulling trailers, in either sleeper or daycab configuration, and truck daycabs or vocational trucks that are purpose-built for specific jobs (P&D, dump, fire, garbage, etc.). Handy tip: Outside North America, tractors and trucks are typically referred to as "artics," short for articulated, and "rigids."

Tractor Sleepers: The largest category of Class 8 vehicles, 44%-45% of the US and NA markets the past 10 years (2018-ending), are primarily used by for-hire fleets. Whether a sleeper is needed every day or not, sleeper cabs provide the flexibility needed to take on jobs as they come. Private fleets are also users of sleeper cabs.

Tractor Daycabs: Private fleets operating from distribution centers, where the truck is returning home on a daily basis, less-than-truckload (LTL) and expedited fleets (UPS, FDX), where the trucks are in hub-and-spoke types of operations, are the primary consumers of tractor daycabs.

Sleeper and Daycab Trends: Because of JIT, freight regionalization, intermodal volume growth, and changes to warehousing in the dot.com age, we are often asked whether there is a trend toward the purchase of daycabs relative to sleeper cabs. In the graph (at right), we attempt to answer the question by looking at sleeper cabs as a percentage of the total US tractor market.

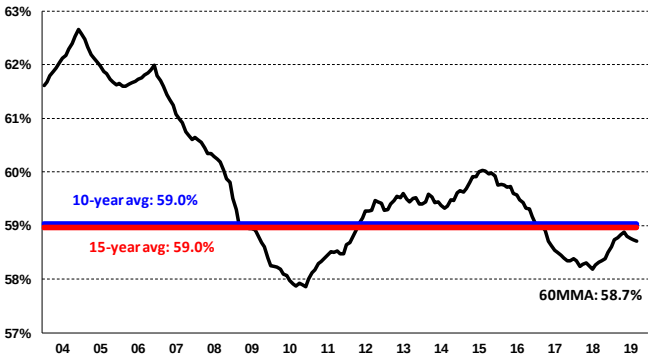
We are now able to see a fairly strong move away from sleepers and towards daycab-equipped tractors in the US. At the end of 2018, the 15-year and 10-year averages were separated by 39bps at 59.6% and 59.2%, respectively. The 5-year, 3-year and 1-year averages are generally below the longer-term trends at 58.9%, 58.1% and 59.4%, respectively. The waterfall-like trend of declining percentages suggests that the market shift toward daycabs is well entrenched in the new economic paradigm.

10-Year Share %	Tractor Sleeper	Tractor Daycab	Truck Sleeper	Truck Daycab
US	44.4	30.7	0.4	24.5
Canada	49.5	18.9	2.3	29.4
Mexico	56.7	15.5	1.1	26.6
Exports	32.0	25.1	0.4	42.4
Tot. NA	**45.2%**	**28.0%**	**0.7%**	**26.1%**

Truck Daycabs: Class 8 truck daycabs are purpose-built vocational units designed for a specific job. Larger vocational niches include pick-up and delivery, tri-axle dumps, garbage trucks, cement mixers, oil field specialty equipment, wreckers, and emergency vehicles. Where the 73% of the market represented by tractors is reliant on the movement of manufactured and consumed goods, the truck daycab market relies more heavily on investment, construction, and state and local government spending.

Truck Sleepers: At just over 1% of the market, truck sleepers are the unicorns of the fleet. These vehicles are used to move freight and are typically associated with truckload sized "hot" loads that absolutely must be delivered on time.

U.S. Class 8 Market:
Sleepers as a Percentage of U.S. Tractor Sales
5 Year Moving Average
January 2004 - September 2019



APPENDIX A – POPULATION METRICS & LONG-TERM DEMAND DRIVERS

POPULATION MODELING

IN RUST WE TRUST: Stock-replacement modeling is the foundation on which ACT's Class 8 forecasts are built. Applying life-cycle assumptions to historical sales generates modeled outputs for population, fleet age, and underlying replacement demand. By using different sets of life-cycle stopping points, we are able to incorporate the outputs at the levels of first trades, active stock replacements, and total fleet scrappage into our analysis of the three primary NA markets, the US, Canada, and Mexico. Regarding the use of three different jumping off points, first owner, active stock, and total fleet, each set of outputs offers a glimpse of conditions impacting different market subsets.

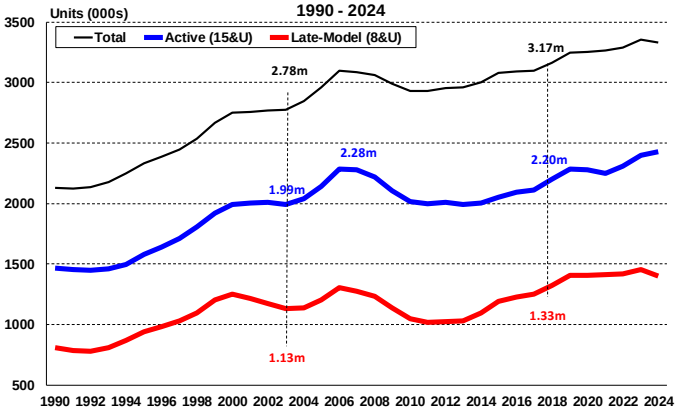
ACT also maintains models for US vocational trucks and tractors. Because of substantive differences in mission and the upfront vehicle costs, mortality assumptions for tractors and trucks differ. Trucks last much longer than tractors, and because they are purpose built for a specific job, they tend to spend more time with the original equipment buyer.

Given the higher upfront cost of a vocational vehicle compared to a tractor, the first owner needs to keep the vehicle longer. If a vocational unit costs 1.5x or 2x more than a tractor, it has to be kept longer to achieve payback. On top of that, vocational units are run a fraction of the miles annually that an average tractor will experience. If the average tractor is running 80,000 to 85,000 miles per year, it takes a tractor almost six years on average to get to 500,000 miles and a trade-in. At around 35,000 miles per year, it takes a vocational unit more than twice as long to accumulate the same mileage. Of course, a price and mileage-based analysis fails to capture more difficult duty/service conditions experienced by many vocational units.

First Trades: The purpose of this modeling stop is to gauge the number of first-owner units hitting critical age and mileage milestones that will trigger new vehicle trades. From ACT's perspective, big new truck buying fleets typically buy new trucks on a reasonably consistent schedule, owing to business model considerations. Truckers don't change their business models randomly: Fleets that rapidly turn equipment are not set up to do the maintenance on high mileage vehicles. Likewise, fleets that are equipped to keep their tractors for extended periods are unlikely to start rapidly flipping equipment. Ditto for vocational buyers who keep their expensive, purpose built, low mileage trucks meaningfully longer than tractor buyers.

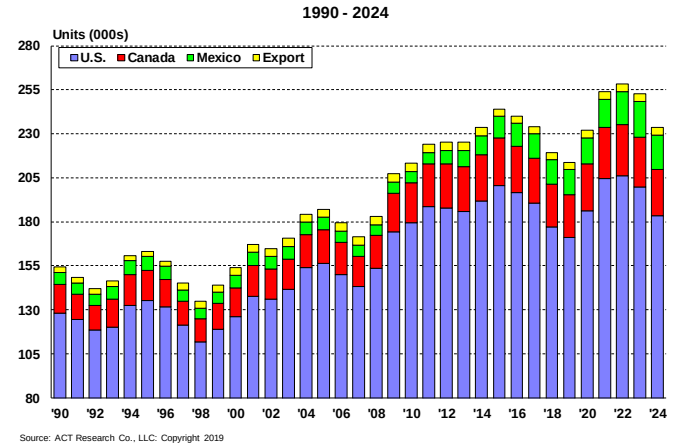
Changing new vehicle market conditions impact the timing of trade-in activity. Weak sales from 2007-2011 triggered a period of elevated valuations for late-model used trucks, facilitating the top of the new

U.S. Class 8 Population: Total Tractors/Artics & Trucks/Rigids



Source: ACT Research Co., LLC: Copyright 2019

Replacement: NA Class 8 Active Stock



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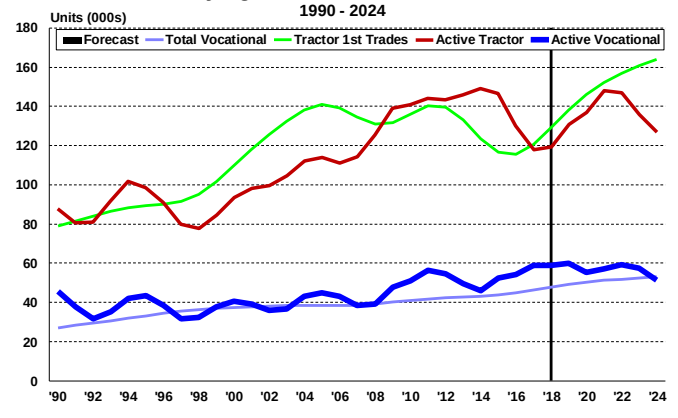
U.S. Class 8 Population Model Outputs: Underlying Demand: Trucks & Tractors



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demand market into 2015. Conversely, strong sales from 2012 through 2015 coupled with an anemic freight market caused late-model used prices to hit the skids into the end of 2015. Drivers that influence the path of used valuations include:

- The price of late model trucks relative to residual valuations
- Fleet profits impact demand for new Class 8 units: New sales usually come with a trade-in attached
- The spot-contract rate spread (DAT data) provides a window into the direction of contract rates, and by extension, carrier profits

Looking forward, the period of strong sales that ended in early 2016 indicates that the market for potential trades rises into the end of the decade. After running through a trough from 2013 to 2017, that means that a long period of elevated used truck prices is unlikely into the end of the decade.

Active Population Model: ACT's active population models are the foundation of our Class 8 forecasting. While the first-owner model helps us understand pressures at the front-end of the market, it does not recognize the vehicle quality that exists at the second owner level. Conversely, the total population model counts trucks that are still in the fleet, but are no longer working every day and no longer capable of reliable long-haul service. We have estimated that around 500,000 old Class 8 tractors are serving as seasonal workers for US farmers. It is our opinion that the active model represents a Goldilocks solution between the too-hot first trade model and the too-cold total population model that is more representative of real capacity in the marketplace.

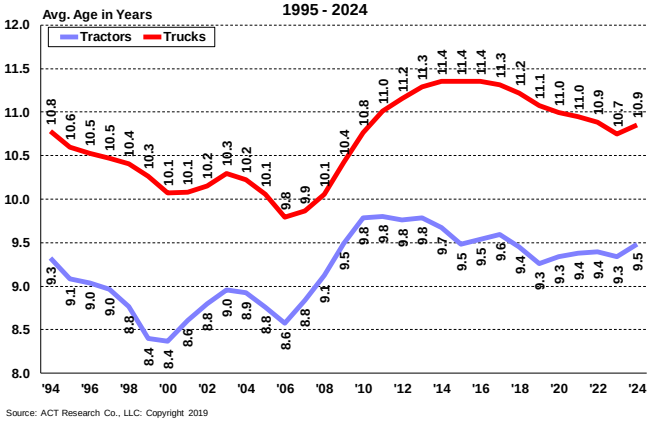
Finding that middle ground, the active population model is an attempt to identify the piece of the market doing the lion's share of the work and representing the lion's share of new vehicle demand. The active population model represents an *uptime-adjusted*, 15-year and under population. The uptime adjustment that is applied to the 15-year population that turns it into the "active" population is an assumption that newer trucks have the capability to do more work than older trucks.

Total Population Model: We pay attention to the first-trade model to identify potential peaks and troughs in underlying trade-in pressure. We pay attention to the active model because we feel it is the most representative way to look at the population that is doing the work. Truthfully, because of the glacial nature of the total population model, we don't use the outputs in our day-to-day market analysis. That said, the "total" model comes in handy as a benchmark in comparison to external statistics. The fleet age charts below illustrate the difference between active and total population average ages for trucks and tractors in the US.

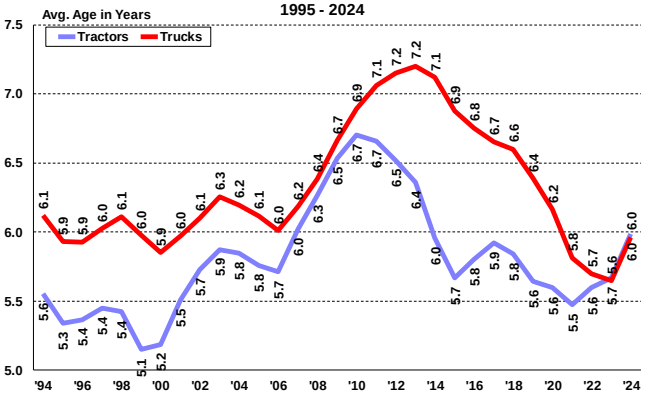
FLEET AGE: If there is a problem with fleet age being measured at the "active" level, it is the finite, 15-year measurement. When years 14 and 15 are peak or trough outliers, they tend to over- or under-state average fleet age. For the total population, while fleet age is apples-to-apples, trend-spotting is essentially non-existent.

Fleet age analysis visualizes periods of over and underbuying, signalling directional demand pressure. As illustrated, there is still some upward demand pressure from a too-old vocational fleet. Per the point above, the sharp drop in truck age into 2021 is primarily related to the 2005-2006 market peak dropping from the active stock measurement.

U.S. Class 8 Population Model Outputs: Average Age, Total Population



U.S. Class 8 Population Model Outputs: Average Age, Active Population



NEW DEMAND: The stock-replacement model helps conceptualize how many Class 8 units need to be replaced every year. Economic activity helps to determine how many new trucks need to be added to the population.

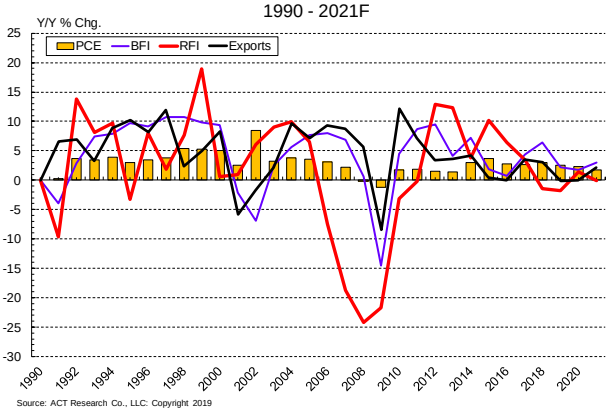
Assuming the economy and productivity are growing at about the same rate, and trucker profitability is middling, the conditions should be in place for replacement levels of demand. Per our NA replacement chart on page A-6, that is something like 225k-230k units per year presently. When the economy is generating freight above the rate of productivity, not only is there a need for replacement vehicles, but also population growth necessary to move additional freight. If we include carrier profitability, trucker profitability, and the fact that confidences are rising, more trucks need to and will be added to the population to deliver the new freight.

Not all economic activity is created equally in terms of contributions to truck freight. As we are fond of saying, industrial output helps to capitalize the "C" in this cyclical market. As illustrated in the chart above, the investment components of the economy (BFI & RFI) are significantly more dynamic than consumer spending (PCE). Additionally, business and residential investment tend to be more freight intensive than consumer spending, generally. As any machinery supplier can attest, there are many parts and materials coming in and many parts and assemblies going out. As any OEM can attest, it takes many parts to make a machine. Also, while we tend to think of housing as MD truck intensive, there are many Class 8 loads involved in turning a farm field (at least in Indiana) into a home.

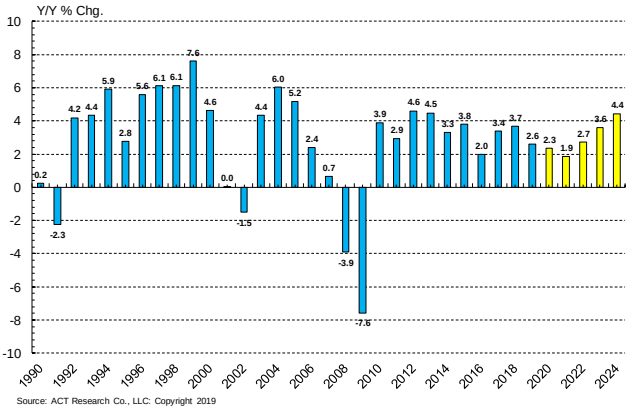
At the other extreme, the services portion of consumer spending has equaled 45% of GDP over the past decade. While restaurants buy food, doctors buy pills, and lawyers buy office supplies, there is not much freight being derived from a large swath of US economic activity.

In most years, offsetting rates of change among the different pieces of the economy make GDP a perfectly good stand-in for economic activity. However, during years when key freight components of the economy cycle together, GDP-only is a quick way to a bad forecast. For this reason, ACT developed a Freight Composite Index, a metric in which the different pieces of the economy are weighted to provide a proxy for freight activity.

Components of GDP
Year Over Year
1990 - 2021F



ACT U.S. Freight Composite
Year Over Year
1990 - 2024



On the next page the third factor of demand is addressed: productivity. In a nutshell, it is not just freight creation, but also changes in utilization and density that impact work to be done. Because shippers expect transportation inflation to continue rising (new vehicle prices, driver wages) through the forecast period, the sense of urgency vis-à-vis fleet productivity will remain in high gear.

During the forecast period, which now extends to 2024, the outlook anticipates that US GDP will grow 13% and ACT's Freight Composite by 21%. Offset by productivity headwinds, the US Class 8 active fleet is projected to grow 5.2% from 2016 to 2.20M by the end of 2024.

Following a pull-forward of economic activity starting in 2018, the economy is projected to slow in 2020. There is no recession built into current expectations. Freight drivers include ongoing pent-up demand in housing, a post-crash rebound in domestic energy production (and commodities broadly), an infrastructure pull-forward, and the reversal of the trend away from domestically manufactured goods.

PRODUCTIVITY, or WHY IT'S DIFFERENT THIS CYCLE

Given the consistent relationship between Class 8 demand and Class 8 population growth from the late 1970s to the Great Recession, we can infer that transportation productivity was roughly in line with productivity growth in the broader economy. Over that period, every percentage point of GDP growth generated a Class 8 population increase of 40bps. From 2004 to the end of 2016, the US economy (GDP) grew 22.6%, and the Class 8 population expanded by 8.4%, or 27bps of population growth for every percentage point of GDP.

The key to the relative strength of Class 8 demand, as well as a look to the future, is not just freight growth, but also its inverse, the rate of productivity growth. As previously indicated, surging productivity has been the key difference this cycle compared to history. Productivity gains were once the purview of truckers who had to improve performance to survive in a world of stagnant freight rates.

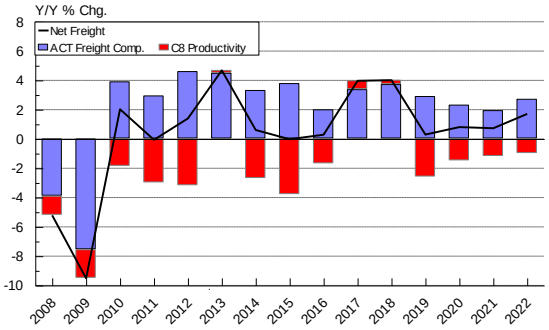
The sharp run-up in transportation costs from 2003 to 2010 (trucks, fuel, drivers) triggered a surge in transportation inflation that truckers were unable to absorb, passing those costs to shippers. The sharp run-up in freight rates triggered changes in shipper behavior as they looked for solutions to mitigate the higher transportation costs.

At the same time, productivity enhancing trends in technology were improving utilization, and railroads' investments in intermodal transportation finally started to pay dividends. Following is a review of the three primary drivers of productivity:

- **Density:** Whether improved packaging, new warehousing practices, or redesigning products, shippers have made dramatic improvements in freight density the past decade. The chart showing the growing spread between the ATA's Truck Loads and Truck Tonnage Indices illustrates the impact higher freight rates have had on freight density. Prior to 2008, the indices basically moved in lock-step for 15 years. Post-recession, tonnage accelerated, reaching pre-recession levels by the end of 2011. The loads index did not surpass their mid-2000s levels until late 2017. While there are some items like frac'ing generating more heavy loads, ACT believes the widening spread between tonnage and loads is primarily related to greater freight density. [Note that this analysis uses the ATA's old index measure at 2000=100.]

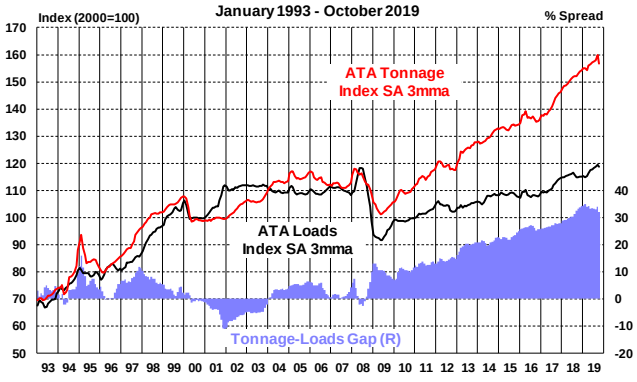
NET FREIGHT: ACT Freight Composite less HD Tractor Productivity

2008 - 2022 (Year/Year)



Source: ACT Research Co., LLC: Copyright 2019

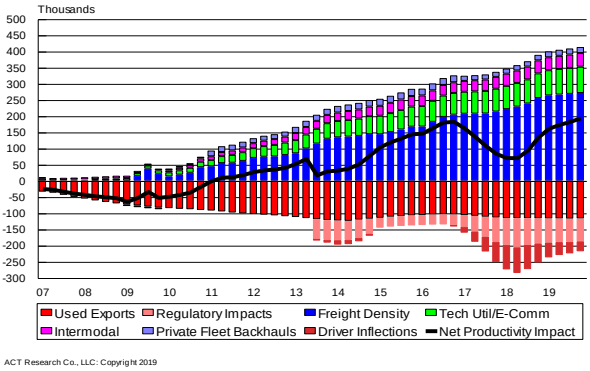
ATA Truck Tonnage Index & ATA Truck Loads Index



Source: American Trucking Associations, ACT Research Co., LLC: Copyright 2019

U.S. Tractor Fleet Productivity Impacts

2007-2019



ACT Research Co., LLC: Copyright 2019

- **Utilization:** Rising costs triggered a multi-pronged attack on improving capacity utilization. The ~8ppt drop in empty backhauls reported by the NPTC from 2007 to 2012 would be an example of companies reining in transportation costs by better utilizing assets.

Harder to quantify are utilization improvements driven by technology brought to bear on other sources of heretofore marginal capacity. The explosion in asset light and non-asset based 3PLs in recent years is indicative of this trend to better utilize the existing fleet.

- **Modal Shift:** Slowing the rate of transit by carrying some additional inventory by shifting some freight to rail is another way to reduce transportation costs. After stagnating for most of a decade, domestic rail intermodal hit its stride coming from the recession.

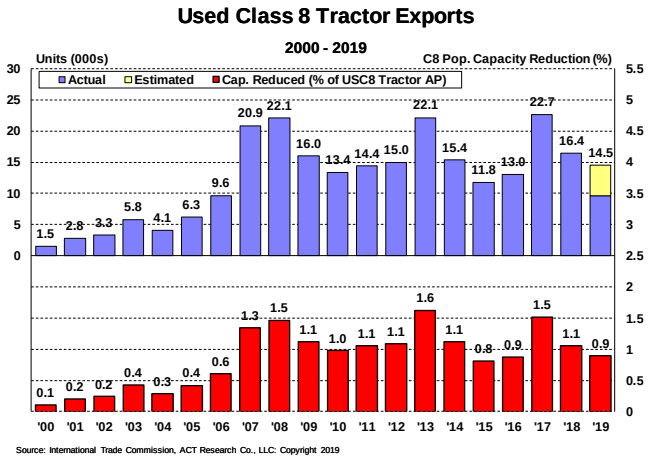
  E-commerce has taken a bite out of the freight that used to be delivered to malls but is now direct delivered to consumers. While the load numbers might not be all that different, greater warehouse density has impacted mileage, but has also raised demand for premium service.

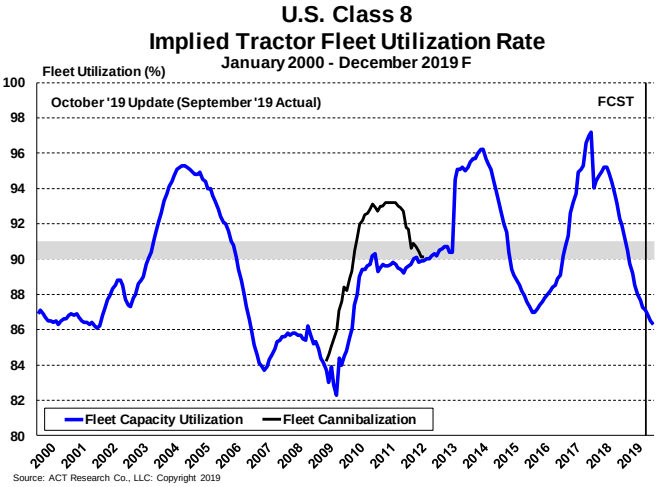
PRODUCTIVITY OFFSET: The impact of the productivity explosion could have been even more devastating than has been experienced. From 2010 to 2018, 144,000 Class 8 tractors were exported from the US, of which 90,000 left the continent. In 2018, Mexico, Nigeria, and Central America were the primary export destinations.

UTLIZATION ANALYSIS, or putting it all together: Distilling the information presented in the past several sections into one chart, we end up with our tractor utilization analysis. Note: Because work done by vocational equipment is fundamentally different, utilization is a much more nebulous concept. At present, we have not hit upon a productivity measure for vocational equipment.

Our Class 8 tractor utilization analysis is a derived number which combines:

- The new demand model, which converts economic data points into freight activity
- The stock-replacement model, which helps to estimate the number of trucks needed to be put out to pasture every year
- The productivity model, which attempts to capture the strong drive for efficiency that continues to materially impact the market





Putting the models together the calculation looks something like this:

New work minus efficiency plus replacement.

At the start of 2019, the modeling suggested there were roughly 2.5%, or 37,000, too many tractors relative to the work that needed to be done. By the end of 2019, the analysis suggests freight demand and tractor supply are likely to fall another 3ppts, or an additional 45k units in arrears. Throughout 2018, drivers, rather than tractors were the key capacity constraint for the industry. Starting in 2H'18, the driver situation was rapidly self-correcting on stronger driver pay. Data suggest that by early-2019, the driver situation was already starting to negatively impact the capacity balance.

OTHER PRIMARY CONSIDERATIONS

FLEET PROFITABILITY: Truckers *use* trucks to haul freight. Truckers *buy* trucks for a lot of reasons besides: to make money, to reduce op-ex, to recruit drivers, and to reduce their tax liabilities.

While it is true that rising freight volumes are required to boost trucker profitability, hence the model's focus on freight creation, it is also true historically that Class 8 production peaks coincide with carrier profits, not the freight cycle.

In the last two major cycles, Class 8 demand (and carrier profits) peaked in 2006 and 2015, but profits in those years were built on the backs of strong prior economic activity that boosted contract freight rates. Consider GDP, ACT's productivity adjusted Net Freight Composite, and public TL carrier net profit margins, comparing economic timing to profitability and Class 8 market timing:

	GDP	ACT NFC	TL Db Net%	USCL8RS
2004	**3.8%**	**5.8%**	4.7%	209k
2005	3.4%	**4.9%**	**5.6%**	**258k**
2006	2.7%	2.0%	**5.6%**	**290k**
2013	1.7%	1.8%	5.2%	188k
2014	**2.6%**	**2.4%**	5.3%	224k
2015	2.9%	-0.1%	**6.2%**	**253k**

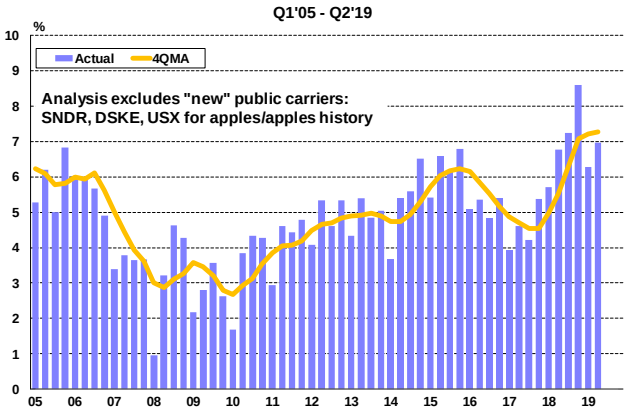
The charts at right illustrate the relationship between profits and demand. The top chart, annual US Class 8 retail sales and carrier net profits, shows the peak and trough relationship between orders and profits. Our analysis suggests the tax law will add roughly 130bps on top of market-driven truckload carrier net profit margins.

The second chart shows the publicly traded truckload carriers' quarterly profits. As illustrated, profitability was rising to a peak into the end of 2018.

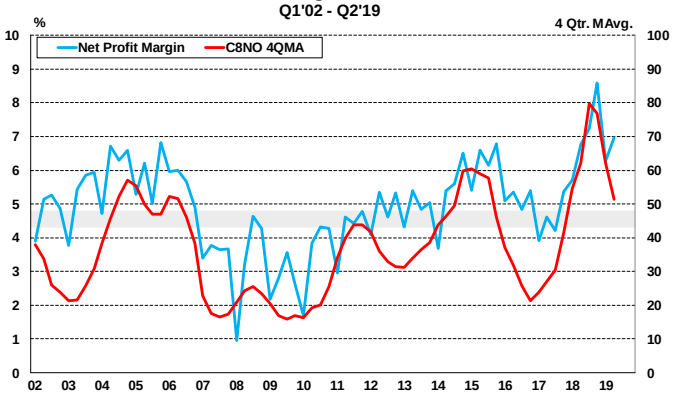
In the cycles denoted on the chart, there was a clear uptick in profitability before orders took off. While profits predict upside orders, order drops typically occur ahead of falling profits. From a historical perspective, 2017's early order rally was an outlier.

For the same reason that machinery demand fell apart a couple of quarters after the popping of the global commodity bubble in late 2014, the relationship between truckers' profits and Class 8 demand is straightforward: businesses tend to reinvest more when they have more to reinvest. For

TL Carrier Database: Core Carrier Net Profit Margin



TL Carrier Database:
Core Carrer Net Profit Margins & US CL8 Tractor Orders



most truckers, their business is trucking in the US. They do not have alternative business units over which to spread the largesse during good times. So, when profits peak, truckers take advantage of the extra cash to modernize their fleets, build up depreciable assets on their balance sheets, and reduce the tax burden.

USED VALUES: The third leg of the new vehicle demand stool is used asset prices. First, there has to be freight in need of hauling. Second, carriers have to be making money to drive the cycle. The third is whether the current price of a used asset is above or below book value. That valuation, if above or below what truckers need to break even on a trade, makes the potential transaction more or less palatable and influences demand up or down.

There is a difference in trade-in timing between the tractor market, where high mileage is the standard, and the vocational truck market, where high-dollar vehicles are purpose built to perform specific tasks. For Class 8 tractors, a good barometer for trade-in expectations is the number of units sold 4 to 8 years ago. ACT's "first trade" model has a longer horizon for first trades, but the peak years of first trades occurs in that 4-8-year population.

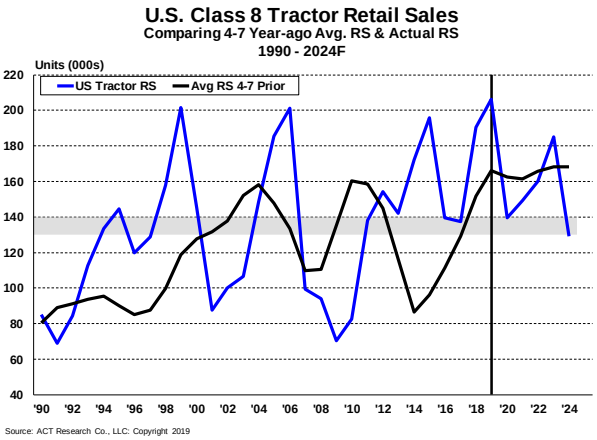
As we have previously discussed, vocational trucks are specialists, rather than generalists like tractors. To that end, they are purchased by businesses for specific jobs. Outfitting vocational trucks increases the price, and because they are typically employed in local endeavors, they don't rack-up mileage like tractors. Because of these factors, vocational units tend to have a much longer first-owner life than tractors, typically pushing beyond a decade.

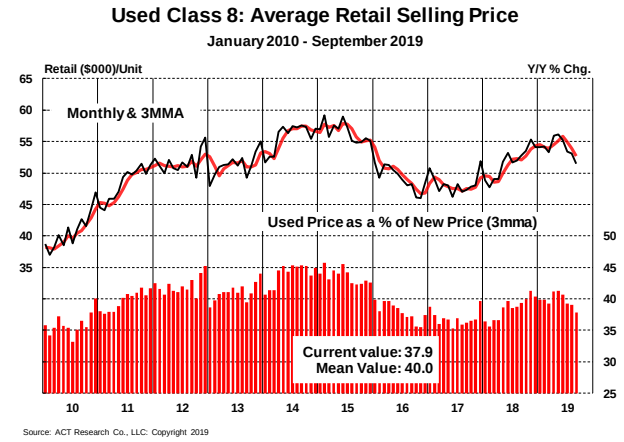
Returning to tractor valuations, the charts at right illustrate problems that have plagued truckers and the industry for well over two decades: Used equipment volumes and new vehicles' demand have been out of sync more often than not since the early 1990s. This has led to boom and bust valuations on equipment, especially of the late model variety.

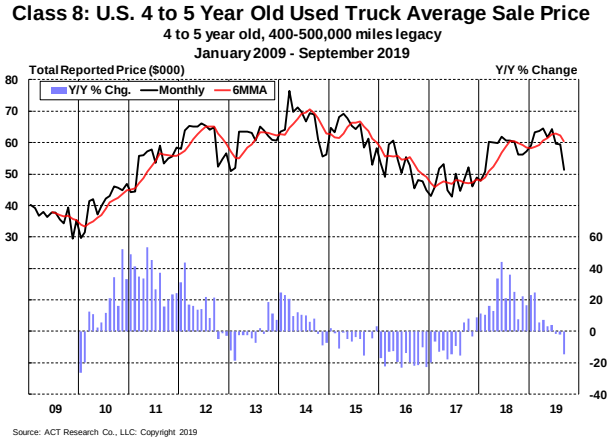
- Weak sales post deregulation (1980s) produced a relative paucity of late-model trades in the 1990s, leading the industry to set aggressive residual values.
- That aggressiveness bit hard in the 2000-2002 period when used valuations were crushed as economic weakness put the brakes on demand.
- Weak early-decade sales led to late-model tractor scarcity as the economy ripped in the 2003-2005-plus period.
- The earlier 2000s trough-peak cycle repeats itself almost exactly in the 2009-2016 period as late model trades and the economy fail to align.

The second and third charts on the page attempt to capture the boom-and-bust phenomenon that has been experienced since the turn of the decade. The first chart shows average sale prices, measuring value relative to new truck prices. The next graph shows the swings in late model used truck pricing with an estimated residual value band inserted.

Returning to the top graph, given the number of tractors sold in the 2012-2016 period, an increasing number of 4-8-year-old trucks started entering the market in 2018. Our current forecast is for a strong







retail sales environment through 2019. With these events happen simultaneously, there should be good support for used prices early. However, with the prognosis for softer economic activity by 2020, that imbalance is likely to put downwards pressure on used Class 8 pricing. Even as used truck values rose though and above equilibrium valuations over the course of 2018, there appears to be considerable risk to pricing if the economy rolls over on top of what should be a very strong period of trade-ins.

SECONDARY CONSIDERATIONS

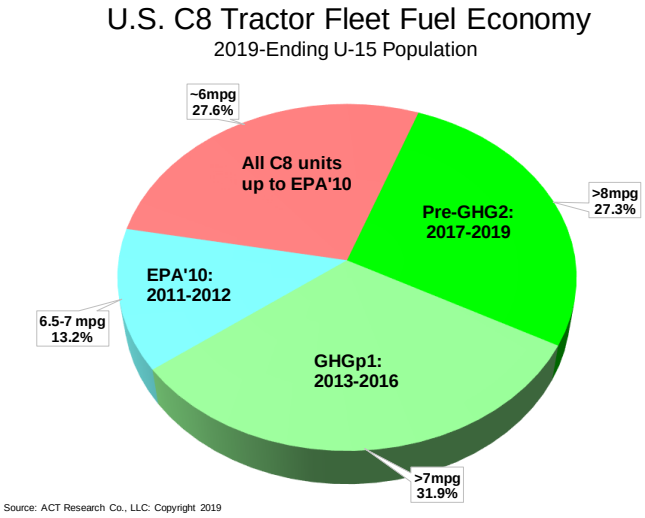
The next group of considerations aren't fundamental to the new demand equation per se, but they are factors in TCO – total cost of ownership – arguably the most important performance indicator by which fleets measure equipment performance.

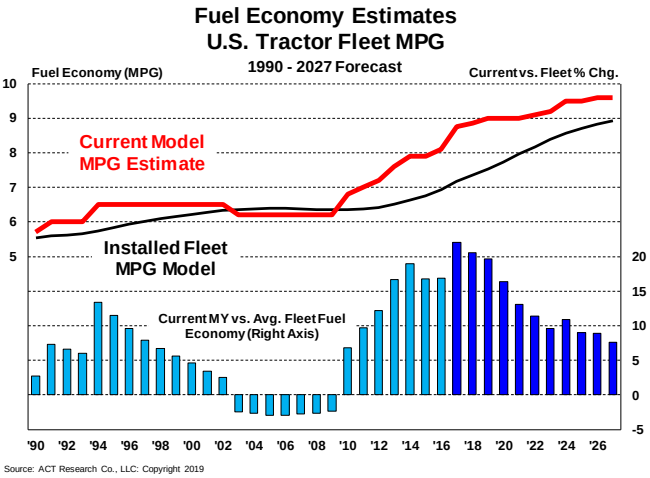
NEW TRUCK PRICES: From 2003 to 2015, primarily attributable to regulations, new Class 8 prices rose by ~$35k, excluding taxes, from something under $100k to around $130k (fleet spec'd tractor sleeper). For FET and state taxes add another ~20% to the bill. On a tax-inclusive basis, our example generates a truck price today $41k higher than in 2002.

Looking forward, the EPA estimates that the first step of the GHG-2 mandate will add another $6,500 (+$1,300 tax) to the bill. Positively, and unlike the other big dollar regulations, the 2021 step for GHG is expected to generate 13% better fuel economy. Taking the projected fuel economy gain into account, the payback on the roughly $8,000 price increase would be around 25 months at $3.00/gallon diesel. Combining the short payback period with no apparent revolutionary technologies, we do not anticipate any pricing-related prebuys through the forecast period.

FUEL ECONOMY: In 2013/2014, the industry rolled out GHG-1 (phase 1) Class 8 tractors. On one hand, the trucks cost more: the EPA estimated GHG-1 compliance costs at $6,700. On the other hand, the new trucks delivered meaningfully better fuel economy (from roughly 6.9 mpg to 7.7 mpg), providing a rapid payback. Replacing a 6-mpg truck with an 8-mpg truck saves 4,200 gallons of fuel every 100,000 miles. If fuel is $3/gallon, that represents $12.6k in fuel savings every 100k miles - a gift that keeps on giving.

At the end of 2016, ACT's modeling suggested that 52% of the under-15 (U15) tractor fleet was getting better than 7 mpg. Looking forward, mandates that continue to push advancements in aerodynamics, parasitic drag, etc. are projected to keep an upward trend in fuel economy through the forecast period. ACT's modeling suggests new vehicles will provide 10% to 15% compared to the installed U15 population through the next decade, providing a competitive advantage for new vehicle buyers.





BIFURCATED MARKET: Truckers with older, high mileage equipment are disadvantaged in today's increasingly regulated market: With older trucks worth less, new trucks costing more, and the regulatory burden increasing across a broad front, there is a widening gap between trucking's haves and have nots. New vehicle fuel economy is but one example. While the growing gap (opportunity, size, technology, etc.) is not a factor impacting the total number of trucks required to do the job (beyond greater efficiency), it does have a large say as to who is buying the vehicles.

REGULATORY IMPACTS: Most regulation has little bearing on new vehicle demand. After all, regulations tend to impact ancillary items – safety, drivers, emissions – they don't impact the amount of freight in need of hauling. That said, regulations have caused freight rates to rise, so arguably regulation has had a second-derivative impact on shipper behavior. As presented under the productivity heading in this section, shippers became very active in improving freight density, following a strong bout of freight rate inflation last decade. In addition to higher fuel costs and driver wages, regulations had a significant impact on new equipment prices.

The regulations that we give attention are the ones that are sufficiently punitive that they impact the demand curve. The two best recent examples are EPA'07 and the FMCSA's change to drivers' Hours of Service (HOS) regulations in mid-2013.

Arguably, the biggest prebuy should have occurred ahead of the pulled-forward EPA'04 emissions mandate: Insufficiently tested technology added ~$5k to the price (ex tax), and fuel economy fell by nearly 5%. Fortunately for the industry/unfortunately for truckers, the lingering effects of the 2001 recession, weak used truck values, and an absence of credit options all but eliminated what could have been a very large event. Likewise, with its ~$10k sticker price, EPA'10 was also a candidate for a prebuy, but economic conditions did not warrant that action. At the end of the day, while there might be a willingness to avoid an environmental regulation, ability is a crucial factor.

The prebuying stars of ability and willingness aligned ahead of EPA'07: In the two years ahead of the mandate, truckers experienced record profitability. The mandate itself represented an $8k sticker price addition with an expensive-to-maintain technology that truckers didn't want.

GHG: With particulate matter (PM) and NOx virtually eliminated thanks to the two-decade long effort that culminated with advanced OBD (on-board diagnostics) arriving at the start of 2013, the EPA and NHTSA and California's Air Resources Board (CARB) were still not content.

Starting in 2014, the regulatory focus shifted to greenhouse gases. With Phase 1 of the GHG standard nearing completion in 2018 and GHG-2 scheduled to start in 2021, the goal is a 30% cumulative reduction in greenhouse gases from an EPA'10 benchmark. Much of the industry was ahead of the curve in terms of achieving the 10% GHG reduction in the first phase of the mandate, and the harvesting of low-hanging fruit meant that costs were modest relative to FE payback for truckers.

EPA and NHTSA have indicated that new tractor costs in 2021 are likely to rise by around $7,000, or $8,400 with tax. In exchange for those dollars, truckers should expect to see a 13% improvement in fuel economy. Positively, the 2021 step represents more of the same, with engine improvements, parasitic drag, and aerodynamics doing the heavy lifting: We are not aware of any major systems, like waste heat capture, being added in 2021.

Assuming an EPA cost estimate that is not out of line with reality, $3/gal diesel, and 90,000 miles per year, truckers would achieve GHG-2 payback in roughly two years (25 months). As such, we do not anticipate any meaningful disruptions in demand resulting from the 2021 regulatory change. Presently, the mandate and our expectations of a market overbuild coincide. While the forecast calls for a rise into 2020 and a fall-off into 2021, those events are predicated on supply and demand issues rather than regulation. Given the reasonably short payback period, if prebuying or delays occur, they are likely to be overshadowed by more traditional market forces.

REGULATIONS and TAXES: The FET, or Federal Excise Tax, is a century-old tariff applied to the purchase of new commercial trucks (Classes 7 & 8) and trailers. On top of state taxes, the FET adds 12% to new heavy equipment purchases. ACT estimates that the cost of emissions regulations from EPA'04 through GHG-1 have added nearly $29,000 to the purchase of a new Class 8 vehicle. So, in addition to paying more per vehicle to improve emissions, truckers are also paying an additional ~$3,500 in FET for the privilege. That doesn't include the 7% or 8% required for state taxes.

HOS: While the EPA regulations have moved demand because of changes to truck cost and complexity, an inadvertent side-effect of changes by the FMCSA to HOS regulations has been the need for more trucks because of reductions in carrier efficiency. With several thousand people killed every year in crashes involving trucks (most not the fault of truckers), safety is an industry imperative. Tightening HOS regulations to rid the nation's highways of tired drivers has been positive for carrier profits and new Class 8 demand.

	Market Share Estimates	Implied Units	% "Excess" Miles	Compliance Productivity loss	Capacity Impact
				0%	
Active Tractor Pop.		1,505,000			
Private	47%	708,000	0%		-
For Hire:	53%	798,000			
Expedited	7%	56,000	0%		-
LTL	10%	80,000	0%		-
Large TL	23%	184,000	0%		-
Mid TL	10%	80,000	5%		4,000
Sm. TL	20%	160,000	10%		16,000
OO	30%	240,000	15%		36,000
ELD "Legal" Impact					56,000
Total Tract Fleet Capacity Impact (%)					3.7%
For-hire Fleet Only Capacity Impact (%)					7.0%

The HOS regulations that went into effect July 1, 2013, are estimated to have impacted trucker productivity by around 4%, not necessarily a bad thing in an overcapacitized market, but there were ancillary costs to driver pay and quality of life. The capacity takeout that occurred in mid-2013 was a critical component of the 2014-2015 surge in carrier profits and Class 8 demand. Similarly, a Congressional override of the two-overnight provision of the 2013 rule at the end of 2014 gave an estimated 2.5ppts of productivity back to shippers, helping to hasten the demise of the cycle.

ELD: While there is a myriad of small changes that remain in the pipeline, the biggest rule change since the 2013 change to HOS is the rule requiring electronic logging devices (ELDs). The mandate's purpose is to rein-in logbook/HOS cheating. The ELD mandate went into effect at the end of 2017.

As their members already run legally, most large carriers have found ELDs to be ultimately accretive to productivity and the bottom line. The largest trucking associations, the ATA, NPTC, and TCA, fully supported the mandate. It is no accident that OOIDA, whose members, anecdotes suggest, were the most flagrant violators of HOS, continues to challenge the rule. Having failed in the Courts, OOIDA has resorted to calling in political favors in the House of Representatives, with Congressmen proposing legislation to roll-back the implementation clock. There was no expectation that these "Hail Mary's" would make it past the House, let alone the Senate. The rule took effect as planned on December 18, 2017.

The table above represents ACT's estimate of the capacity takeout that occurred when the industry was finally forced to run legally at the end of Q1'18. While we are comfortable with our population and market segmentation estimates, the percentage of extra miles being run by small and mid-sized for-hire fleets and owner operators is strictly guess work. That said, we view the guesses ("estimates") as reasonable based on anecdotes collected through the years as well as OOIDA's strong opposition to the proposal. To paraphrase Shakespeare, "the Association doth protest too much, methinks."

As of mid-2018, the FMCSA was reporting that HOS log book violations had declined 82bps y/y in May, to a record low 0.54%.

FURTHER AFIELD: While it is not a next-five-years issue, semi and fully-autonomous vehicles continue to enter conversations. Unless there are changes to allowable GVWs or trailer lengths, there does not appear to be much of a productivity impact moving from manual to semi-autonomous driving: The trucks are still constrained by drivers' hours of service. It is not until trucks become fully autonomous, and the logistics system figures out how to start making those trucks run continuously, that we enter a new productivity paradigm.

To that end, any discussion of trucking productivity stemming from government action has to include the railroad lobby. It is our belief that, regardless of the potential improvements in safety, efficiency, etc., the railroads will always do everything in their power to throw roadblocks into the paths of trucking productivity improvements. Considering that autonomous trucking will require changing rules in the 48 contiguous states, it could be years of hand-to-hand combat. Of course, automotive is also making strides towards autonomy, so the rails might not be able to stop the autonomous train. Speaking of which …

FINALLY: To keep track of the multi-pronged regulatory landscape, to include emissions, vehicle safety, driver safety, and fleet safety, we are maintaining tables focused on those regulations which have the ability to impact new commercial vehicle demand. For specifics, Appendix C contains five pages of Federal, State, Canadian, and Mexican regulations and status.

READING THE TEA LEAVES, or ADJUSTING THE DATA FOR SEASONALITY: In some data series, especially those that are already trendy in nature, build, retail sales, inventory, and seasonal adjustment do a good job of smoothing away much of the month-to-month variance brought about by the number of days in a given month, or predictable annual events like vacation shutdowns or end-of-year tax buying. In highly variable data series like net orders, where month-to-month changes can be extreme, seasonal adjustment does not smooth, per se, but it does add depth to the analysis.

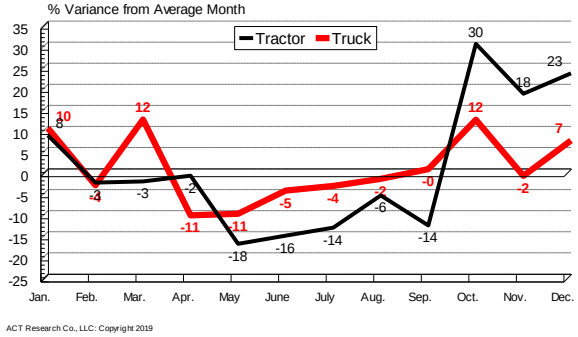
ACT's seasonal factoring incorporates a rolling 12-month calendar, production days per month, and retail sales days per month. What seasonal adjustment attempts to capture are deviations from the trend. A positive seasonal factor indicates that a month is typically stronger than average, a negative factor, weaker. Dividing the actual data point by its corresponding seasonal factor generates the seasonally adjusted data point.

As big carriers have gotten bigger, and the owner-operator market has morphed from a new truck to a used truck buyer business (at least for tractors), we have seen a shift in the seasonal factors for Class 8 net orders through the past decade, with some already important months becoming more important, while other already less important months have become less so. In addition to the "big order" months getting bigger, the length of peak order season has gotten shorter: The period with positive seasonal factors used to extend into March and April.

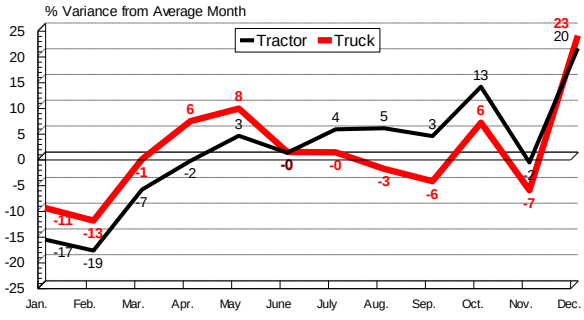
High peak and deep trough seasons generate a steady flow of seasonally adjusted order analysis. As the retail factor graph illustrates, there are a few months every year when it is critical to understand the pull-forward impact of end-of-year tax related buying on January and February retail sales. As illustrated, there is typically around a 25ppt to 30ppt retail sales swing every year from December to January (days per month dependent).

As an example: December '17/January '18 NA Class 8 retail sales were 27,800 and 18,600 units. Despite the large nominal decrement in RS, seasonal adjustment more than halves the month-to-month differential field at a respective 25,600 and 21,600 units.

U.S. Class 8 Net Order Seasonal Factors
2019



U.S. Class 8 Retail Sales Seasonal Factors
2019



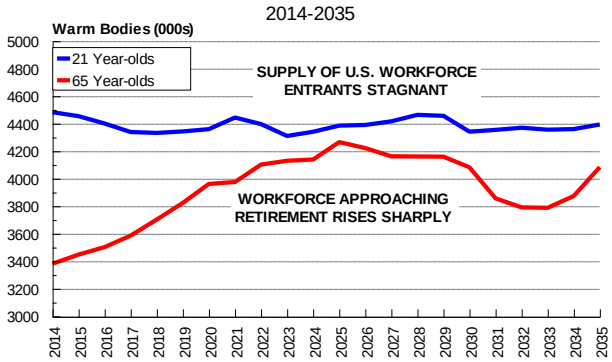
DRIVERS: Why mention drivers in a section on Class 8 demand drivers? The short answer is the louder you hear trucking companies screaming about drivers now, the more money they will be making later. If you are not seeing driver shortage headlines, it is tough to make a case that freight volumes are not sufficient to move the needle on rates and, by extension, profits.

While not at peak levels, driver shortage is an "evergreen" top concern among fleet executives as a major management challenge facing truck companies. We agree that hiring and retaining drivers is a problem and concur with most if not all of the causes frequently cited:

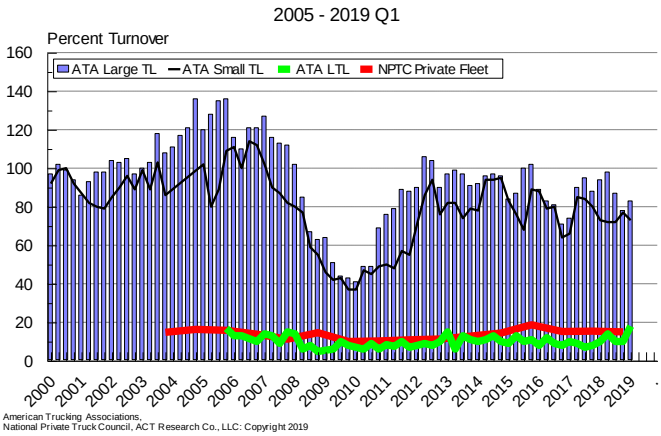
- Driving is an arduous, strenuous and sometimes dangerous job.
- Driving can lead to unhealthy and undesirable lifestyles (excessive time away from home, poor health habits and diet, confined workspace).
- Work status/prestige has deteriorated since deregulation as relative pay has fallen.
- New technologies (ELDs, speed restrictions, in-cab cameras, and tracking technologies) increasingly bring management monitoring and control into areas that were formerly at the driver's discretion, a negative for drivers who value independence.
- Regulations, many new or more stringent over this decade, have already and will continue to narrow the labor pool and/or are hurting driver productivity.
  - CSA safety scores that "stick" to the driver
  - Follicle-level drug testing
  - Health and sleep apnea screening
  - Hours of Service tightening
  - Fewer miles per year
- Demographics: The current driver population is skewed to the "baby boom" generation and will see disproportional (compared to other industries) driver exits as these workers reach retirement.

While acknowledging the reality of the crisis, we are more sanguine vis-à-vis the implications of the situation. First and foremost, we believe that driver shortage severity is *a sign of prosperity for truckers*. After all, it is the amount of freight that determines driver demand (not the reverse), and freight is a manifestation of economic activity. It is no coincidence that periods of peak carrier profitability have occurred during the tightest incidences of driver unavailability.

U.S. Demographics
Potential Hirees & Impending Retirees



Fleet Driver Turnover



When the economy is strong, the industry does well, pushing drivers to the top of the management worry list. We suspect that trucking executives would rather deal with the problem of insufficient drivers and 100% driver turnover (2014) rather than insufficient freight and 40% driver turnover (2009-10). Again guessing, most managers would rather deal with a crisis in a cost/expense line item than a crisis that shakes their fundamental ability to deliver top-line and bottom-line results in their own enterprise.

SUMMARY: History doesn't repeat but it rhymes: As we have seen in this deeply cyclical industry, the capacity situation can change on a dime. To that end, truckers do what they perceive is best for their business, not what is best for the industry. With cash flow and profitability, new truck demand can become exceptionally good exceptionally fast. The reverse is also true. As we say, truckers buy trucks to make money (and avoid paying taxes). The binary nature of Class 8 market demand is alive and well.

US TRAILERS

FREIGHT: There is a straightforward relationship between trailer industry health and economic activity:

- Economic growth creates new freight to haul. That requires more capacity, which is satisfied through more trailers, improved productivity of the existing fleet, or a combination of the two.
- Economic downturns reduce freight volumes. Overcapacity requires fewer trailers. Trailers are not replaced and could also be idled until needed.
- The dry van freight composite shows our measure of dry van freight demand. The chart shows the severity of the last downturn; the drop in freight was prolonged and exceptionally deep.

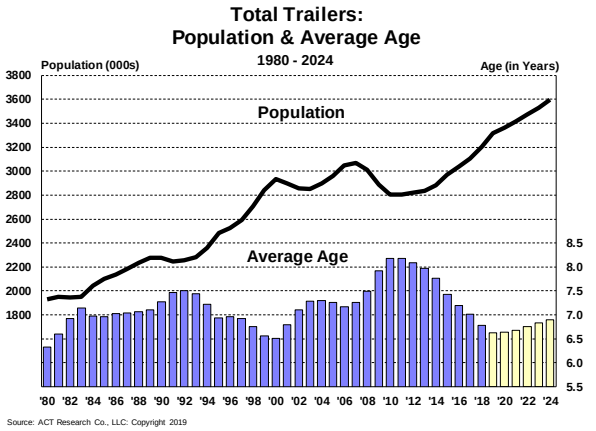
Despite historically low interest rates, the pace of the economy has been lackluster in this recovery. The economy did not cycle once the Fed cut interest rates. Because of the debt and credit-related components of the Great Recession, ACT's Class 8 freight composite declined 8.0% y/y in 2009. Our dry van composite fell 3.4% in 2009; this measure tends to fare better than both the pace of economic growth and the Class 8 measurement.

POPULATION AND FLEET AGE: The results of fewer new trailer shipments from early 2008 through early 2010 include:

- Shrinking population. The trailer fleet declined 9%, or 271k units, from 2007 through 2011. Trailers in operation slid from 3.08 million to 2.81 million. The trailer fleet finally surpassed that 2007 peak in 2017 and continued to grow to a new record in 2019.
- Aging fleet. Average age grew from 7.2 years in 2006 to 8.4 years in 2010 and 2011.

Solid 2011 shipments resulted in a plateauing of the upward march of trailer age. The additional gains of 2012, the best shipment levels since 2006, added to TIO (trailers in operation) and generated the first average age decline in five years. With shipments averaging 224k annually from 2011-2013, trailers in operation grew slowly. Volume improved further in 2014, with 2015 setting an all-time shipment record. TIO ended 2017 at the highest level in history, and we project continued growth in TIO throughout the forecast horizon. As projected, the fleet slid below the seven-year age mark in 2018, reaching a level not seen since 2001.

Structural changes in dry van utilization have exacerbated demand weakness. Dry vans, reefer vans, and heavy lowbeds reached record age levels in the last downturn. Flatbeds, pneumatic tanks, and

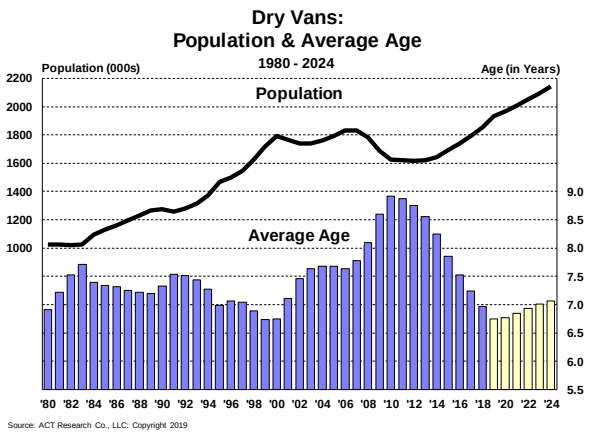


dump trailers reached fleet ages at levels not seen since the aftermath of the 1991 recession.

Population falls when new trailer deliveries dip below replacement levels in response to lower capacity needs. In 2009, for example, 79k new trailers were shipped. ACT's population model indicated that ~206k trailers actually needed replacement that year, denoting the trailer fleet contracted by ~127k units. The accompanying chart displays the contraction that occurred from 2008 through 2011, the tail-end of a decline of more than 260k. ACT's analysis showed an increase in 2012, ending the cyclical contraction of TIO. Our population model indicates that replacement will average 216k from 2019 to 2024.

DRY VAN POPULATION plateaued in 2006/2007 at 1.83 million units. Analysis shows the dry van population bottomed in the 2011 to 2013 timeframe, at roughly 1.62 million units in 2012, down 215,000 units, or 12%, from the peak. We project population will finally surpass that 2006/07 peak and continue to grow during the forecast period.

Dry van replacement rates peaked in 2014. Over the forecast period, replacement is projected to fall from more than 130k in 2018 to just 117k units in 2021, before increasing to 126k in 2024.



Dry vans represent nearly 60% of total trailer demand historically and have generally tracked within a range of 55% to 65% of total. After the historically low 36% in 2009, they grew to 49% of shipments in 2010, returning to 56%-58% from 2011 through 2013, peaking at 63% in 2016. 2018 came in at 60%, and dry vans will average 60% of total industry volume for the forecast period. The potential for 33' pup trailers continues to ebb and flow; at this point, they appear to be off the official legislative table.

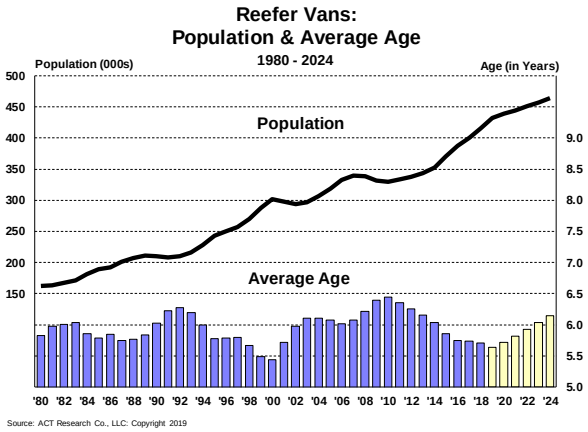
The prospect of 33-foot pup trailers would be a game-changer in terms of new vehicle demand that would have profound implications for trailer spec'ing and would potentially be disastrous for Class 8 demand – at least until the market realigned on a new paradigm. The move to 33' pups for LTL/expedited carriers is an increase of 18% in cubic capacity compared to 28' pups. Moving from 53' to 66' by today's TL carriers is a 25% increase in cubic capacity. Fortunately for Class 8 manufacturers, any change in pup trailer length should flow through a traditional rulemaking process, moving from the initial NPRM (Notice of Proposed Rulemaking) through final approval with a two-year legislative implementation window.

REEFER VAN POPULATION: Reefer van population and age show that there is a greater degree of predictability in reefer van demand than for other trailer types. Stability comes from an underlying demand for temperature-controlled freight movement, primarily food and dairy products, which tends to buffer cyclical swings. The average age of the reefer van fleet remained in a tight 5.4 to 6.4-year band from 2000 to 2011, before gradually declining to the 5.8-year level at the close of 2017. It will fall to 5.6 years in 2020, before trending to 6.1 in 2024. That is less volatility than in either the dry van or flatbed markets. Reefer van age is impacted by four factors that are integral to temperature stability:

- Insulation foam breaks down over time, reducing thermal efficiency.
- Insulation absorbs moisture over time, reducing freight capacity and thermal efficiency.
- The trailer box itself can become compromised.
- The reefer unit wears out.

When a refrigeration unit replacement is considered, the business model normally indicates it is not worth putting a new unit on an inefficient box.

Despite improved construction techniques addressing all four of the aforementioned factors, reefer van fleet age is expected to remain close to historic levels.

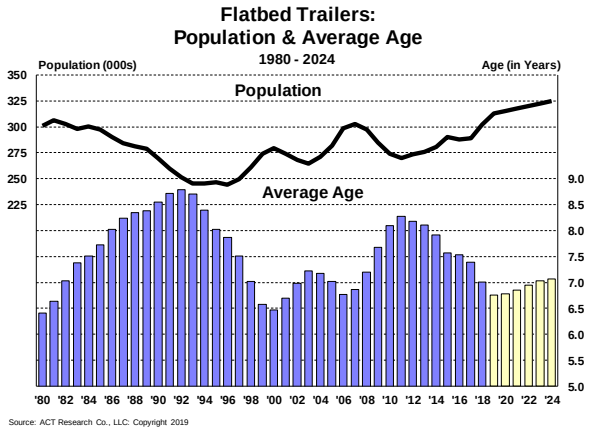


Contributing to this are California Air Resources Board (CARB) regulations that mandate a late-model/clean diesel reefer fleet. Starting in 2009, CARB mandated a seven-year age threshold on a rolling/go-forward basis. Increasing temperature-controlled freight transport demand has pushed reefer shipments to two consecutive historic records in 2014 and 2015, with 2016 close behind that 2015 peak. Fleet investments for the implementation of FSMA (Food Safety Management Act) helped pull forward volumes in 2014-2016. 2017 was also positively impacted. We project solid levels through 2020, with the full forecast horizon averaging more than 43k/year. New equipment helps fleets meet regulatory requirements regarding safe transportation of food for both human and pet consumption, including temperature control, sanitary conditions, and the documentation of those efforts.

Reports of solid demand for reefer containers, domestic and international, as well as a surge in temperature-controlled warehouse demand, confirms growing demand and investment across the entire cold chain.

FLATBED POPULATION: Flatbeds are impacted by steel output, automobile production, and new home construction in the United States. Flatbed shipments hitting a 56-year low in 2009 speaks volumes about the economy's weakest sectors. Coincidentally, new home construction fell to a 56-year low in 2009.

Flatbeds generally haul steel and other heavy material. The average age trend tracks US steel industry fortunes from bust to boom in the 1980s and 1990s, as well as the debt-fueled 2000s. Last decade, steady automobile output and runaway housing activity drove the flatbed trailer population to more than 300k units, the best level in almost 30 years.



Fleet age remained in a narrow band from 1999 through 2007, averaging 6.9 years. The Great Recession generated a peak of 8.3 years in 2011.

The global economic recovery, green considerations, and de-globalization are a good combination for flatbed trailers as manufacturers "home-shore" production. Consider:

- Growing pressure to reduce carbon footprint provides positive environmental and political impacts.
- Rising RMB and increasing labor rates reduce the financial benefit of manufacturing in China.

These factors support a scenario for above-trend manufacturing output. Add growing replacement pressure and the fact that the two flatbed intensive domestic freight sectors, construction (residential and commercial) and automotive, are still at well below trend levels. Notable is stronger demand for aluminum flats versus steel or combo configurations.

OTHER TRAILER DEMAND DRIVERS: The trailer market is an 80/20 story: dry vans, reefer vans, and flatbed trailers accounted for 80% of new trailer demand over the last ten years, while the remaining 20% of the market were mission-specific trailers impacted by different sets of demand drivers. Dumps, lowbeds, and pneumatic tanks are driven by commercial construction, road building, mining, and oil exploration. Liquid tanks haul loads of fruit juice, but they also haul chemicals and petroleum products. Hydraulic fracturing for oil and natural gas has been a major driver of bulk and liquid tank demand. Natural gas prices and oil prices have both had significant impact on specialty trailer demand. Agricultural sector profitability is the driving force for grain trailers. The amount of freight will ultimately be the major factor supporting equipment investment.

STRUCTURAL & SYSTEMIC ISSUES: Since 2000, dry vans have accounted for more than 57% of US trailer shipments. Anything impacting the dry van market will have market-wide repercussions. Two phenomena have had a profound impact on dry van demand.

STRUCTURAL: Over the past two decades:

- Improved dry van quality. Construction shifted from FRP and sheet and post to plate wall.
- 1984, 1987, and 1991 length law changes increased productivity and encouraged premature replacement.
- Dry van to tractor ratio changed. Higher ratios evolved with JIT and drop-and-hook strategies. Higher ratios extend trailer life.
- Negative implications of the high to low ratio transition: A 1:1 trailer to tractor ratio would mean that a trailer runs as many miles as a tractor. A 2:1 ratio boosts the effective life expectancy of a trailer by 50%.
- Trailer tracking technology improves efficiency, effectively increasing available capacity.
- A move from TOFC to domestic containers: IANA reports TOFC loads fell from 2.6 million in 2000 to under 1.7 million in 2014, while domestic container loads went from 2.3 million to over 6.4 million. Assuming each TOFC van trailer carried 35 loads per year, every 1,000,000 load shift from TOFC means 29,000 van trailers are "functionally replaced." Additional domestic container loads, at the same loads per year, point to another 23,000 potential trailer equivalent impact. We estimate an annual dry van impact of ~3,700 units.

Fleets operated approximately 1.9 dry vans per dry van tractor in 2009-2011, 11% below the 2000 level. At 1.85 trailers per tractor, there were still 65,000, or 4%, too many dry van trailers as in 2009. An improved economy helped absorb the extra capacity.

SYSTEMIC: Weak economic activity and the financial crisis collateral damage caused:

- Excessively weak used trailer prices fed by weak demand and shrinking dry van ratios.
- Tighter lending standards limit truckers' ability to borrow money. This appears to be more significant to smaller and medium fleets.
- Continual fleet consolidation. This increases equipment utilization, negatively impacting long-term demand.

N.A. CLASSES 5-7 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 1

		2019					2020				
	2018	Q1	Q2	Q3	Q4	2019	Q1	Q2	Q3	Q4	2020
CLASSES 5-7 RETAIL SALES											
. **Truck**	199,391	50,674	56,716	54,886	57,424	219,700	47,580	52,164	48,349	53,107	201,200
Y/Y % Change	8.8	6.3	9.5	13.1	11.7	10.2	-6.1	-8.0	-11.9	-7.5	-8.4
. **Bus**	41,869	8,654	10,529	14,391	9,626	43,200	9,791	11,550	13,920	10,040	45,300
Y/Y % Change	-2.2	2.3	-3.8	1.5	16.2	3.2	13.1	9.7	-3.3	4.3	4.9
. **RV**	21,626	4,256	4,378	3,192	3,874	15,700	4,113	4,382	3,953	4,052	16,500
Y/Y % Change	-1.1	-25.5	-18.8	-41.8	-23.1	-27.4	-3.4	0.1	23.8	4.6	5.1
TOTAL CLASSES 5-7	262,886	63,584	71,623	72,469	70,924	278,600	61,485	68,095	66,221	67,199	263,000
Y/Y % Change	6.0	2.9	5.1	6.3	9.6	6.0	-3.3	-4.9	-8.6	-5.3	-5.6
CLASSES 5-7 PRODUCTION											
. **Truck**	208,341	54,936	60,885	60,198	47,727	223,746	49,963	50,903	46,253	48,697	195,816
Y/Y % Change	13.0	10.1	12.6	15.5	-8.6	7.4	-9.1	-16.4	-23.2	2.0	-12.5
. **Bus**	42,627	9,519	12,930	10,797	9,474	42,720	10,884	12,631	11,925	9,854	45,294
Y/Y % Change	0.0	-1.3	2.1	-8.1	10.6	0.2	14.3	-2.3	10.5	4.0	6.0
. **RV**	21,753	5,334	4,152	3,452	2,167	15,105	4,309	4,461	3,919	3,843	16,533
Y/Y % Change	0.1	-7.3	-26.8	-40.0	-52.6	-30.6	-19.2	7.5	13.5	77.4	9.5
TOTAL CLASSES 5-7	272,721	69,789	77,967	74,447	59,368	281,571	65,156	67,996	62,097	62,394	257,643
Y/Y % Change	9.6	6.9	7.7	6.9	-9.2	3.2	-6.6	-12.8	-16.6	5.1	-8.5

U.S. CLASSES 5-7 VEHICLE SALES AND PRODUCTION OUTLOOK: TABLE 2

		2019					2020				
	2018	Q1	Q2	Q3	Q4	2019	Q1	Q2	Q3	Q4	2020
CLASSES 5-7 RETAIL SALES											
. **Retail Sales**	235,312	57,166	64,226	64,162	63,446	249,000	55,668	61,031	56,567	62,134	235,400
Y/Y % Change	5.4	2.6	6.4	5.9	8.2	5.8	-2.6	-5.0	-11.8	-2.1	-5.5
CLASSES 5-7 PRODUCTION											
. **Production**	245,508	63,740	70,264	67,559	51,067	252,630	57,970	60,509	55,227	55,429	229,135
Y/Y % Change	9.7	8.4	8.5	8.8	-14.6	2.9	-9.1	-13.9	-18.3	8.5	-9.3

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

CANADIAN CLASSES 5-7 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 3

		2019					2020				
	2018	Q1	Q2	Q3	Q4	2019	Q1	Q2	Q3	Q4	2020
CLASSES 5-7 RETAIL SALES											
. **Retail Sales**	17,479	3,940	5,083	5,828	5,149	20,000	4,138	4,537	4,205	4,619	17,500
Y/Y % Change	17.8	8.3	-3.2	19.1	39.4	14.4	5.0	-10.7	-27.8	-10.3	-12.5
CLASSES 5-7 PRODUCTION											
. **Production**	17,095	4,053	4,935	4,831	5,576	19,395	4,647	4,851	4,427	4,443	18,368
Y/Y % Change	13.3	-3.2	-1.2	6.4	65.2	13.5	14.7	-1.7	-8.4	-20.3	-5.3

MEXICO CLASSES 5-7 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 4A

		2019					2020				
	2018	Q1	Q2	Q3	Q4	2019	Q1	Q2	Q3	Q4	2020
CLASSES 5-7 RETAIL SALES											
. **Retail Sales**	9,323	2,336	2,167	2,262	2,135	8,900	2,223	2,437	2,259	2,481	9,400
Y/Y % Change	4.2	-0.4	-7.3	-7.4	-2.8	-4.5	-4.8	12.5	-0.1	16.2	5.6
CLASSES 5-7 PRODUCTION											
. **Production**	9,115	1,877	2,549	1,870	2,605	8,901	2,393	2,498	2,280	2,288	9,460
Y/Y % Change	0.3	-8.3	5.9	-29.8	30.3	-2.3	27.5	-2.0	21.9	-12.2	6.3

EXPORT CLASSES 5-7 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 4B

		2019					2020				
	2018	Q1	Q2	Q3	Q4	2019	Q1	Q2	Q3	Q4	2020
CLASSES 5-7 RETAIL SALES											
. **Retail Sales**	772	142	147	217	194	700	166	181	168	185	700
Y/Y % Change	-1.9	51.1	-34.4	-21.7	9.6	-9.3	16.6	23.5	-22.5	-4.8	0.0
CLASSES 5-7 PRODUCTION											
. **Production**	1,003	119	219	181	127	646	172	179	164	164	679
Y/Y % Change	30.8	-50.4	-14.5	-43.4	-32.1	-35.6	44.4	-18.1	-9.6	29.3	5.1

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

N.A. CLASSES 5-7 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 5

	2017	2018	2019	2020	2021	2022	2023	2024
CLASSES 5-7 RETAIL SALES								
. **Truck**	183,233	199,391	219,700	201,200	201,950	204,900	209,650	206,050
Y/Y % Change	6.9	8.8	10.2	-8.4	0.4	1.5	2.3	-1.7
. **Bus**	42,803	41,869	43,200	45,300	44,200	45,300	46,150	46,150
Y/Y % Change	2.5	-2.2	3.2	4.9	-2.4	2.5	1.9	0.0
. **RV**	21,866	21,626	15,700	16,500	16,000	17,000	17,500	16,500
Y/Y % Change	4.1	-1.1	-27.4	5.1	-3.0	6.3	2.9	-5.7
TOTAL CLASSES 5-7	247,902	262,886	278,600	263,000	262,150	267,200	273,300	268,700
Y/Y % Change	5.9	6.0	6.0	-5.6	-0.3	1.9	2.3	-1.7
CLASSES 5-7 PRODUCTION								
. **Truck**	184,361	208,341	223,746	195,816	200,698	203,967	210,675	205,309
Y/Y % Change	8.1	13.0	7.4	-12.5	2.5	1.6	3.3	-2.5
. **Bus**	42,642	42,627	42,720	45,294	44,085	45,431	46,246	46,161
Y/Y % Change	3.5	0.0	0.2	6.0	-2.7	3.1	1.8	-0.2
. **RV**	21,722	21,753	15,105	16,533	15,979	17,041	17,521	16,458
Y/Y % Change	2.8	0.1	-30.6	9.5	-3.4	6.6	2.8	-6.1
TOTAL CLASSES 5-7	248,725	272,721	281,571	257,643	260,762	266,439	274,442	267,928
Y/Y % Change	6.8	9.6	3.2	-8.5	1.2	2.2	3.0	-2.4

U.S. CLASSES 5-7 VEHICLE SALES AND PRODUCTION OUTLOOK: TABLE 6

	2017	2018	2019	2020	2021	2022	2023	2024
CLASSES 5-7 RETAIL SALES								
. **Retail Sales**	223,326	235,312	249,000	235,400	235,800	240,000	245,600	241,400
Y/Y % Change	5.4	5.4	5.8	-5.5	0.2	1.8	2.3	-1.7
CLASSES 5-7 PRODUCTION								
. **Production**	223,789	245,508	252,630	229,135	234,623	239,128	246,672	240,669
Y/Y % Change	5.8	9.7	2.9	-9.3	2.4	1.9	3.2	-2.4

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

APPENDIX B – FORECAST TABLES

CANADIAN CLASSES 5-7 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 7

	2017	2018	2019	2020	2021	2022	2023	2024
CLASSES 5-7 RETAIL SALES								
. **Retail Sales**	14,841	17,479	20,000	17,500	15,900	16,300	16,600	16,400
Y/Y % Change	24.2	17.8	14.4	-12.5	-9.1	2.5	1.8	-1.2
CLASSES 5-7 PRODUCTION								
. **Production**	15,085	17,095	19,395	18,368	15,660	16,370	16,650	16,375
Y/Y % Change	28.4	13.3	13.5	-5.3	-14.7	4.5	1.7	-1.7

MEXICO CLASSES 5-7 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 8A

	2017	2018	2019	2020	2021	2022	2023	2024
CLASSES 5-7 RETAIL SALES								
. **Retail Sales**	8,948	9,323	8,900	9,400	9,650	10,000	10,200	10,000
Y/Y % Change	-6.6	4.2	-4.5	5.6	2.7	3.6	2.0	-2.0
CLASSES 5-7 PRODUCTION								
. **Production**	9,084	9,115	8,901	9,460	9,675	10,038	10,220	9,985
Y/Y % Change	2.4	0.3	-2.3	6.3	2.3	3.8	1.8	-2.3

EXPORT CLASSES 5-7 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 8B

	2017	2018	2019	2020	2021	2022	2023	2024
CLASSES 5-7 RETAIL SALES								
. **Retail Sales**	787	772	700	700	800	900	900	900
Y/Y % Change	13.4	-1.9	-9.3	0.0	14.3	12.5	0.0	0.0
CLASSES 5-7 PRODUCTION								
. **Production**	767	1,003	646	679	805	904	900	900
Y/Y % Change	14.8	30.8	-35.6	5.1	18.6	12.3	-0.4	0.0

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

NORTH AMERICAN CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 9

	2018	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2019	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2020
CLASS 8 RETAIL SALES											
. **Tractor (Sleeper)**	143,546	35,531	40,212	39,620	36,430	151,793	25,686	25,890	25,279	27,317	104,173
Y/Y % Change	39.3	29.9	19.4	-2.1	-13.4	5.7	-27.7	-35.6	-36.2	-25.0	-31.4
. **Tractor (Daycab)**	88,704	21,880	24,978	25,789	22,756	95,403	17,252	17,389	16,978	18,347	69,966
Y/Y % Change	23.9	15.5	17.9	9.3	-8.9	7.6	-21.2	-30.4	-34.2	-19.4	-26.7
. **Truck (Sleeper)**	2,425	585	640	658	942	2,825	504	508	496	536	2,043
Y/Y % Change	46.3	-46.9	-40.9	-33.2	-0.6	16.5	-13.9	-20.7	-24.7	-43.1	-27.7
. **Truck (Daycab)**	80,159	18,926	23,358	24,359	20,937	87,580	18,695	18,843	18,398	19,882	75,819
Y/Y % Change	5.9	-42.6	-27.6	-30.1	-9.4	9.3	-1.2	-19.3	-24.5	-5.0	-13.4
TOTAL CLASS 8	314,834	76,922	89,188	90,426	81,064	337,600	62,137	62,630	61,151	66,082	252,000
Y/Y % Change	25.0	-4.3	1.1	-9.5	-11.0	7.2	-19.2	-29.8	-32.4	-18.5	-25.4
CLASS 8 PRODUCTION											
. **Tractor (Sleeper)**	147,357	40,410	44,679	41,425	28,887	155,401	27,185	24,061	23,128	22,154	96,527
Y/Y % Change	41.7	29.9	28.4	-4.5	-24.2	5.5	-32.7	-46.1	-44.2	-23.3	-37.9
. **Tractor (Daycab)**	90,047	24,533	26,433	25,474	21,289	97,729	18,268	16,168	15,541	14,887	64,864
Y/Y % Change	24.0	20.7	18.3	7.9	-10.4	8.5	-25.5	-38.8	-39.0	-30.1	-33.6
. **Truck (Sleeper)**	2,381	756	796	849	480	2,881	529	468	450	431	1,877
Y/Y % Change	54.1	33.1	51.0	22.3	-19.0	21.0	-30.1	-41.2	-47.0	-10.2	-34.8
. **Truck (Daycab)**	84,666	23,659	24,032	22,693	19,401	89,785	19,786	17,512	16,833	16,124	70,256
Y/Y % Change	9.3	11.2	15.7	5.4	-8.0	6.0	-16.4	-27.1	-25.8	-16.9	-21.8
TOTAL CLASS 8	324,451	89,358	95,940	90,441	70,056	345,795	65,768	58,209	55,952	53,596	233,525
Y/Y % Change	26.9	21.9	22.3	1.4	-16.1	6.6	-26.4	-39.3	-38.1	-23.5	-32.5
MEMO: NORTH AMERICAN CLASS 8 PRODUCTION BY ENGINE DISPLACEMENT*											
. **Class 8 MDD**	46,234	11,054	10,055	9,786	8,477	39,371	7,491	6,642	6,423	6,196	26,752
Y/Y % Change	10.7	-9.1	-12.8	-13.0	-24.7	-14.8	-32.2	-33.9	-34.4	-26.9	-32.1
. **Class 8 HDD**	278,217	78,304	85,885	80,655	61,579	306,425	58,277	51,568	49,529	47,400	206,773
Y/Y % Change	30.1	28.1	28.4	3.5	-14.8	10.1	-25.6	-40.0	-38.6	-23.0	-32.5
TOTAL CLASS 8	324,451	89,358	95,940	90,441	70,056	345,795	65,768	58,209	55,952	53,596	233,525
Y/Y % Change	26.9	21.9	22.3	1.4	-16.1	6.6	-26.4	-39.3	-38.1	-23.5	-32.5

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
* MDD: Class 8 truck with engines have displacement ≤ 10 liters
* HDD: Class 8 truck with engines have displacement > 10 liters
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

U.S. CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 10

		2019					2020				
	2018	Q1	Q2	Q3	Q4	2019	Q1	Q2	Q3	Q4	2020
CLASS 8 RETAIL SALES											
CLASS 8 TRACTOR	190,427	48,216	53,753	57,127	50,496	209,592	34,517	34,791	33,969	36,709	139,986
Y/Y % Change	38.8	31.7	21.9	6.5	-10.0	10.1	-28.4	-35.3	-40.5	-27.3	-33.2
CLASS 8 TRUCK	65,401	16,158	19,532	20,990	17,728	74,408	15,291	15,412	15,048	16,262	62,014
Y/Y % Change	9.0	7.1	16.9	31.7	0.4	13.8	-5.4	-21.1	-28.3	-8.3	-16.7
TOTAL CLASS 8	255,828	64,374	73,285	78,117	68,224	284,000	49,808	50,204	49,018	52,971	202,000
Y/Y % Change	29.7	24.5	20.6	12.2	-7.5	11.0	-22.6	-31.5	-37.3	-22.4	-28.9
CLASS 8 PRODUCTION											
CLASS 8 TRACTOR	194,790	54,640	59,639	57,613	43,303	215,195	36,519	32,322	31,069	29,760	129,670
Y/Y % Change	40.2	35.3	27.2	2.7	-15.8	10.5	-33.2	-45.8	-46.1	-31.3	-39.7
CLASS 8 TRUCK	68,342	19,996	20,575	19,666	16,160	76,397	16,178	14,319	13,763	13,184	57,444
Y/Y % Change	11.1	21.5	25.4	11.2	-9.2	11.8	-19.1	-30.4	-30.0	-18.4	-24.8
TOTAL CLASS 8	263,132	74,636	80,214	77,279	59,463	291,592	52,697	46,641	44,832	42,944	187,115
Y/Y % Change	31.2	31.3	26.7	4.8	-14.1	10.8	-29.4	-41.9	-42.0	-27.8	-35.8

CANADIAN CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 11

		2019					2020				
	2018	Q1	Q2	Q3	Q4	2019	Q1	Q2	Q3	Q4	2020
CLASS 8 RETAIL SALES											
CLASS 8 TRACTOR	24,665	5,488	6,728	5,404	5,941	23,561	4,577	4,613	4,504	4,868	18,563
Y/Y % Change	38.6	14.0	-5.3	-15.0	-7.0	-4.5	-16.6	-31.4	-16.6	-18.1	-21.2
CLASS 8 TRUCK	9,628	1,917	2,852	2,723	2,848	10,340	2,204	2,221	2,169	2,344	8,938
Y/Y % Change	15.3	3.2	5.6	3.5	16.7	7.4	15.0	-22.1	-20.4	-17.7	-13.6
TOTAL CLASS 8	34,293	7,405	9,580	8,127	8,788	33,900	6,781	6,835	6,673	7,211	27,500
Y/Y % Change	31.2	11.0	-2.3	-9.6	-0.5	-1.1	-8.4	-28.7	-17.9	-17.9	-18.9
CLASS 8 PRODUCTION											
CLASS 8 TRACTOR	25,491	6,714	6,396	6,614	4,878	24,602	4,629	4,097	3,938	3,772	16,437
Y/Y % Change	42.9	3.0	4.4	-1.7	-20.3	-3.5	-31.1	-35.9	-40.5	-22.7	-33.2
CLASS 8 TRUCK	10,695	2,897	2,729	2,775	2,396	10,797	2,229	1,973	1,896	1,816	7,914
Y/Y % Change	30.0	-6.1	-2.3	1.3	15.3	1.0	-23.1	-27.7	-31.7	-24.2	-26.7
TOTAL CLASS 8	36,186	9,611	9,125	9,389	7,274	35,399	6,858	6,070	5,834	5,589	24,351
Y/Y % Change	38.8	0.1	2.3	-0.8	-11.3	-2.2	-28.6	-33.5	-37.9	-23.2	-31.2

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

MEXICO CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 12

	2018	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2019	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2020
CLASS 8 RETAIL SALES											
CLASS 8 TRACTOR	13,388	2,936	4,216	2,388	2,180	11,720	3,138	3,163	3,089	3,338	12,728
Y/Y % Change	-16.0	-19.6	38.6	-23.9	-38.7	-12.5	6.9	-25.0	29.3	53.1	8.6
CLASS 8 TRUCK	4,830	827	1,165	806	782	3,580	1,103	1,111	1,085	1,173	4,472
Y/Y % Change	-26.0	-47.6	-0.9	-21.9	-25.1	-25.9	33.3	-4.6	34.6	49.9	24.9
TOTAL CLASS 8	18,218	3,763	5,381	3,194	2,962	15,300	4,241	4,275	4,174	4,510	17,200
Y/Y % Change	-18.9	-28.1	27.6	-23.4	-35.6	-16.0	12.7	-20.6	30.7	52.3	12.4
CLASS 8 PRODUCTION											
CLASS 8 TRACTOR	13,550	2,730	4,542	2,085	1,598	10,955	3,514	3,110	2,989	2,863	12,476
Y/Y % Change	-16.8	-20.0	30.6	-34.6	-54.0	-19.2	28.7	-31.5	43.4	79.2	13.9
CLASS 8 TRUCK	5,130	874	1,026	692	754	3,346	1,234	1,093	1,050	1,006	4,383
Y/Y % Change	-24.7	-43.8	-23.7	-38.6	-31.7	-34.8	41.2	6.5	51.8	33.3	31.0
TOTAL CLASS 8	18,680	3,604	5,568	2,777	2,352	14,301	4,748	4,202	4,039	3,869	16,859
Y/Y % Change	-19.2	-27.4	15.4	-35.6	-48.6	-23.4	31.7	-24.5	45.5	64.5	17.9

EXPORT CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 13

	2018	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2019	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2020
CLASS 8 RETAIL SALES											
CLASS 8 TRACTOR	3,770	771	493	490	569	2,323	706	711	694	751	2,862
Y/Y % Change	3.1	-37.6	-22.0	-44.9	-43.8	-38.4	-8.5	44.3	41.7	31.9	23.2
CLASS 8 TRUCK	2,725	609	449	498	521	2,077	601	606	592	639	2,438
Y/Y % Change	10.5	-13.4	-24.4	-30.4	-26.9	-23.8	-1.3	34.9	18.8	22.8	17.4
TOTAL CLASS 8	6,495	1,380	942	988	1,090	4,400	1,307	1,317	1,286	1,390	5,300
Y/Y % Change	6.1	-28.8	-23.2	-38.5	-36.8	-32.3	-5.3	39.8	30.2	27.5	20.5
CLASS 8 PRODUCTION											
CLASS 8 TRACTOR	3,573	859	535	587	397	2,378	791	700	673	644	2,808
Y/Y % Change	2.1	-24.4	-17.2	-39.9	-51.3	-33.5	-7.9	30.8	14.6	62.4	18.1
CLASS 8 TRUCK	2,880	648	498	409	571	2,126	674	596	573	549	2,392
Y/Y % Change	18.3	-13.3	-34.0	-39.5	-18.7	-26.2	4.0	19.7	40.1	-3.8	12.5
TOTAL CLASS 8	6,453	1,507	1,033	996	967	4,503	1,465	1,296	1,246	1,194	5,200
Y/Y % Change	8.8	-20.0	-26.3	-39.7	-36.2	-30.2	-2.8	25.5	25.1	23.4	15.5

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

NORTH AMERICAN CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 14

	2017	2018	2019	2020	2021	2022	2023	2024
CLASS 8 RETAIL SALES								
. **Tractor (Sleeper)**	103,022	143,546	151,793	104,173	115,929	126,715	144,352	112,269
Y/Y % Change	-6.3	39.3	5.7	-31.4	11.3	9.3	13.9	-22.2
. **Tractor (Daycab)**	71,583	88,704	95,403	69,966	72,720	76,671	89,172	67,795
Y/Y % Change	8.8	23.9	7.6	-26.7	3.9	5.4	16.3	-24.0
. **Truck (Sleeper)**	1,657	2,425	2,825	2,043	1,832	1,934	2,439	1,569
Y/Y % Change	21.9	46.3	16.5	-27.7	-10.4	5.6	26.1	-35.7
. **Truck (Daycab)**	75,689	80,159	87,580	75,819	79,520	84,181	93,538	68,868
Y/Y % Change	3.9	5.9	9.3	-13.4	4.9	5.9	11.1	-26.4
TOTAL CLASS 8	251,951	314,834	337,600	252,000	270,000	289,500	329,500	250,500
Y/Y % Change	0.8	25.0	7.2	-25.4	7.1	7.2	13.8	-24.0
CLASS 8 PRODUCTION								
. **Tractor (Sleeper)**	103,994	147,357	155,401	96,527	114,142	128,247	148,574	105,272
Y/Y % Change	3.8	41.7	5.5	-37.9	18.2	12.4	15.8	-29.1
. **Tractor (Daycab)**	72,590	90,047	97,729	64,864	71,771	77,737	91,786	62,850
Y/Y % Change	24.3	24.0	8.5	-33.6	10.6	8.3	18.1	-31.5
. **Truck (Sleeper)**	1,545	2,381	2,881	1,877	1,797	1,940	2,508	1,522
Y/Y % Change	30.6	54.1	21.0	-34.8	-4.3	7.9	29.3	-39.3
. **Truck (Daycab)**	77,461	84,666	89,785	70,256	78,404	85,197	96,221	64,498
Y/Y % Change	13.0	9.3	6.0	-21.8	11.6	8.7	12.9	-33.0
TOTAL CLASS 8	255,590	324,451	345,795	233,525	266,115	293,121	339,089	234,142
Y/Y % Change	11.9	26.9	6.6	-32.5	14.0	10.1	15.7	-30.9
MEMO: NORTH AMERICAN CLASS 8 PRODUCTION BY ENGINE DISPLACEMENT*								
. **Class 8 MDD**	41,763	46,234	39,371	26,752	30,577	33,709	38,995	26,926
Y/Y % Change	27.4	10.7	-14.8	-32.1	14.3	10.2	15.7	-30.9
. **Class 8 HDD**	213,827	278,217	306,425	206,773	235,538	259,412	300,094	207,215
Y/Y % Change	9.3	30.1	10.1	-32.5	13.9	10.1	15.7	-30.9
TOTAL CLASS 8	255,590	324,451	345,795	233,525	266,115	293,121	339,089	234,142
Y/Y % Change	11.9	26.9	6.6	-32.5	14.0	10.1	15.7	-30.9

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
* MDD: Class 8 truck with engines have displacement ≤ 10 liters
* HDD: Class 8 truck with engines have displacement > 10 liters
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

U.S. CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 15

	2017	2018	2019	2020	2021	2022	2023	2024
CLASS 8 RETAIL SALES								
CLASS 8 TRACTOR	137,228	190,427	209,592	139,986	149,319	160,008	185,185	135,050
Y/Y % Change	-1.6	38.8	10.1	-33.2	6.7	7.2	15.7	-27.1
CLASS 8 TRUCK	59,998	65,401	74,408	62,014	62,181	65,992	73,815	49,950
Y/Y % Change	4.5	9.0	13.8	-16.7	0.3	6.1	11.9	-32.3
TOTAL CLASS 8	197,226	255,828	284,000	202,000	211,500	226,000	259,000	185,000
Y/Y % Change	0.2	29.7	11.0	-28.9	4.7	6.9	14.6	-28.6
CLASS 8 PRODUCTION								
CLASS 8 TRACTOR	138,952	194,790	215,195	129,670	147,833	162,870	190,790	122,896
Y/Y % Change	11.8	40.2	10.5	-39.7	14.0	10.2	17.1	-35.6
CLASS 8 TRUCK	61,532	68,342	76,397	57,444	61,562	67,172	76,049	45,455
Y/Y % Change	14.3	11.1	11.8	-24.8	7.2	9.1	13.2	-40.2
TOTAL CLASS 8	200,484	263,132	291,592	187,115	209,396	230,042	266,839	168,350
Y/Y % Change	12.6	31.2	10.8	-35.8	11.9	9.9	16.0	-36.9

CANADIAN CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 16

	2017	2018	2019	2020	2021	2022	2023	2024
CLASS 8 RETAIL SALES								
CLASS 8 TRACTOR	17,790	24,665	23,561	18,563	20,250	21,856	23,905	19,124
Y/Y % Change	13.8	38.6	-4.5	-21.2	9.1	7.9	9.4	-20.0
CLASS 8 TRUCK	8,351	9,628	10,340	8,938	9,750	10,144	11,095	8,876
Y/Y % Change	12.7	15.3	7.4	-13.6	9.1	4.0	9.4	-20.0
TOTAL CLASS 8	26,141	34,293	33,900	27,500	30,000	32,000	35,000	28,000
Y/Y % Change	13.5	31.2	-1.1	-18.9	9.1	6.7	9.4	-20.0
CLASS 8 PRODUCTION								
CLASS 8 TRACTOR	17,842	25,491	24,602	16,437	19,913	21,480	24,565	19,124
Y/Y % Change	27.6	42.9	-3.5	-33.2	21.1	7.9	14.4	-22.2
CLASS 8 TRUCK	8,224	10,695	10,797	7,914	9,588	9,970	11,401	8,876
Y/Y % Change	25.6	30.0	1.0	-26.7	21.1	4.0	14.4	-22.2
TOTAL CLASS 8	26,066	36,186	35,399	24,351	29,500	31,450	35,967	28,000
Y/Y % Change	26.9	38.8	-2.2	-31.2	21.1	6.6	14.4	-22.2

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

MEXICO CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 17

	2017	2018	2019	2020	2021	2022	2023	2024
CLASS 8 RETAIL SALES								
CLASS 8 TRACTOR	15,931	13,388	11,720	12,728	14,760	17,472	20,384	21,840
Y/Y % Change	-9.0	-16.0	-12.5	8.6	16.0	18.4	16.7	7.1
CLASS 8 TRUCK	6,531	4,830	3,580	4,472	5,740	6,528	7,616	8,160
Y/Y % Change	-5.9	-26.0	-25.9	24.9	28.4	13.7	16.7	7.1
TOTAL CLASS 8	22,462	18,218	15,300	17,200	20,500	24,000	28,000	30,000
Y/Y % Change	-8.1	-18.9	-16.0	12.4	19.2	17.1	16.7	7.1
CLASS 8 PRODUCTION								
CLASS 8 TRACTOR	16,292	13,550	10,955	12,476	13,878	17,636	20,954	22,052
Y/Y % Change	-6.3	-16.8	-19.2	13.9	11.2	27.1	18.8	5.2
CLASS 8 TRUCK	6,815	5,130	3,346	4,383	5,397	6,589	7,829	8,239
Y/Y % Change	-3.3	-24.7	-34.8	31.0	23.1	22.1	18.8	5.2
TOTAL CLASS 8	23,107	18,680	14,301	16,859	19,275	24,225	28,783	30,292
Y/Y % Change	-5.4	-19.2	-23.4	17.9	14.3	25.7	18.8	5.2

EXPORT CLASS 8 RETAIL SALES AND PRODUCTION OUTLOOK: TABLE 18

	2017	2018	2019	2020	2021	2022	2023	2024
CLASS 8 RETAIL SALES								
CLASS 8 TRACTOR	3,656	3,770	2,323	2,862	4,320	4,050	4,050	4,050
Y/Y % Change	16.0	3.1	-38.4	23.2	50.9	-6.3	0.0	0.0
CLASS 8 TRUCK	2,466	2,725	2,077	2,438	3,680	3,450	3,450	3,450
Y/Y % Change	2.3	10.5	-23.8	17.4	50.9	-6.3	0.0	0.0
TOTAL CLASS 8	6,122	6,495	4,400	5,300	8,000	7,500	7,500	7,500
Y/Y % Change	10.1	6.1	-32.3	20.5	50.9	-6.3	0.0	0.0
CLASS 8 PRODUCTION								
CLASS 8 TRACTOR	3,498	3,573	2,378	2,808	4,290	3,998	4,050	4,050
Y/Y % Change	18.7	2.1	-33.5	18.1	52.8	-6.8	1.3	0.0
CLASS 8 TRUCK	2,435	2,880	2,126	2,392	3,654	3,406	3,450	3,450
Y/Y % Change	4.5	18.3	-26.2	12.5	52.8	-6.8	1.3	0.0
TOTAL CLASS 8	5,933	6,453	4,503	5,200	7,944	7,404	7,500	7,500
Y/Y % Change	12.5	8.8	-30.2	15.5	52.8	-6.8	1.3	0.0

Note: Historical retail sales and production tie to ACT Research Company's State of the Industry Reports published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
Build Location: The geography of a built unit reflects the market for which it is destined, NOT the country in which the actual production takes place.

NORTH AMERICAN TRAILER PRODUCTION OUTLOOK: TABLE 19

		2019					2020				
	2018	Q1	Q2	Q3	Q4	2019	Q1	Q2	Q3	Q4	2020
U.S. TRAILER PRODUCTION											
Dry Vans	194,478	50,403	54,040	53,146	45,711	203,300	43,200	40,896	38,745	37,159	160,000
Y/Y % Change	6.4	10.7	6.7	5.2	-4.4	4.5	-14.3	-24.3	-27.1	-18.7	-21.3
Reefer Vans	45,930	12,641	13,458	12,925	10,976	50,000	11,075	10,560	9,639	9,526	40,800
Y/Y % Change	7.4	20.0	18.2	9.1	-9.7	8.9	-12.4	-21.5	-25.4	-13.2	-18.4
Total Vans	240,408	63,044	67,498	66,071	56,687	253,300	54,275	51,456	48,384	46,685	200,800
Y/Y % Change	6.6	12.4	8.8	6.0	-5.5	5.4	-13.9	-23.8	-26.8	-17.6	-20.7
Platforms	34,817	9,792	9,106	7,295	6,107	32,300	6,720	6,080	5,355	4,845	23,000
Y/Y % Change	47.8	21.4	-0.9	-19.1	-28.6	-7.2	-31.4	-33.2	-26.6	-20.7	-28.8
Heavy Lowbeds	4,386	1,187	1,266	1,134	913	4,500	960	1,152	1,071	917	4,100
Y/Y % Change	35.7	25.3	11.6	-2.7	-19.9	2.6	-19.1	-9.0	-5.6	0.4	-8.9
Medium Lowbeds	8,046	2,237	2,055	1,704	1,404	7,400	2,048	1,984	1,701	1,467	7,200
Y/Y % Change	29.8	17.1	-6.5	-18.1	-24.3	-8.0	-8.4	-3.5	-0.2	4.5	-2.7
Dumps	8,593	2,264	2,530	2,323	1,883	9,000	2,048	2,048	2,098	2,206	8,400
Y/Y % Change	4.9	8.6	6.0	0.1	4.5	4.7	-9.5	-19.1	-9.7	17.2	-6.7
Liquid Tanks	6,919	2,126	2,202	2,301	1,871	8,500	1,792	1,702	1,703	1,703	6,900
Y/Y % Change	23.9	19.7	28.2	37.1	7.0	22.9	-15.7	-22.7	-26.0	-9.0	-18.8
Bulk Tanks	2,048	395	389	331	235	1,350	274	306	339	381	1,300
Y/Y % Change	8.7	-13.4	-27.7	-41.3	-52.0	-34.1	-30.6	-21.3	2.4	62.1	-3.7
Total Tanks	8,967	2,521	2,591	2,632	2,106	9,850	2,066	2,008	2,042	2,084	8,200
Y/Y % Change	20.1	12.9	14.9	17.4	-5.9	9.8	-18.0	-22.5	-22.4	-1.0	-16.8
Grain/Comm.	7,846	1,858	1,938	1,814	1,690	7,300	1,600	1,728	1,512	1,460	6,300
Y/Y % Change	-1.4	-4.7	-5.8	-7.1	-10.4	-7.0	-13.9	-10.8	-16.6	-13.6	-13.7
All Other Trailers	9,894	2,392	2,631	2,379	1,698	9,100	1,854	1,856	1,890	1,600	7,200
Y/Y % Change	11.8	12.8	3.7	-7.7	-36.1	-8.0	-22.5	-29.5	-20.6	-5.8	-20.9
Total U.S. Trailers	322,957	85,295	89,615	85,352	72,488	332,750	71,571	68,312	64,053	61,264	265,200
Y/Y % Change	11.0	13.2	7.0	2.0	-9.5	3.0	-16.1	-23.8	-25.0	-15.5	-20.3
All Chassis	54,887	4,984	5,983	7,240	6,093	24,300	6,720	7,168	7,623	8,489	30,000
Y/Y % Change	41.7	-53.7	-60.1	-57.2	-50.1	-55.7	34.8	19.8	5.3	39.3	23.5
Dollies	7,950	3,269	3,076	2,580	2,075	11,000	2,048	2,176	2,016	1,760	8,000
Y/Y % Change	70.9	107.4	115.1	-2.2	-10.1	38.4	-37.4	-29.3	-21.9	-15.2	-27.3
Total U.S. Axled	385,794	93,548	98,674	95,172	80,656	368,050	80,339	77,656	73,692	71,513	303,200
Y/Y % Change	15.4	6.6	-1.5	-7.8	-14.8	-4.6	-14.1	-21.3	-22.6	-11.3	-17.6
Total Canada Trailers	23,375	6,050	5,100	5,750	5,100	22,000	4,900	4,150	4,750	4,250	18,050
Y/Y % Change	44.3	-6.9	-5.1	-6.5	-4.7	-5.9	-19.0	-18.6	-17.4	-16.7	-18.0
Total Mexico Trailers	9,750	2,350	3,000	3,750	3,150	12,250	2,250	2,900	3,600	3,000	11,750
Y/Y % Change	0.5	23.7	22.4	28.2	27.3	25.6	-4.3	-3.3	-4.0	-4.8	-4.1
Total N.A.	418,919	101,948	106,774	104,672	88,906	402,300	87,489	84,706	82,042	78,763	333,000
Y/Y % Change	16.3	6.1	-1.2	-6.8	-13.2	-4.0	-14.2	-20.7	-21.6	-11.4	-17.2

Y/Y % Change are current quarter vs. same quarter one year ago.
All Other Trailers includes pole & logging, livestock, refuse/transfer, 10-40 ton lowbed, and other miscellaneous trailer types.

NORTH AMERICAN TRAILER PRODUCTION OUTLOOK: TABLE 20

	2017	2018	2019	2020	2021	2022	2023	2024
U.S. TRAILER PRODUCTION								
Dry Vans	182,749	194,478	203,300	160,000	155,000	161,000	167,000	175,000
Y/Y % Change	1.0	6.4	4.5	-21.3	-3.1	3.9	3.7	4.8
Reefer Vans	42,760	45,930	50,000	40,800	39,000	40,500	41,000	42,000
Y/Y % Change	-8.4	7.4	8.9	-18.4	-4.4	3.8	1.2	2.4
Total Vans	225,509	240,408	253,300	200,800	194,000	201,500	208,000	217,000
Y/Y % Change	-1.0	6.6	5.4	-20.7	-3.4	3.9	3.2	4.3
Platforms	23,556	34,817	32,300	23,000	23,000	23,000	23,500	24,000
Y/Y % Change	17.7	47.8	-7.2	-28.8	0.0	0.0	2.2	2.1
Heavy Lowbeds	3,232	4,386	4,500	4,100	4,100	3,900	3,800	3,700
Y/Y % Change	4.8	35.7	2.6	-8.9	0.0	-4.9	-2.6	-2.6
Medium Lowbeds	6,200	8,046	7,400	7,200	7,600	7,500	7,700	7,500
Y/Y % Change	12.5	29.8	-8.0	-2.7	5.6	-1.3	2.7	-2.6
Dumps	8,192	8,593	9,000	8,400	9,000	8,000	8,000	7,500
Y/Y % Change	-4.0	4.9	4.7	-6.7	7.1	-11.1	0.0	-6.3
Liquid Tanks	5,585	6,919	8,500	6,900	7,100	7,200	7,400	7,200
Y/Y % Change	5.8	23.9	22.9	-18.8	2.9	1.4	2.8	-2.7
Bulk Tanks	1,884	2,048	1,350	1,300	2,100	2,000	1,900	1,800
Y/Y % Change	84.9	8.7	-34.1	-3.7	61.5	-4.8	-5.0	-5.3
Total Tanks	7,469	8,967	9,850	8,200	9,200	9,200	9,300	9,000
Y/Y % Change	18.6	20.1	9.8	-16.8	12.2	0.0	1.1	-3.2
Grain/Comm.	7,956	7,846	7,300	6,300	7,200	7,300	7,600	7,500
Y/Y % Change	9.8	-1.4	-7.0	-13.7	14.3	1.4	4.1	-1.3
All Other Trailers	8,853	9,894	9,100	7,200	7,000	7,100	7,400	7,400
Y/Y % Change	-3.0	11.8	-8.0	-20.9	-2.8	1.4	4.2	0.0
Total U.S. Trailers	290,967	322,957	332,750	265,200	261,100	267,500	275,300	283,600
Y/Y % Change	1.2	11.0	3.0	-20.3	-1.5	2.5	2.9	3.0
All Chassis	38,731	54,887	24,300	30,000	36,500	31,600	28,700	32,200
Y/Y % Change	14.7	41.7	-55.7	23.5	21.7	-13.4	-9.2	12.2
Dollies	4,652	7,950	11,000	8,000	7,500	8,500	9,000	8,900
Y/Y % Change	-53.5	70.9	38.4	-27.3	-6.3	13.3	5.9	-1.1
Total U.S. Axled	334,350	385,794	368,050	303,200	305,100	307,600	313,000	324,700
Y/Y % Change	0.9	15.4	-4.6	-17.6	0.6	0.8	1.8	3.7
Total Canada Trailers	16,200	23,375	22,000	18,050	17,750	18,750	19,500	15,500
Y/Y % Change	5.9	44.3	-5.9	-18.0	-1.7	5.6	4.0	-20.5
Total Mexico Trailers	9,700	9,750	12,250	11,750	10,200	11,500	12,000	12,500
Y/Y % Change	-1.0	0.5	25.6	-4.1	-13.2	12.7	4.3	4.2
Total N.A.	360,250	418,919	402,300	333,000	333,050	337,850	344,500	352,700
Y/Y % Change	1.1	16.3	-4.0	-17.2	0.0	1.4	2.0	2.4

Note: U.S. Trailer Production ties to ACT Research Company's U.S. Trailers Report published monthly.
Y/Y % Change are current quarter vs. same quarter one year ago.
All Other Trailers includes pole & logging, livestock, refuse/transfer, 10-40 ton lowbed, and other miscellaneous trailer types.

NORTH AMERICAN CLASS 4 PRODUCTION OUTLOOK: TABLE 21

	2018	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2019	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2020
CLASS 4 PRODUCTION											
. **US**	13,280	2,958	4,273	3,530	3,889	14,650	3,228	4,312	3,553	3,908	15,000
Y/Y % Change	10.5	-1.8	7.7	11.9	23.6	10.3	9.1	0.9	0.6	0.5	2.4
. **CANADA**	2,003	466	622	472	490	2,050	452	604	497	547	2,100
Y/Y % Change	2.7	10.7	12.7	-6.7	-6.5	2.3	-3.0	-3.0	5.4	11.6	2.4
. **MEXICO**	1,897	547	460	377	466	1,850	409	546	450	495	1,900
Y/Y % Change	-4.2	30.2	-3.4	-22.3	-9.7	-2.5	-25.3	18.7	19.4	6.2	2.7
. **EXPORT**	667	128	121	133	118	500	108	144	118	130	500
Y/Y % Change	94.5	-49.6	-22.4	4.7	-9.2	-25.0	-15.9	18.8	-10.9	10.4	0.0
TOTAL CLASS 4	17,847	4,099	5,476	4,512	4,963	19,050	4,196	5,605	4,619	5,080	19,500
Y/Y % Change	9.5	-0.2	6.3	5.6	15.0	6.7	2.4	2.4	2.4	2.4	2.4

NORTH AMERICAN CLASS 4 PRODUCTION OUTLOOK: TABLE 22

	2017	2018	2019	2020	2021	2022	2023	2024
CLASS 4 PRODUCTION								
. **US**	12,022	13,280	14,650	15,000	13,750	13,750	15,250	14,000
Y/Y % Change	9.7	10.5	10.3	2.4	-8.3	0.0	10.9	-8.2
. **CANADA**	1,950	2,003	2,050	2,100	2,000	2,050	2,100	1,900
Y/Y % Change	32.8	2.7	2.3	2.4	-4.8	2.5	2.4	-9.5
. **MEXICO**	1,981	1,897	1,850	1,900	2,000	2,000	2,000	2,000
Y/Y % Change	639.2	-4.2	-2.5	2.7	5.3	0.0	0.0	0.0
. **EXPORT**	343	667	500	500	550	550	700	700
Y/Y % Change	15.9	94.5	-25.0	0.0	10.0	0.0	27.3	0.0
TOTAL CLASS 4	16,296	17,847	19,050	19,500	18,300	18,350	20,050	18,600
Y/Y % Change	25.4	9.5	6.7	2.4	-6.2	0.3	9.3	-7.2

APPENDIX C - REGULATORY PIPELINE

Regulation	Agency	Intro	Status	Impact	Milestones	Next Steps	Proposed Implementation
U. S. Federal - General							
Repeal FET on HD Trucks and Trailers	IRS	Reintroduced as H.R. 2381 4/30/2019	Referred to House Ways and Means Comm	Repeal 12% FET on HD trucks, tractors and trailers	Intro to 2019/20 Congress by LaMalfa (R-CA) and Peterson (D-MN) Termed "Modern, Clean, and Safe Truck Act of 2019" Significant fleet/dealer/association support action in June	Committee discussion and approval	TBD
Fuel Tax Hike to fund Infrastructure Spending	IRS	Apr-19	Proposal by Rep Collins (R-NY)	Double Fed 18.4 cents/gal gasoline tax			
Reauthorize FAST Act Highway Law	Senate Committee	7/30/2019	Current Act expires Fall 2020		Environment and Public Works Comm approved measure by 21-0 bipartisan vote	Approval by other Committees and full House	Targeted before current act expires
U. S. Federal - Emissions							
GHG-2	EPA &NHTSA	Jun-15	Final rule published EPA seeking repeal of glider kit rules Courts put trailer rules into abeyance.	~~CY2018 Trailers~~ **CY2018 Glider Kits** MY2021 Tractors Implementation through 2027	TTMA filed suit with US DC District Court of Appeals 12/2/16 EPA Requests OMB to repeal glider kit GHG-2 regs 10/20/17 Court implements stay on trailers 10/27/17 California says it will implement GHG-2 unilaterally EPA indicated no glider kit enforcement Court rules glider kit rules must be implemented	TTMA files 8/6 to get schedule from EPA, EPA responds 8/16; will meet with TTMA EPA/TTMA met on 9/21/18 to rvw process TTMA seeking similar NHTSA meeting TTMA withdraws their 8/6 motion 9/24 11/5/19 update - analysis continues **Next trailer update early Feb'20**	CY2018 trailers stayed by US Appeals Court indefinitely; repeal strong possibility glider kit regs to be repealed MY2021 tractors still as scheduled
Ultra-Low NOX Standards for On-Road HD Trucks & Engines	South Coast Air Quality Mgmt District (SCAQMD) and others	Jun-16	Petition to US EPA	Request EPA to revise current standards of 0.2 grams brake horsepower-hour (g/bhp-hr) to 0.02 g/bhp-hr	Petition sent to EPA 6/16	April 6th Training requirement; digital training course not yet posted by FDA	
Mid-term Evaluation of GHG Emissions for MY 2022-25 Light Duty Veh.	EPA	Apr-18	Being examined	Revise 2025 auto fuel efficiency standards	Published in Federal Register. EPA proposes holding to 2020 levels	CARB and other states have filed case to prevent overturn of 2025 targets. See info here	TBD
Clean Air Act waiver process for California	EPA	Apr-18	Administration proposal	Administration seeks to revoke waiver ability for California in Clean Air Act	Bush Admin (2007) formally denied waiver renewal Obama Admin reinstated waiver	Any attempt by Trump Admin would likely result in multi-year legal fight	TBD
Cleaner Trucks Initiative (CTI)	EPA	Nov-18	Proposal	NOX reduction goals impact HD engines	Future rulemaking announced 11/13/2018 Separate from GHG-2 greenhouse gas effort	Publication in 2020	TBD
U. S. Federal - Safety							
ELD (Electronic Logging Devices)	FMCSA	Dec-15	Final implementation still scheduled for 12/16/19	Requires nearly universal ELD usage Indication of very slow adoption by small & medium fleets Reduction of 2% to 3% of transport "capacity"	Dec-15 Final Rule Published Dec-15 OOIDA files suit Jun-16 FMCSA files response Jun-16 ATA files brief supporting FMCSA 7th Circuit Court of Appeals denies OOIDA suite OOIDA petitions Supreme Court / Supreme Court refuses to hear case Sep-17 OOIDA creates coalition to delay ELDs 2 years	**FMCSA will re-hear request from Small Business in Transportation Coalition previously denied in Jul'19 to exempt fleets with <50 employees** **Public notice period open until 11/29/19.**	**Fleets operating AOBDRs have until 12/16/19 to switch to ELDs** **FMCSA indicates that NO EXTENSIONS will be granted, but now considering exemption for fleets under 50 employees**
Rented Vehicles ELD Exemption	FMCSA	03/22/17	TRALA petition to exempt vehicles rented for 30 days or less for 5 year exemption requested.	Address unintended technical and operational consequences impacting short-term rental vehicles	11/22/2016 - TRALA files petition with FMCSA 3/22/2017 - FMCSA opens 30 day comment period **8 day rental vehicle exemption granted Oct'17 good through 10/11/22**	4/22/2017 Comment period closed	With ELD implementation (12/18/17)
Stop Underrides Act	NHTSA	Mar-19	Re-submitted to House and Senate Feb 2019 Originally submitted in 2017	Guards on front and sides of trucks Update rear trailer guard standards May require trailer side guards Retrofit requirement uncertain	Both ATA and OOIDA opposed effort in 2017	Forwarded to appropriate committees in House and Senate	

APPENDIX C - REGULATORY PIPELINE

Regulation	Agency	Intro	Status	Impact	Milestones	Next Steps	Proposed Implementation
U.S. Federal - Safety, Continued							
Positive Train Control Requirements	Subcomm on Railroads, Pipelines, and Haz. Materials	02/14/18	Status update from stakeholders	Implementations of PTC continues well behind schedule		Congressional reaction to several rail accidents, both passenger and freight	Originally 2015 Extended to 12/31/2018 **Four railroads did meet yr-end 2018 requirement**
Heavy Vehicle Speed Limiters	NHTSA & FMCSA	2014	NPRM 09/07/2016 ATA & OOIDA requested extension ATA rqst granted	Safety & efficiency Widespread fleet and gov't support Small to med fleets will be most impacted	Original publication target 3/24/2014 Has ATA approval 5/16/2016 Sent to OMB for evaluation; Cleared 8/16 NPRM 09/07/2016	Comment period extended to 12/7/2016 **On DOT/FMCSA list of Significant Rulemakings for future action**	Proposal tabled **Definitely "back burner" for current Administration**
Entry Level Driver Training	FMCSA	2016	Effective 5/6/2019	Proposed mandatory behind-the-wheel and driving range training			Compliance 2/7/2020
V2V Communications	NHTSA	Aug-14	Work Continues Asking for V2X (vehicle to everything) commentary	Deployment of connected vehicle tech across U.S. LV fleet. Safety & crash avoidance	ANPRM published 8/2014 Reportedly no CV industry input into process yet	Asked for V2X commentary 12/2018	In Development
Distracted Driver Guidelines Phase II	NHTSA	11/23/16	Voluntary guidelines	Encourage development of devices to reduce potential for driver distraction	Accepted comments at Regulations.gov	Comment period closed 2/3/2017	TBD
Small Carrier Electronic Logging Device Exemption Act	USDOT	05/01/18	Bill filed in U.S. House	Fleets w/10 or fewer trucks exempted from ELD regs	Peterson (D-MN) and Ganforte (R-MT) provide bi-partisan support	Likely to go to committee. No indication of similar Senate action yet.	TBD
Revise HOS rules	FMCSA	5/17/18 8/21/18 3/29/19	Request from Senate group	Seeking more flexibility in HOS implementation	ANPRM 8/21/18 NPRM to OMB (per Sec'y Cho at MATS 3/29/19) **NPRM published 8/22/19** **Public comment period reopened**	**Over 6,200 comments filed through 9/3/19** **Review of comments after 45 day comment period** **CVSA asked for 45 day extension** **ATA asked for 30 day extension** **Public Comment closed on 10/21/19**	TBD
Stoneridge Camera System 5 Yr Exemption	FMCSA	12/01/18	Waiver granted	Allow camera-monitoring system instead of currently mandated rear-view mirrors		Expect other exemption requests to be granted	Exemption granted for 5 years
Exemption for warning flags on stinger Auto Transporters	FMCSA	Feb-19	Five year exemption granted	Automobile Carriers Conference requested exemption in July 2017			Exemption to run until 2/15/2024
33 Foot Pup Trailers	DOT (eventually)	Feb-19	Americans for Modern Transportation requests action by House Comm on Transportation & Infrastructure	Increase length of Pup trailers from 28 to 33 feet (18% volume gain)	Latest attempt for this capacity increase	House Committee action	TBD
Brake light variance for Groendyke Transport	FMCSA	Rqst Jul'18	Granted 4/26/19	5 yr waiver expires 4/26/24	Flashing amber lights high on trailer added to existing rear brake steady brake lights. Tested on >700 trailers. 34% reduction of rear end collisions vs other half of fleet.	Install on other half of Groendyke fleet. Could become future standard on all trailers due to positive results.	In place
Safe Testing and Deployment of ADS CMVs	FMCSA	May-19	ANPRM published	Seeking input on barriers to safe testing and deployment of ADS CMVs on public roads	View Docket Here	Public comment window originally through 7/29/19 **FMCSA extend window to 8/28/19** **Website still accepting comments 9/3/19**	TBD

APPENDIX C - REGULATORY PIPELINE

Regulation	Agency	Intro	Status	Impact	Milestones	Next Steps	Proposed Implementation
U.S. Federal - Safety, Continued							
Remove Regulatory Barriers for Vehicles with ADS	NHTSA	May-19	ANPRM published	Seeking input on how to test and verify compliance of ADS with existing regulations	View Docket Here	Public comment window originally through 7/29/19 **FMCSA extend window to 8/28/19** **Website still accepting comments 10/5/19**	TBD
Amend Visual Inspection Rules on NG Fuel Container Integrity	NHTSA	06/21/19	NPRM published	Change rules from mileage based schedule to time based schedule	View NPRM here	Public comment window through 8/20/19 **Website still accepting comments 9/3/19**	TBD
Locomotive Voice and Video Recording	FRA	07/24/19	NPRM published	Similar to airplane "black box" devices	Comment period open until 9/23/19	Review of comments and preparation of rule publication	TBD
U. S. Federal - Miscellaneous							
Interstate Transportation of Hemp	USDA	10/31/19	Rule implemented	Pre-empts state laws with regards to transportation of hemp	Interim rule implemented 10/31/2019 Accepting public comment through 12/30/19	Allows licensed growers (state or USDA) to grow hemp and participate in interstate commerce. Hemp must be certified to be THC-free	Rule effective 10/31/2019 through 11/1/2021
U. S. Federal - Drivers							
CDL Drug and Alcohol Clearinghouse	FMCSA	02/12/14	Final Rule published 12/2/2016	Reporting of drug or alcohol abuse to CDL centralized database Requires carriers to query database in hiring decisions	Required by MAP-21	Implementation per schedule	**1/6/2020 Implementation**
Hair Follicle Drug Testing	HHS & DOT	Dec-15	Included in FAST Act - deadlines Now in legislation to combat opioid crisis	Allow hair follicle testing as DOT approved method for drug testing	Included in FAST Act HHS must develop testing guidelines w/I 10 months - deadline missed Law signed 10/20/18 includes hair testing for drivers	Substance Abuse and Mental Health Services Administration to report progress on guidelines to Congress Sec'y of HHS to report progress w/i 60 days	TBD
Entry Level Driver Training	FMCSA	Jun-15	Passed OMB review 11/15/2016	Set training standards for new CV drivers CDL schools and carriers with in-house training programs must self-certify as meeting requirements	Negotiated rulemaking with ATA, OOIDA, etc. Proposed rule published March 2016 Final rule effective date 3/21/2017	Originally due to go into effect 2/6/17. Rule now in effect with 3 year window for compliance Training Provider Registry (TRP) must still be deployed.	Compliance date 2/7/2020
Qualification of Drivers - Diabetes Standard	FMCSA	Original 2015	Comment period now open on NPRM	Allow CDL drivers with controlled diabetes to operate interstate without obtaining individual exemption	Original NPRM closed 7/6/2015 FMCSA asked Medical Review Board for review That review is now available	Public comment through 11/8/2016	TBD
V.A. Physicians to Certify Veteran Truck Drivers	FMCSA	12/1/2016	NPRM published in Federal Register; Accepting public comment	Simplify veteran driver certification	ANPRM not required; Docket No. FMCSA-2016-0333 published 12/01/2016	Public comment through 01/03/2017 Signed into law; waiting DOT formal NPRM process	TBD
DRIVE-Safe Act	U.S. House and Senate	Original 3/18/2018 Reintroduced 2/25/19	To be assigned to appropriate committees	Allow 18-21 yr-old truck drivers to operate in interstate commerce All 48 contiguous states currently allow 18 yr-olds to obtain CDL ATA supports, OOIDA opposes	"Developing Responsible Individuals for a Vibrant Economy" Reintroduced into new session of Congress Bi-partisan sponsorship in both House and Senate	Stuck in subcommittee	
Change Entry Level Driver Training Rule	FMCSA	Jun-18	NPRM published 6/29/2018	Ease requirements for CDL license Class B to Class A upgrade		Accepting public commentary	TBD
Under 21 Military CDL Pilot Program	FMCSA	Jul-18	Federal Register posting 7/6/2018	Study performance of drivers under 21 with military experience	60 day public comment period closed 9/4/18	Reviewing public commentary	TBD
Federal HOS regs pre-emp California Meal/Rest Break regs	FMCSA	12/20/2018	Petition granted	30 minute meal breaks no longer required in California			In effect
O-Os no longer bound to arbitration in disputes	U.S. Supreme Court	1/15/2019	Court ruling 8-0	Arbitration no longer required for Interstate Owner-Operators disputes on working conditions and compensation		Case between O-O and New Prime Inc. returned to lower court for hearing.	

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Regulation	Agency	Intro	Status	Impact	Milestones	Next Steps	Proposed Implementation
U. S. Federal - Drivers, Continued							
Third Party Commercial Driver Testers	FMCSA	6/27/2019	NPRM	Allow CDL trainer to administer skills testing to applicants they trained. Will streamline CDL testing procedures	View Docket Here		
Sleeper Berth Time need not be compensated	Dept. of Labor	7/22/2019	Ruling/clarification	Wage and Hours Law does not require compensation unless driver is actually performing work or "on call"	Clears confusion from recent court cases Consistency with general industry understanding	"Guidance" does not have rule of law, but will be influential in any current court cases. Will also support any future rulings.	Immediate
U.S. State							
CA State Labor Code - Additional meal & rest	State of California			Higher fleet operating costs	Implemented Some fleets imposing surcharges		
TX Mandates Intrastate ELD usage	State of Texas	Apr-17		First state to rule on ELDs; other states to possibly follow		Other states will follow based upon MCSAP funding	12/19/2019
NV Self-Driving Legislation	State of Nevada	Jun-17	Assembly Bill 69 passed and signed	State R&D policy for autonomous vehicle	Bill passed and signed into law		
Pilot projects announced for Florida Turnpike	State of Florida	Jul-17	Announced, scheduled, and under construction	Seeking a leading role in connected vehicle and autonomous operations	Test track for V2I, V2V comm. under construction DATP(Driver Assisted Truck Platooning) test scheduled	DATP testing to begin in Sep'17	SunTrax to open 2019 Targeting full-time platooning in operation by Jul'18
California GHG-2 for Trailers & Gliders	California	2017	CARB sets 2020 implementation for state	Unilateral implementation. May expand applicability to out-of-state fleets operating in CA	Will state need EPA Clean Air Act waiver?	EPA's current "revisiting" of rules pushed CARB actions.	MY2020
California Phase 2 Unilateral GHG Trailer Certification	California	2017	Effective on 1/1/20 for MY2020 trailers	Trailers sold in CA must meet requirements OEMs will need to certify and receive Exec Order to sell in CA (Note: this is sell in CA, not "use" in CA like TRU regs)	2/7/19 Phase 2 GHG rulemaking approved 3/25/19 CARB workshop 4/1/19 Certification Applications may be submitted 1/1/20 Program starts 3/31/21 2020MY reports due from OEMs Second Webinar in July to address industry questions	OEMs must certify trailers meet new regs. Significant certification efforts and warranty requirements for OEMs	1/1/2020
Ports of Long Beach and LA approve Clean Air Stds	CARB	Jul-18	Implementation 10/1/2018	Any new trucks added to Ports Drayage Truck Registry (PDTR) must be MY 2014 or newer	Trucks currently enrolled in PDTR not impacted		10/1/2018
Illinois recommends Truck Platooning be allowed	Competitive Enterprise Institute	7/20/2018		Driver must still be in truck		State action needed to implement recommendation	
Innovative Clean Transit 2018	State of California	8/7/2018	Proposal published; Public review on 9/28/18	Convert transit bus fleet to ZEB (zero emission buses) by 2040	Sets ZEB purchase mandates for replacement buses starting in 2023; 100% replacements ZEB starting 2029 100% of bus fleet to be zero-emission by 2040	Public hearing 9/27/2018 Next board mtg 1/24/2019	Proposed to start 1/1/2023
Clean Trucks, Clean Air (SB210)	California	9/20/2019	"Heavy-Duty Vehicle Inspection Program" (HDVIP) Signed into law	All out-of-state Class 4 - 8 non gasoline vehicles must be smog compliance checked to operate in state	Two year "pilot" program underway to develop program "specifics"	Pilot Program Potential Fed EPA involvement	Full implementation in 2021/22
New TRU Regulation Draft	California ARB	4/2016 but workshops in Aug/Sep'19	Under Development	Reduce impact of areas where TRUs and TRU gen sets congregate	Public Workshops occurred in late Aug and Sept 2019	TRU registration fees to cover program cost	TRU registration to start in 2022

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Regulation	Agency	Intro	Status	Impact	Milestones	Next Steps	Proposed Implementation
Canada							
ELD Mandate	Transport Canada	Dec-17	Final rule published 6/12/19 Awaiting implementation	Require 3rd party cert of ELDs No AOBRD grandfathering Cross-border fleets: ELDs must identify country of operations. apply correct HOS rules Generally align with US fed standards	Gazette 2 publication on 6/12/19 Public comments now allowed, but rule will likely remain as published	Public comment allowed US based fleets will need ELDs to be updated to Canadian regs 3rd party verification program needs to created Canadian fleets will need to install verified ELDs	6/12/2021
Locomotive Voice and Video Recording	TSB (Transportation Safety Board)	TBD	Recommendation in train safety report Legislation needed	Report also recommends recording in all modes of transportation	Initial recommendation Jan'14 New report to be reviewed by TSB Chair	TSB Chair to make further recommendations	TBD
Expanded Automated Vehicle Pilot Project	Ontario Ministry of Transportation	Jan-19	Underway	"Platoon Pilot" pgm to demonstrate potential of CV platooning	Up to 3 vehicles; SAE level 1 or 2 tech; driver required in each vehicle; designated highways only	Limited participation; fleets must be approved by Ministry	Currently underway
Mexico Federal							
Revise NOM-044 HD Emissions Standards	SEMARNAT	Jan-14	Under development	HD vehicles would need to meet EPA 2010 or Euro VI standards Impact through MY2037	12/2014 Mexico SEMARNAT approved update	Still determining the level of standards to be implemented.	Expect Euro V 7-18& Euro VI 2020
Adequate supply of ULSD fuel	PEMEX	In time to support NOM-044 revision	In process	Needed to allow NOM-044 update to be implemented	Feb'14 PEMEX commits to investment at all refineries	Continued investment by PEMEX ULSD availability still minimal **500ppm sulphur diesel sales banned as of 1/1/19 (currently 24% of consumption)** **PEMEX expects further delay in proposed implementation**	Well behind schedule **Domestic ULSD only at 3 of 6 domestic refineries; 9% of domestic demand** **Additional ULSD imports needed**
New Railroad Agency Created	Agencia Reguladora del Transporte Ferroviano	Aug-16		Promote, regulate, and monitor the railroad industry	New agency created	Full impact uncertain until agency has operational experience	Agency opened on 8/18/2016
Others of Interest							
Euro Engine Standard Implementation	SEMARNAT	2017 (Proposed)	Likely to be introduced in 2017	Sets timing for intro of various engine/exhaust technologies	Proposed: 12/31/2018 Vehicles w/EuroIV engines no longer built 1/1/2019 Either EuroV or EuroVI required 1/2/2021 Only Euro VI engines		
Exchange of biographical info at U.S./Canada land crossings	Federal - U.S. and Canada		Part of implementation of 2011 cross border agreement	Increase visibility on border crossing Concern U.S. IRS could use info to prove "substantial presence" and charge U.S. income tax on cross-border Canadian drivers	2011 Agreement signed between Canada and U.S.	6/2016 Canadian Trucking Alliance asks Canadian gov't for clarification; 120 days U.S. "presence" could trigger U.S. Federal tax, 180 days could trigger "illegal presence"	Under discussion
Highlight designates recently updated information							
Steps in the Federal Rule Making Process			Go here for a detailed review of the process				

ANPRM	Advanced Notice of Proposed Rule Making	Seeking input for development of rules	
SNPRM	Supplemental Notice of Proposed Rule Making	Seeking addition input. Can happen before or after NPRM	
NPRM	Notice of Proposed Rule Making	Proposal published in Federal Register, opens commentary period	
IFR	Interim Final Rule	Infrequently used step before final rule publication	
Final Rule		Starts the implementation clock; can be a 2 year horizon	
ADS	Automated Driving Systems	MCSAP	Motor Carrier Safety Assistance Program
CMVs	Commercial Motor Vehicles	NHTSA	Nat'l Highway Traffic Safety Administration
DOT	Dept. of Transportation	PEMEX	Petroleos Mexicano
EPA	Environmental Protection Agency	SCAQMD	South Coast Air Quality Management District
FRA	Federal Rail Administration	SEMARNAT	Mexico's Secretariat of Environment and Natural Resources
HHS	Health & Human Services	TSB	Transportation Safety Board Canada
IIHS	Insurance Institute for Highway Safety	ULSD	Ultra Low Sulfur Diesel fuel
LVVR	Locomotive Voice and Video Recording	USDA	United States Department of Agriculture

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