

Safety and Environmental Performance Data for Industry Benchmarking – Calendar Year 2021 Charts

Office of Offshore Regulatory Programs

Offshore Safety Improvement Branch

OCS Performance Measures Program

December 19, 2022

BSEE Mission:

*“To promote safety, protect the environment and
conserve resources offshore through vigorous
regulatory oversight and enforcement.”*



About the Data in This Presentation

- The graphs in this presentation illustrate trends in data collected for the calendar years 2010 through 2021
- Primary data source: BSEE-0131 form, required to be submitted annually to BSEE by Oil & Gas (O&G) operators with Outer Continental Shelf (OCS) activities during the prior year (30 CFR 250.1929)
- Self-reported data collected on the BSEE-0131 form includes:
 - Company and contact information
 - Illnesses and injuries: DART (Days Away, Restricted, Transfer) and non-DART recordables, company vs contractor, production vs drilling vs construction, by quarter
 - Hours worked: company vs contractor, production vs drilling vs construction, by quarter
 - Number of EPA NPDES (Environmental Protection Agency, National Pollutant Discharge Elimination System) non-compliances
 - Number and volume of oil spills less than one barrel each
- Other data used in this analysis and presentation are from the BSEE Technical Information Management System (TIMS) and National Consolidated Information System (NCIS) databases:
 - Oil spills in two additional categories: 1) between 1 and 50 barrels each, and 2) over 50 barrels each (per 30 CFR 254.46, spills greater than 50 barrels volume have additional reporting requirements)
 - O&G production
 - Platform count
 - Number of rigs and number of non-rig activities involved in drilling and related well operations
 - Wells spud
 - Losses of well control
 - Fires
 - Fatalities
 - Incidents of non-compliance (INCs)
 - Inspection metrics: numbers of inspectors, inspection visits, types of inspections performed, components inspected
- Industry may use this data to compare their individual performance to the averages for all OCS O&G work.



Overview of Calendar Year (CY) 2021 Data Set

- The graphs in this presentation illustrate trends in data collected for the calendar years 2010 through 2021. Data extracted from the TIMS database are valid as of the date of extraction. Because TIMS and NCIS data is updated whenever new information becomes available, the 2021 data presented here should be considered reasonable estimates. Data for the years 2010 – 2021 similarly reflect what was available in the database when they were extracted from TIMS.
- Data from calendar year 2010 forward may be considered more complete than pre-2010 data, as 2010 was the first year that BSEE-0131 form submission was required (30 CFR 250.1929). Prior to CY 2010, submission of the requested data was on a voluntary basis. Thus, these charts use 2010 as the base year for comparison and depiction of post-2010 trends.
- 39 operating companies* recorded production in 2021. An additional 6 operating companies recorded work hours related to facility closures and / or well operations. Therefore, a total of 45 companies of the 46 companies were totaling 98% participation rate goal required to submit the BSEE-0131 form by March 31, 2021. BSEE received 45 of the 46 forms-delete,.
- The downward trend in number of companies active in Oil and Gas operations on the Outer Continental Shelf (OCS) continued in 2021 after a brief leveling off period in 2020. There were 45 companies active on the OCS in 2021 compared to 58 companies active on the OCS in 2018.
- The number of loss of well control (LOWC) incidents increased to 4 in 2021 from 1 in 2020. This is the largest count of LOWC since 2014. In combination with the number of workhours decreasing, the result is a large increase in the LOWC incident *rate* for 2021.

* An operating company and all its subsidiaries are counted as 1 company in this analysis

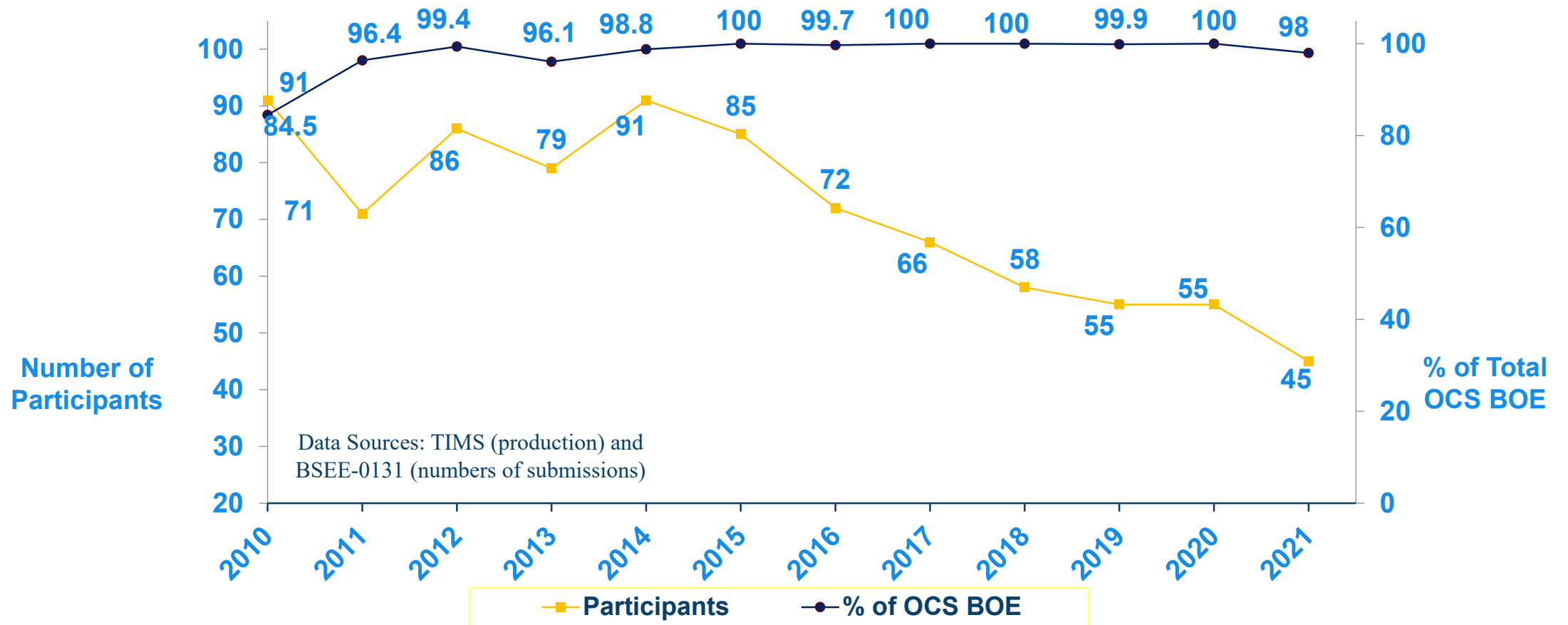


Highlights of 2021 Data

- The COVID-19 impact noted in 2020 continued into 2021. The reductions in work-hours and lower production levels resulted from a reduced demand for oil and gas started to turn around in 2021. With work-hours starting to increasing again in 2021, an increased number of reportable illnesses were reported. This resulted in raising injury/illness rates.
 - **Total Production** in terms of Barrels of Oil Equivalent (BOE) decreased by 2.5% compared to 2020 (slide 7).
 - **Total work hours** increased by 17% compared to 2020 (slide 8).
 - **Contractor work hours** increased by 20%, but **operator-employee work hours** increased by only 9% during the year (slide 9).
 - **BOE produced per production work-hour** in 2021 decreased to approximately 2018/2019 levels (slide 10).
 - **Safety statistics**
 - The **Total Recordable Injury/Illness Rate** (TRIR) for all O&G activities on the OCS increased by 29% during 2021, largely because of COVID-19 work-related DART illnesses that were reported to BSEE. However, if the COVID-19 illnesses are excluded, the TRIR for the (combined activities) for all O&G activities on the OCS would have decreased by 17%. This represents a rate very near historical low levels (Slides 6 and 13).
 - Most COVID-19 illnesses were reported for Production operations representing the **largest impact** on Production TRIR (Slides 6, 14, 15).
 - In Drilling and Well Operations, the TRIR and DART rate decreased compared to 2020. However, if COVID-19 illnesses are excluded from the injury/illness rate calculations, there would have been an increase in **Total Injury/Illness rates** of 13% and an increase in * **DART Injury/Illness rates** of 11%. These results would have been in the pre-COVID historical ranges (Slides 6, 14, 16).
 - The rate of **occupational fatalities**, those where BSEE has primary investigation authority, decreased in 2021. This metric has remained above the national average of approximately 0.9 fatalities per 25,000 full time equivalent workers per year for the past 3 years (slide 12).
 - **Other Incident statistics**
 - Two large oil spills of 588 BBL and 452 BBL contributed to a rise in volume of oil spilled as a percent of production volumes compared to 2020 (slides 25 and 26).
 - INC issuance in well operations increased by 9%, while the number of well inspections decreased by 31% resulting in a 33% incline in INC to inspection ratios in 2021. INC issuance for production operations increased by 81%, leading to increases in both INC to component and INC per inspection ratios in 2021 (Slides 27 – 30).
- * DART acronym for Days Away, Restricted, or Transferred



OCS Performance Data Survey Participation*

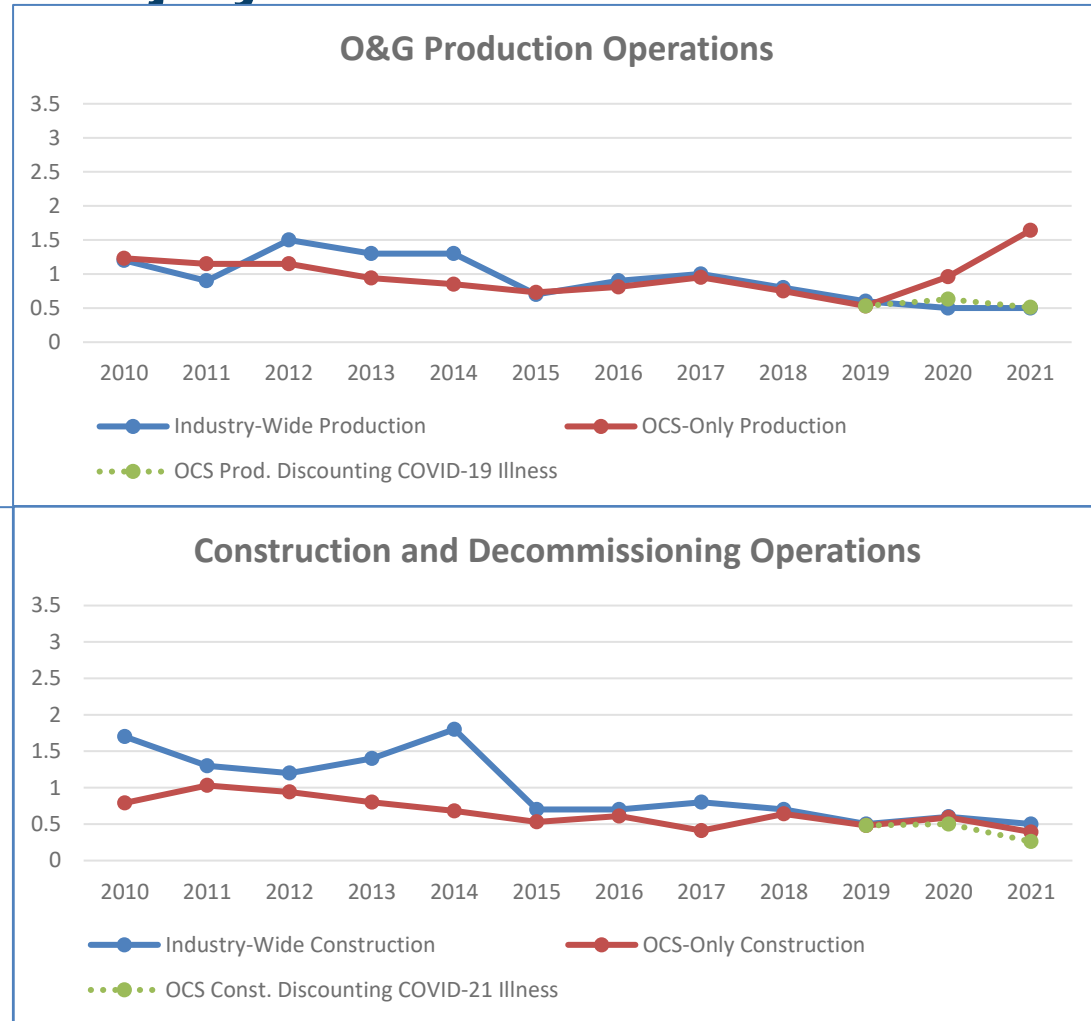


In CY 2020, there was a decrease of 10 companies recorded work hours involving facility closures and / or well operations. A total of 45 companies were required to submit the BSEE-0131 form by March 31, 2021.

*2010 was the first year that OCS Performance Measure Data were required by BSEE regulation (30 CFR 250.1929).

OCS vs Industry-Wide Injury/Illness Rates

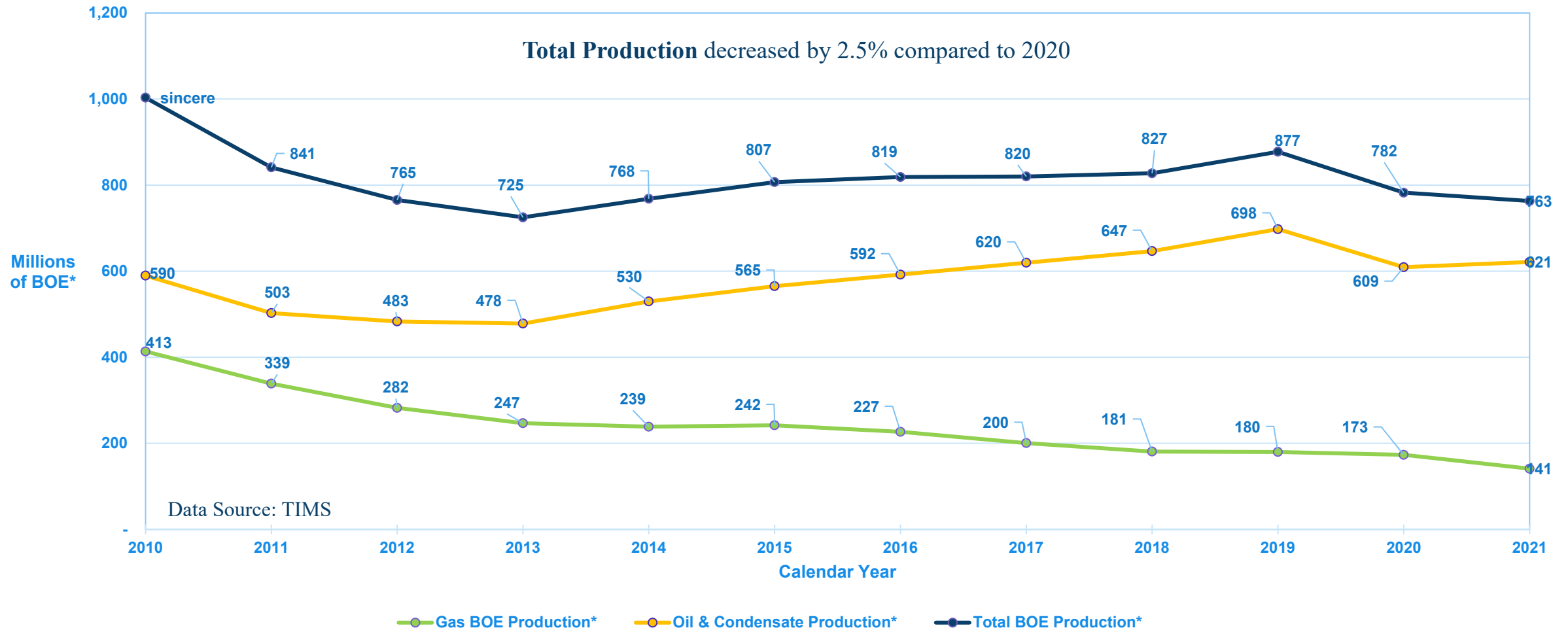
- The total injury/illness rates* for all oil and gas (O&G) categories (production, drilling and construction) **on the OCS** have historically been lower than the rates for the **United States O&G industry overall**.
- COVID-19 illnesses contributed to a 2020 & 2021 uptick, mostly in production operations on the OCS.
- The total injury/illness rates* for all oil and gas (O&G) categories (production, drilling and construction) **on the OCS** remain lower than the rates for the **United States O&G industry overall** once COVID cases have been accounted for.



* The industry-wide illness/injury rates are from the Bureau of Labor Statistics table: "TABLE 1. Incidence rates of nonfatal occupational injuries and illnesses by industry and case types, (various years)". Industry-wide equivalents: O&G Production - NAICS Code 211; Drilling and Well Operations - NAICS code 213111; Construction and Decommissioning - NAICS code 23712.. These rates use the same formula that BSEE uses, which is $[DART + \text{non-DART recordables}] / [\text{total number of work hours}] * 200,000$. Each set combines both DART and non-DART recordables (DART = Days Away from work, job Restricted, and job Transfer).

* (Sources of data: BSEE-0131 for OCS Total Recordables; Bureau of Labor Statistics (BLS) tables for Industry-Wide Total Recordables. BLS is expected to release industry-wide 2021 data in Nov. 2022)

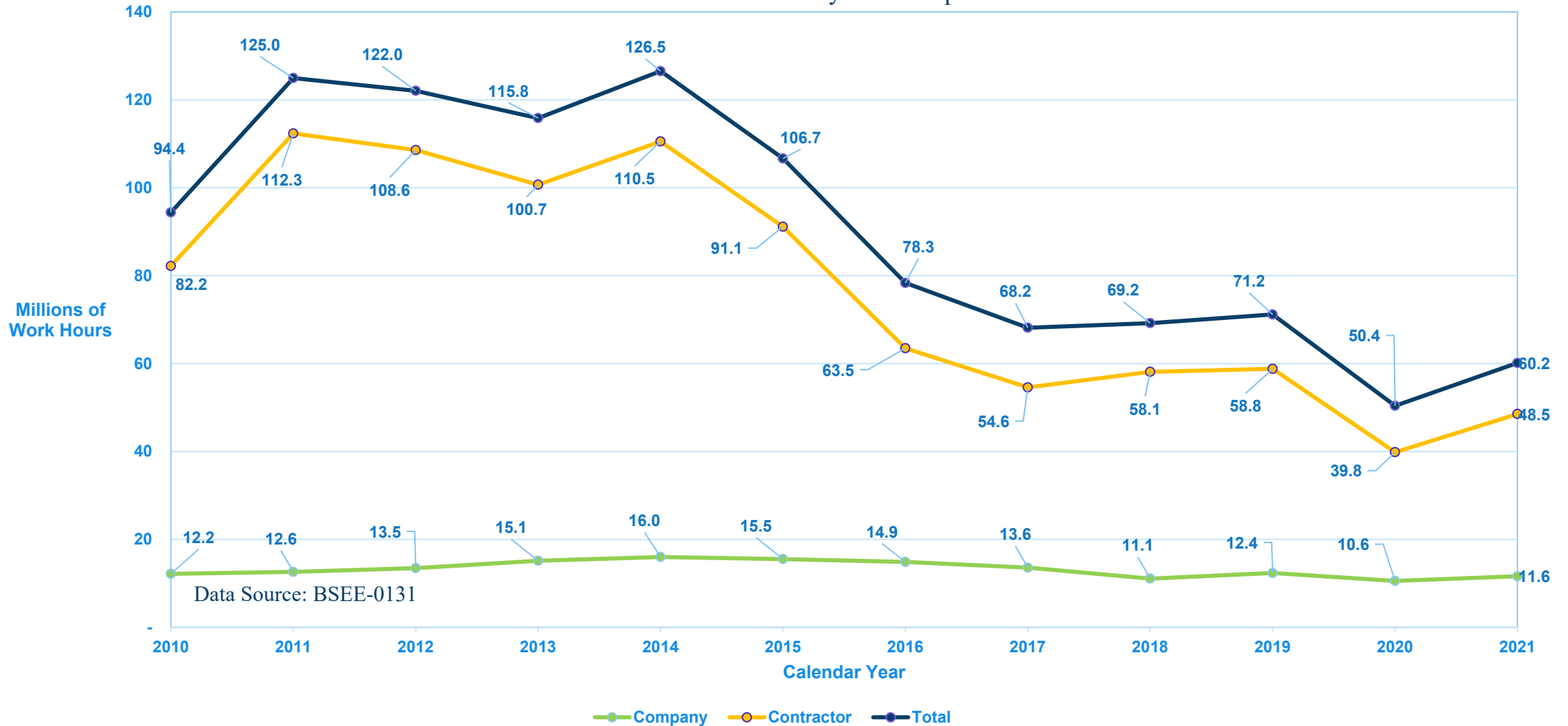
Total OCS Oil and Gas Production



* BOE = Barrels of Oil Equivalent. Gas production is converted into BOE so that it can be compared to actual barrels of oil.
 In 2019, 2020 and 2021, the conversion factor used was 5.8 MCF per BOE. In 2021, the conversion factor used was 5.6 MCF per BOE.

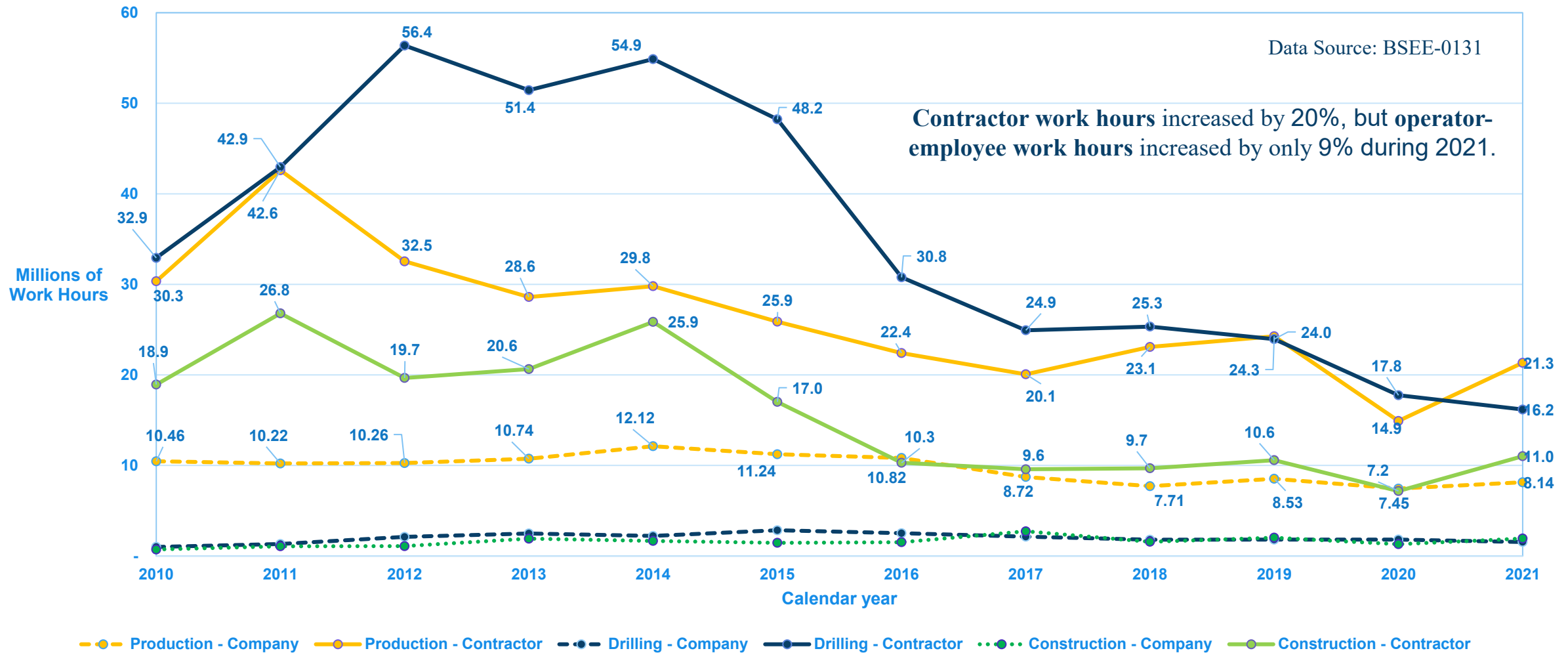
Total OCS Work Hours

Total work hours increased by 17% compared to 2020

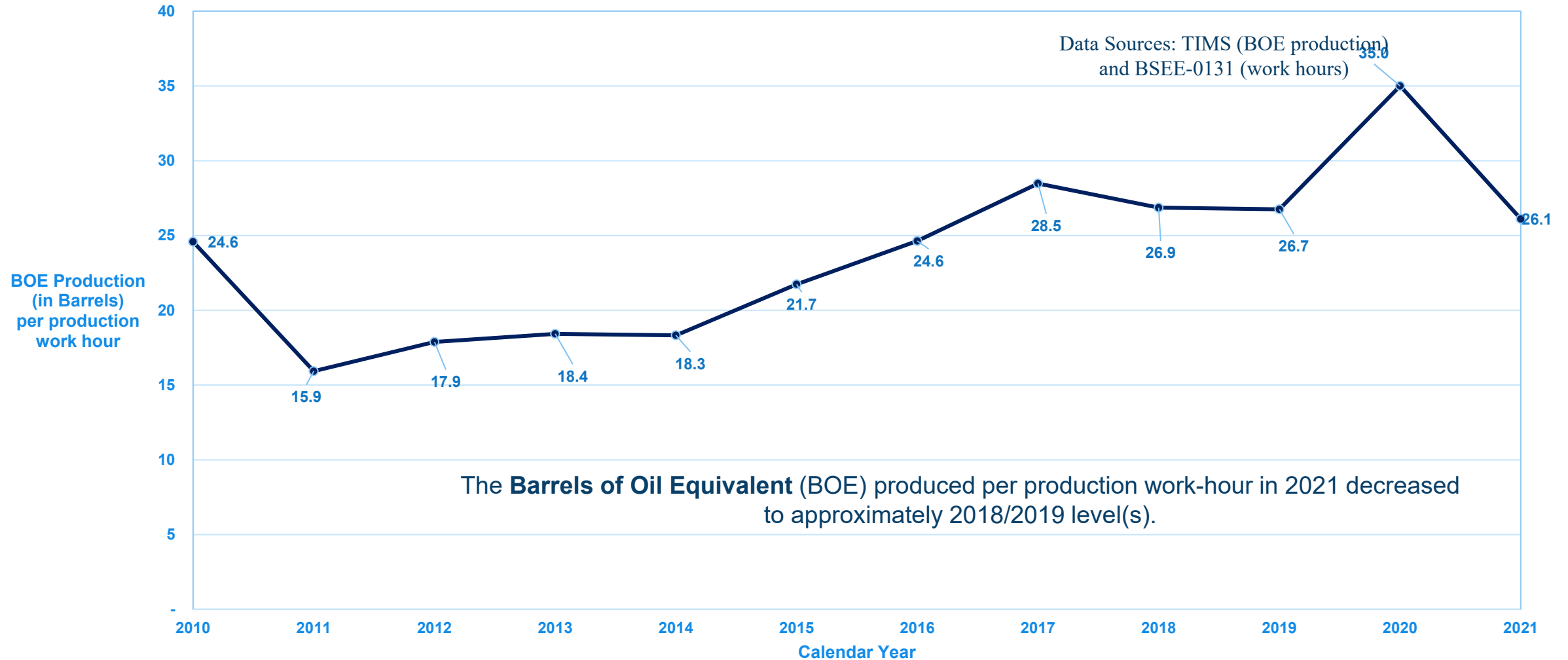


Total OCS Work Hours

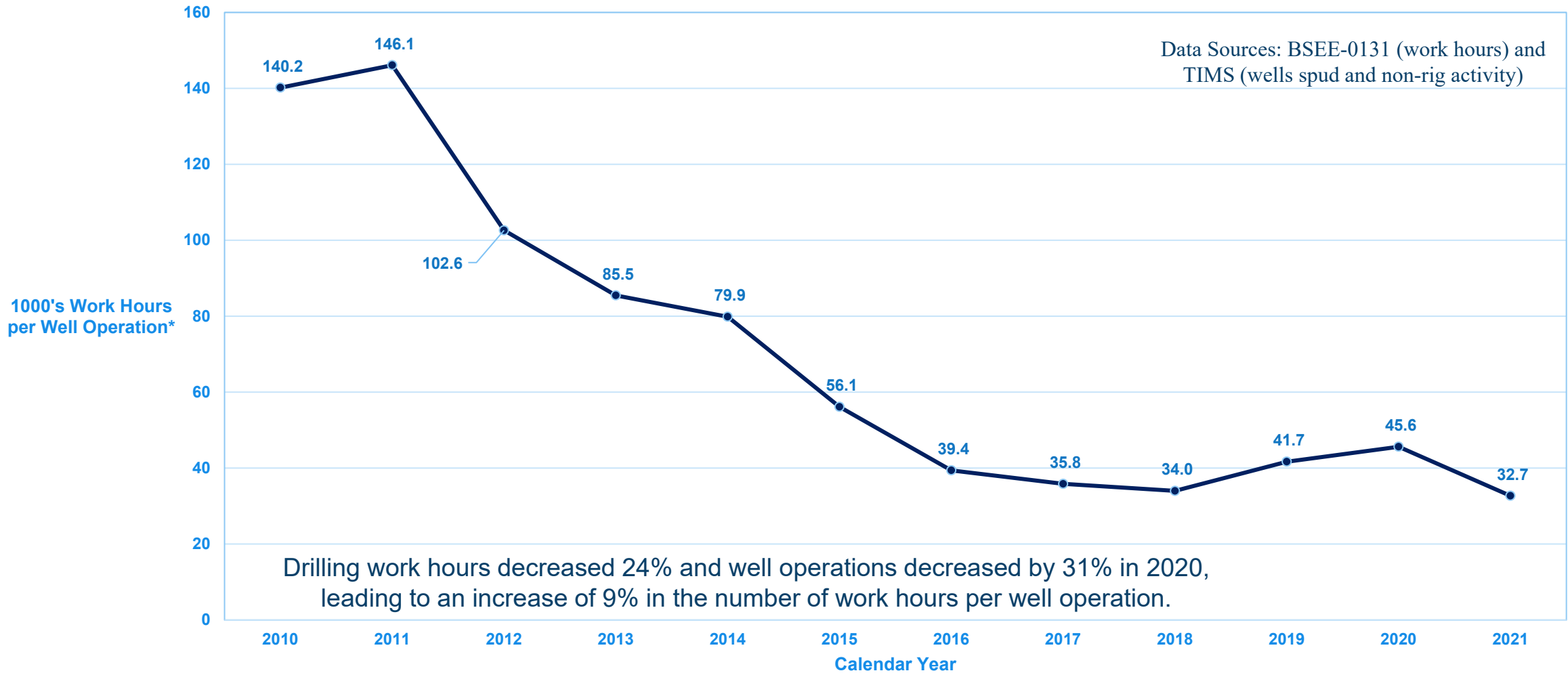
Category, Company vs Contractor



BOE Production Per Production Work Hour

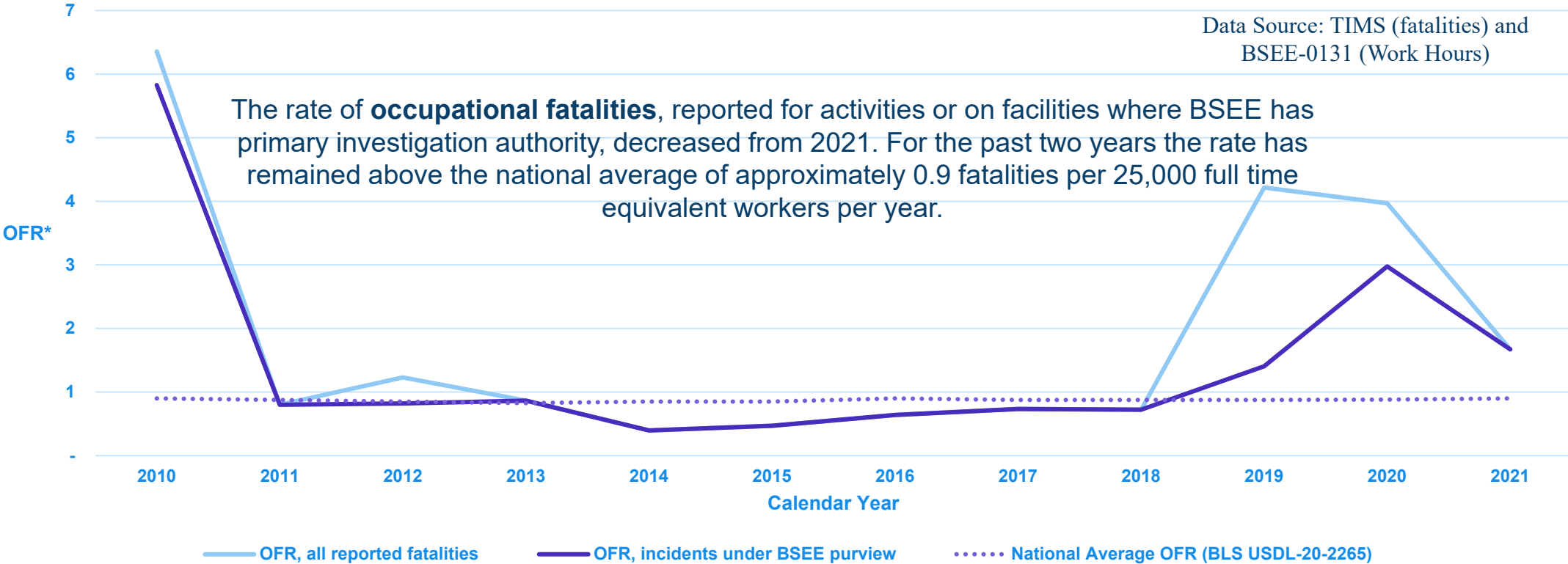


Work Hours per Well Operation*



* Work Hours reported for drilling and related well activities, divided by (# Participant Wells Spud + # Non-rig activities)

Occupational Fatality Rate (OFR)*,**



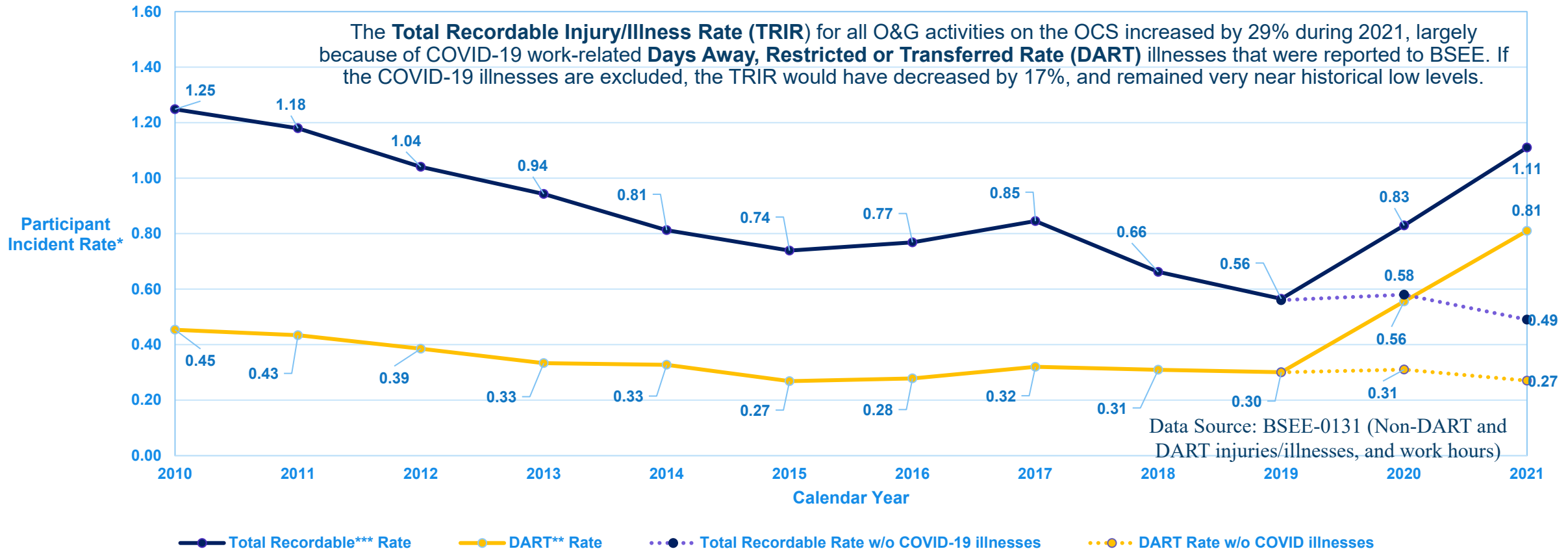
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Operational Fatalities under BSEE purview:	11	2	2	2	1	1	1	1	1	2	3	2
Additional Occupational Fatalities in OCS operations:	1	0	1	0	0	0	0	0	0	4	1	0

*Reported Occupational Fatalities per 25,000 FTE workers (or 50,000,000 work hours).

** All occupational fatalities that are reported to BSEE are reflected in the "All Reported Fatalities" line. Fatalities associated with diving, helicopter, and lifeboat incidents are investigated by other federal agencies and therefore excluded from "incidents under BSEE purview." This chart excludes non-occupational fatalities reported to BSEE, such as from activities conducted during non-work shift times or from chronic, preexisting conditions.



Combined OCS Operations: Total and DART Recordable Incident Rates

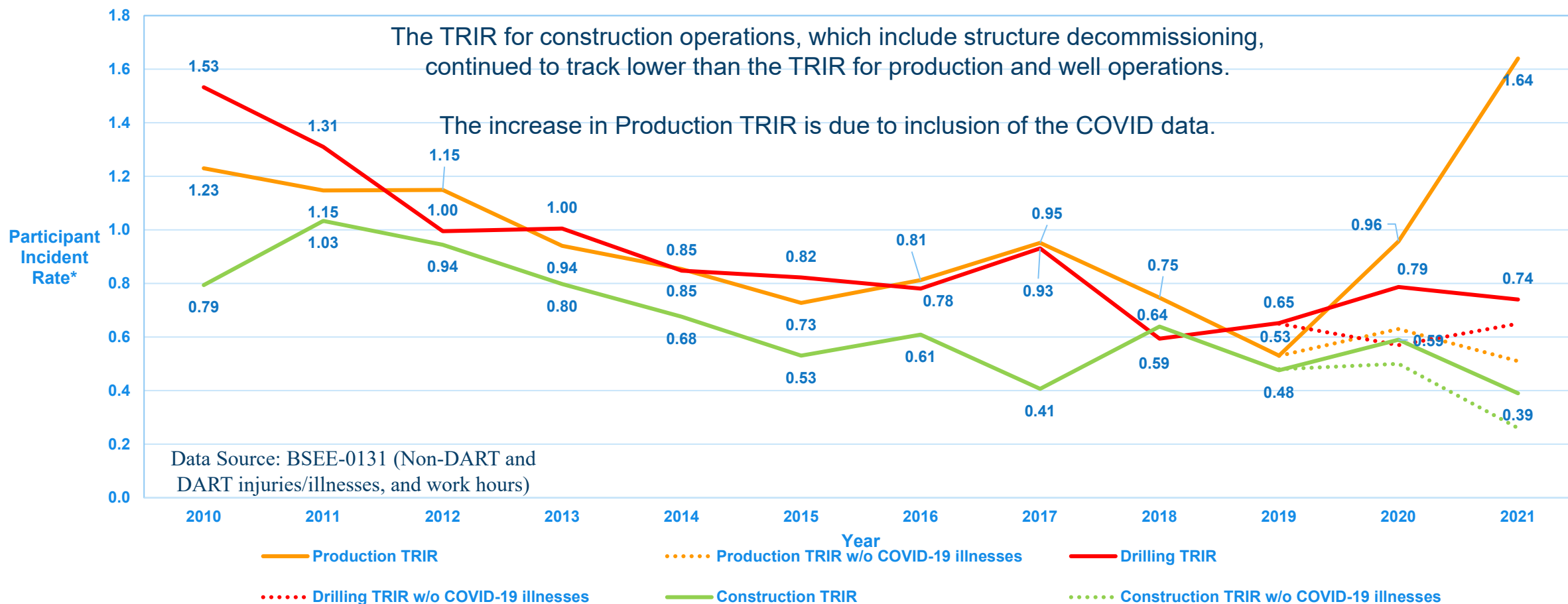


* Number of injury/illness incidents per 200,000 man-hours worked for operators that submitted BSEE-0131 forms.

** DART = injury or illness leading to Days Away, Restricted duty or job Transfer

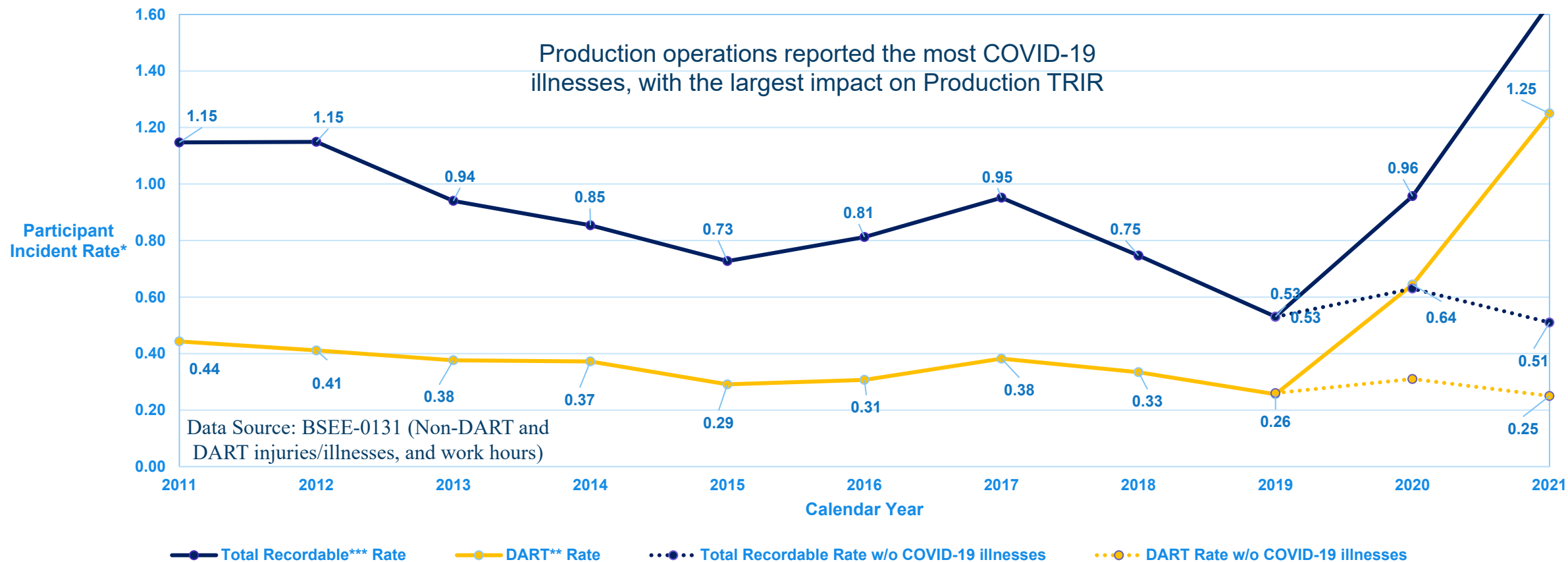
*** Total Recordable Incidents = the sum of DART and non-DART recordable injuries/illnesses. Beginning 2018 and finalized with a revised form in 2019, BSEE clarified that non-DART recordable injuries should be reported separately from DART recordable injuries. In the past some operators interpreted the "Recordables" line on BSEE-0131 as a request for "Total Recordables" and some interpreted it as a request for "Non-DART Recordables" since there was already a separate line for DART Recordable data (the form never specified which to enter).

Total Recordable Incident Rates (TRIRs) by OCS Operation



* Number of injury/illness incidents per 200,000 man-hours worked for operators that submitted BSEE-0131 forms.

Production Operations: Total and DART Recordable Incident Rates



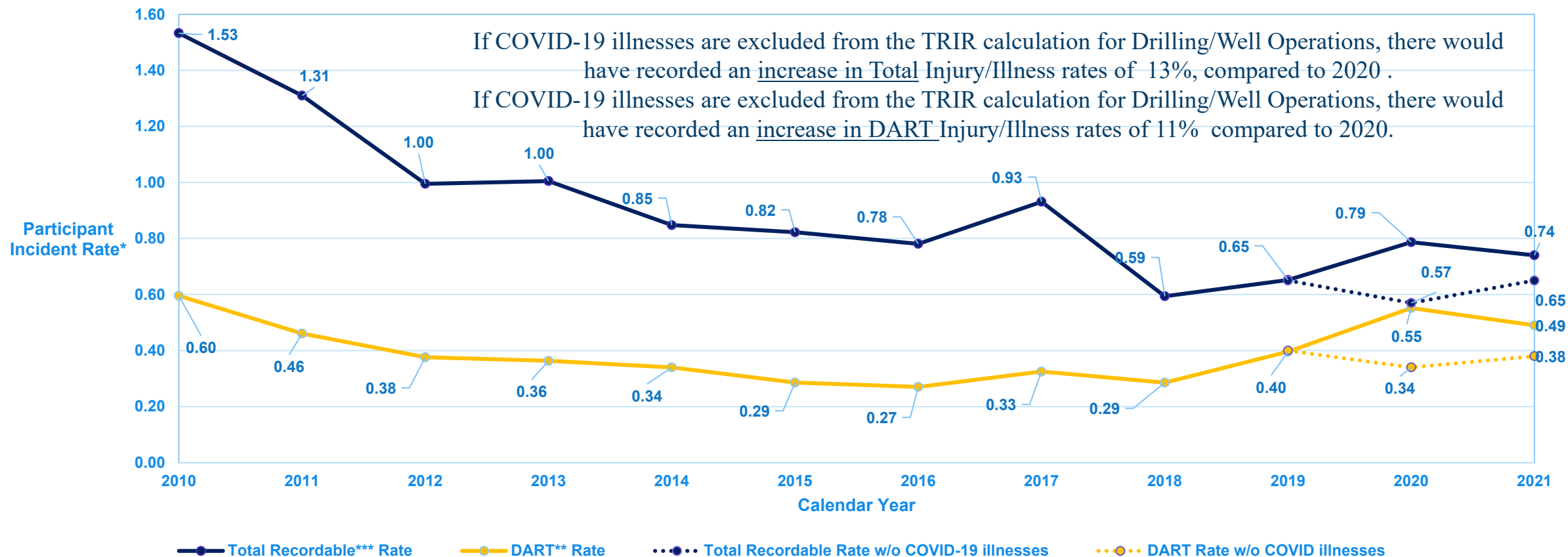
* Number of injury/illness incidents per 200,000 man-hours worked for operators that submitted BSEE-0131 forms.

** DART = injury or illness leading to Days Away, Restricted duty or job Transfer

*** Total Recordable Incidents = the sum of DART and non-DART recordable injuries/illnesses. Beginning 2018 and finalized with a revised form in 2019, BSEE clarified that non-DART recordable injuries should be reported separately from DART recordable injuries. In the past some operators interpreted the "Recordables" line on BSEE-0131 as a request for "Total Recordables" and some interpreted it as a request for "Non-DART Recordables" since there was already a separate line for DART Recordable data (the form never specified which to enter).

Drilling and Well Operations: Total and DART Recordable Incident Rates

Data Source: BSEE-0131 (Non-DART and DART injuries/illnesses, and work hours)

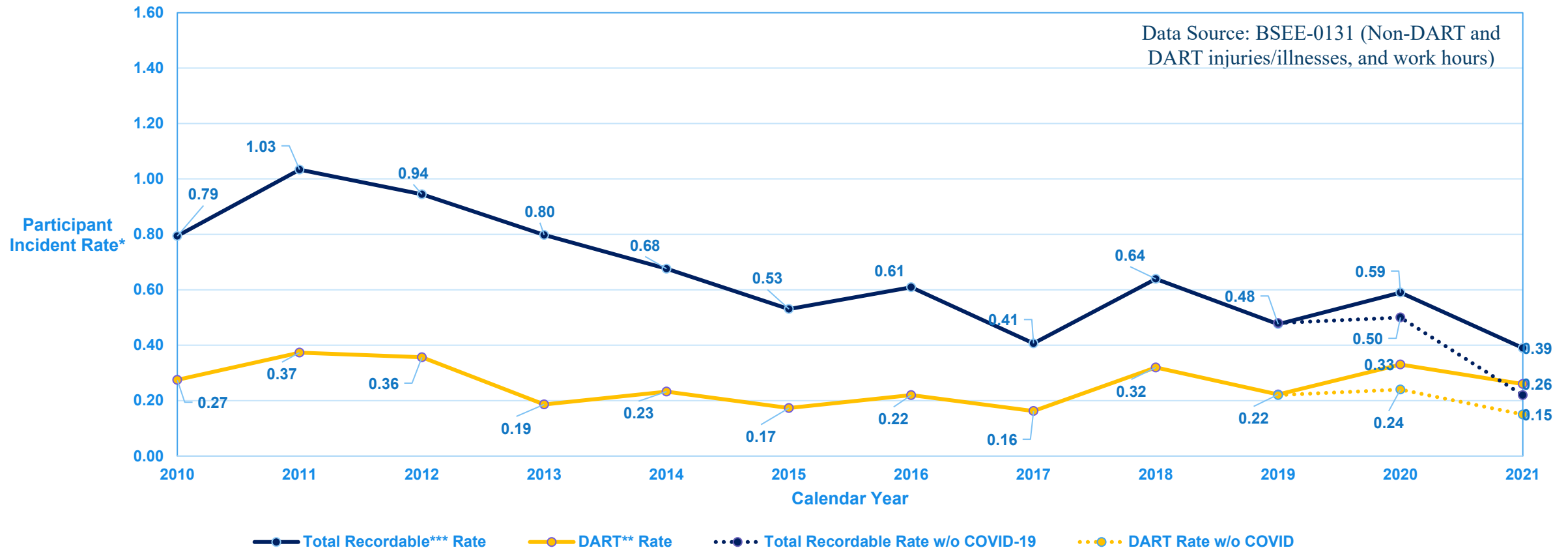


* Number of injury/illness incidents per 200,000 man-hours worked for operators that submitted BSEE-0131 forms.

** DART = injury or illness leading to Days Away, Restricted duty or job Transfer

*** Total Recordable Incidents = the sum of DART and non-DART recordable injuries/illnesses. Beginning 2018 and finalized with a revised form in 2019, BSEE clarified that non-DART recordable injuries should be reported separately from DART recordable injuries. In the past some operators interpreted the "Recordables" line on BSEE-0131 as a request for "Total Recordables" and some interpreted it as a request for "Non-DART Recordables" since there was already a separate line for DART Recordable data (the form never specified which to enter).

Construction and Decommissioning Operations: Total and DART Recordable Incident Rates



* Number of injury/illness incidents per 200,000 man-hours worked for operators that submitted BSEE-0131 forms.

** DART = injury or illness leading to Days Away, Restricted duty or job Transfer

*** Total Recordable Incidents = the sum of DART and non-DART recordable injuries/illnesses. Beginning 2018 and finalized with a revised form in 2019, BSEE clarified that non-DART recordable injuries should be reported separately from DART recordable injuries. In the past some operators interpreted the "Recordables" line on BSEE-0131 as a request for "Total Recordables" and some interpreted it as a request for "Non-DART Recordables" since there was already a separate line for DART Recordable data (the form never specified which to enter).

Percentage of Reported Fires on drill ships and well operation vessels	
2018 Fires	12%
2019 Fires	11%
2020 Fires	20%
2021 Fires	7%

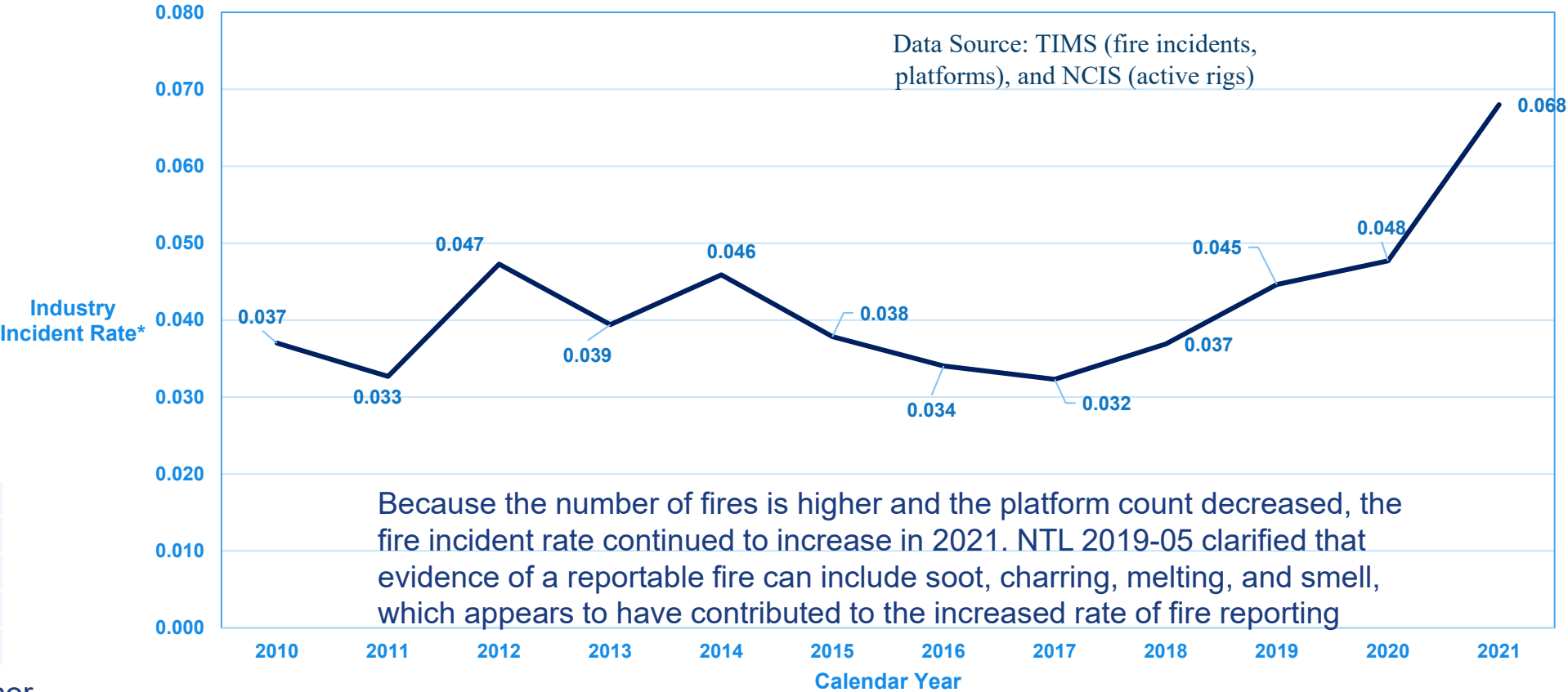
Median Age of Platforms (years) when fire was reported	
2018 Fires	19.1
2019 Fires	22.4
2020 Fires	21.3
2021 Fires	24.6

Percentage of Reported Fires with no obvious flame or arc flash	
2018 Fires	34%
2019 Fires	43%
2020 Fires	48%
2021 Fires	17%

Severity Level of 2021 Fires**	
1	34%
2	46%
3	14%
4	6%

80% of 2021 fires were minor, witnessed immediately, and easily extinguishable with minimal effort.

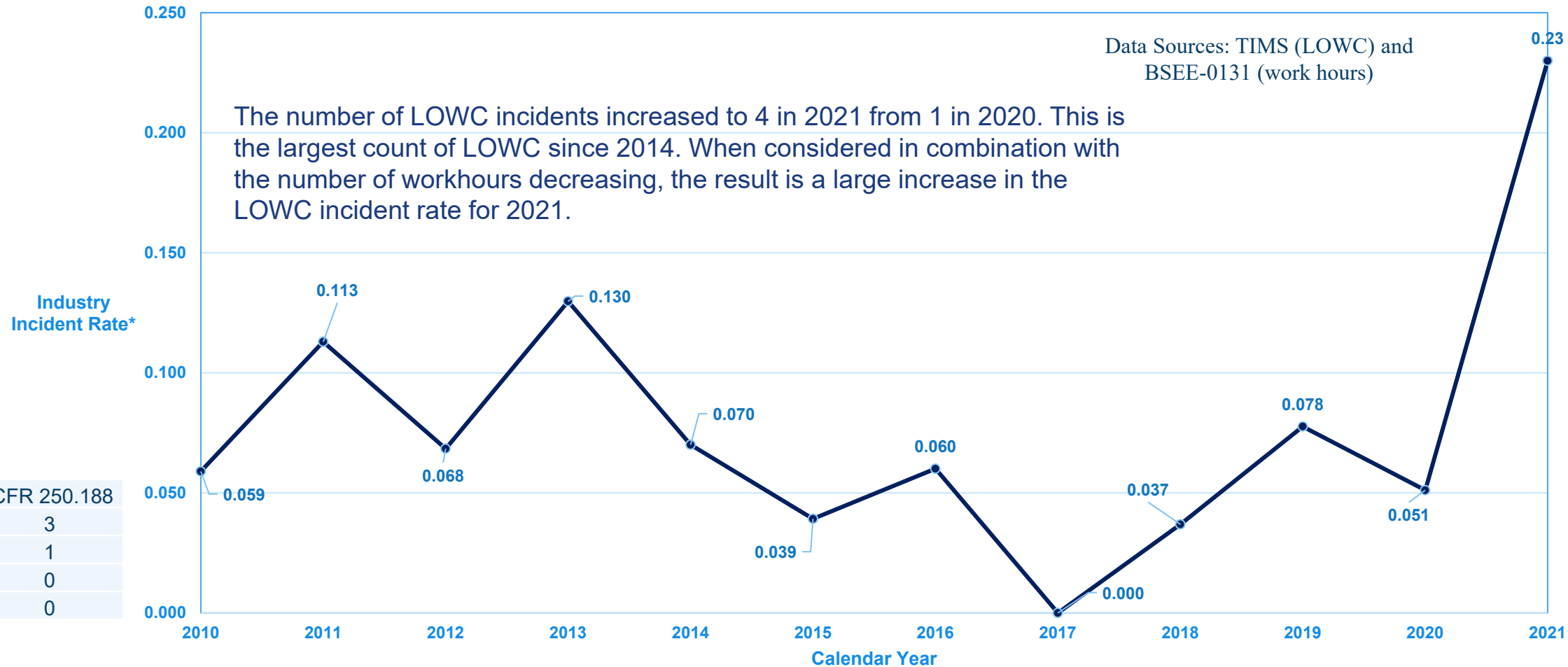
Fire Incident Rate



*Ratio of fires to number of platforms and active drill rigs for entire OCS. All fire incidents are counted independent of their impacts.

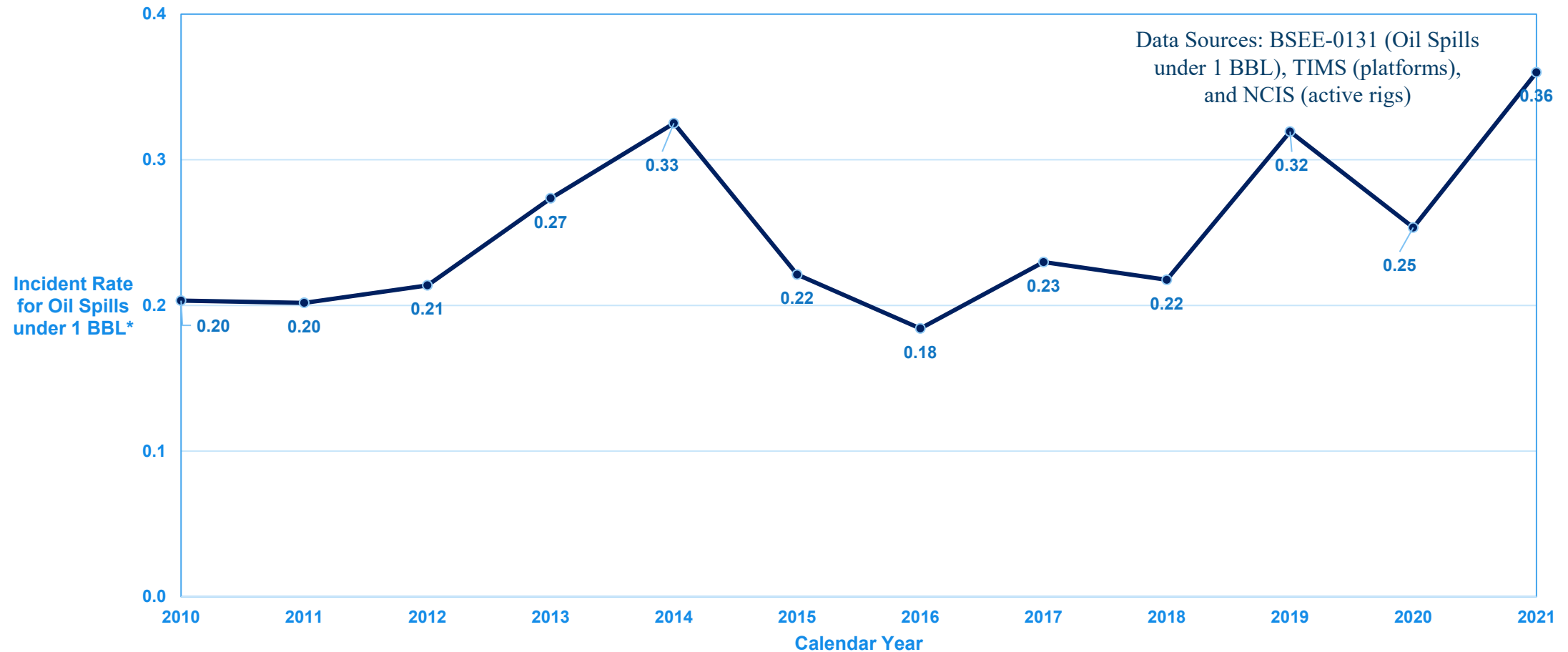
** Severity of 1 is described as no flame but evidence of a fire as listed above. Severity level 2- small flame immediately extinguished. Severity level 3 = medium potential fire but was witness and extinguished easily. Severity level 4 = large fire, or in an area without people in the area, or had potential to be uncontrolled.

Loss of Well Control (LOWC) Incident Rate



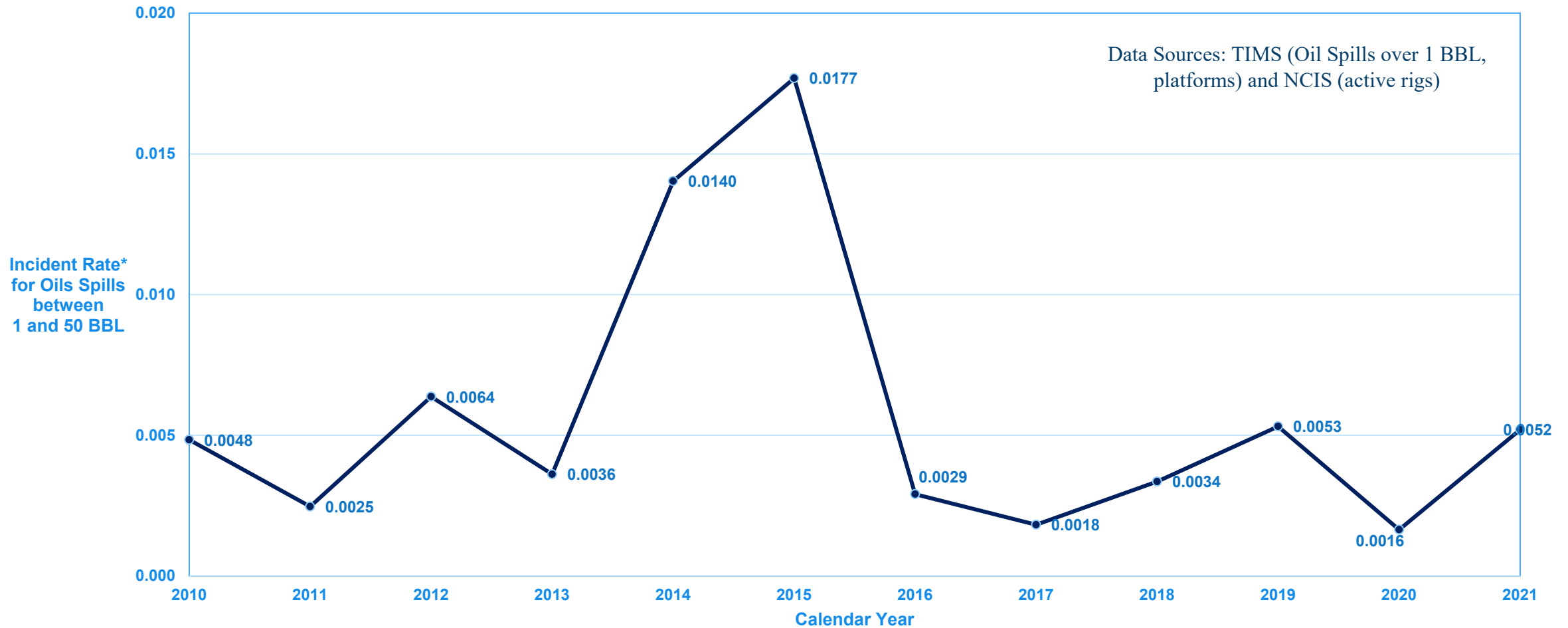
*Number of LOWC incidents per million work hours recorded for Drilling and Well Operations for entire OCS.
The above data reflects all reported losses of well control; this was formerly called "Blowout Rate".

Incident Rate for Oil Spills < 1 BBL



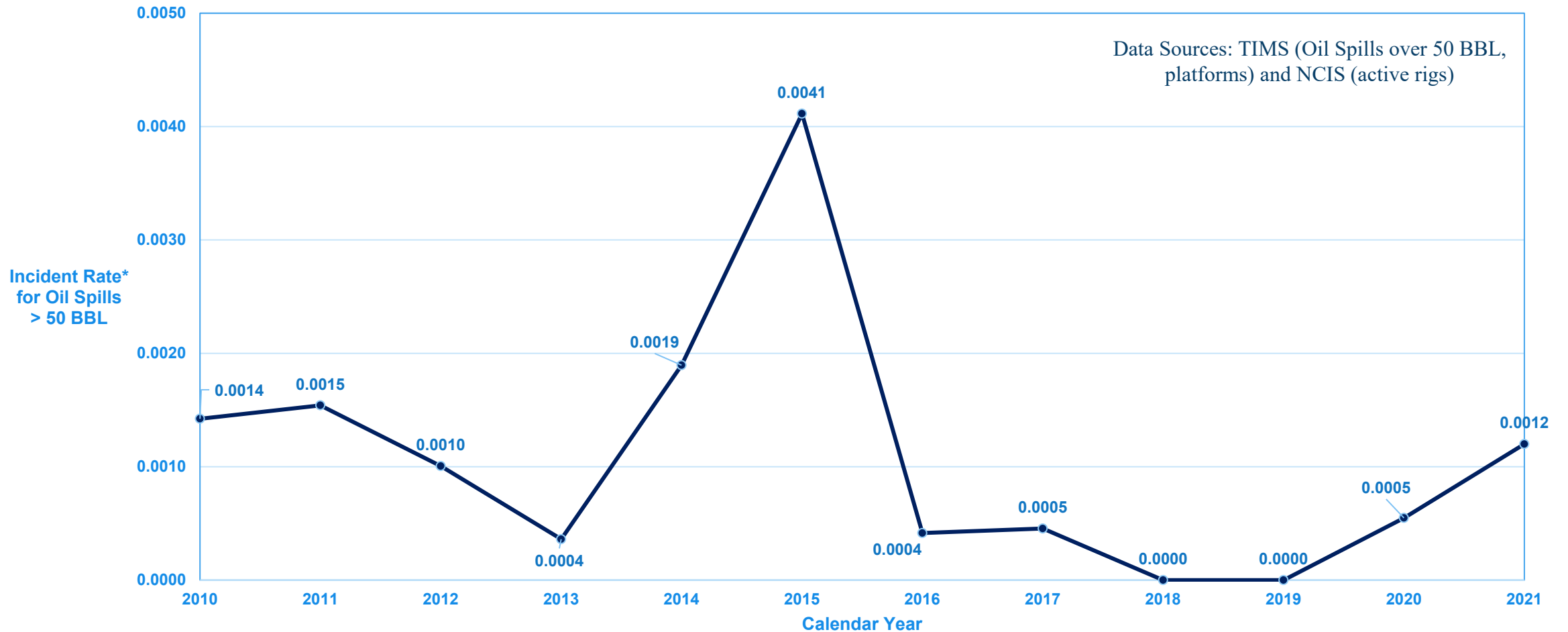
*Ratio of number of spills < 1 BBL to number of platforms for operators that submitted BSEE-0131 forms plus the number of active drill rigs. Data does not distinguish between the types of operations from which the oil was spilled.

Incident Rate for Oil Spills ≥ 1 BBL and < 50 BBL



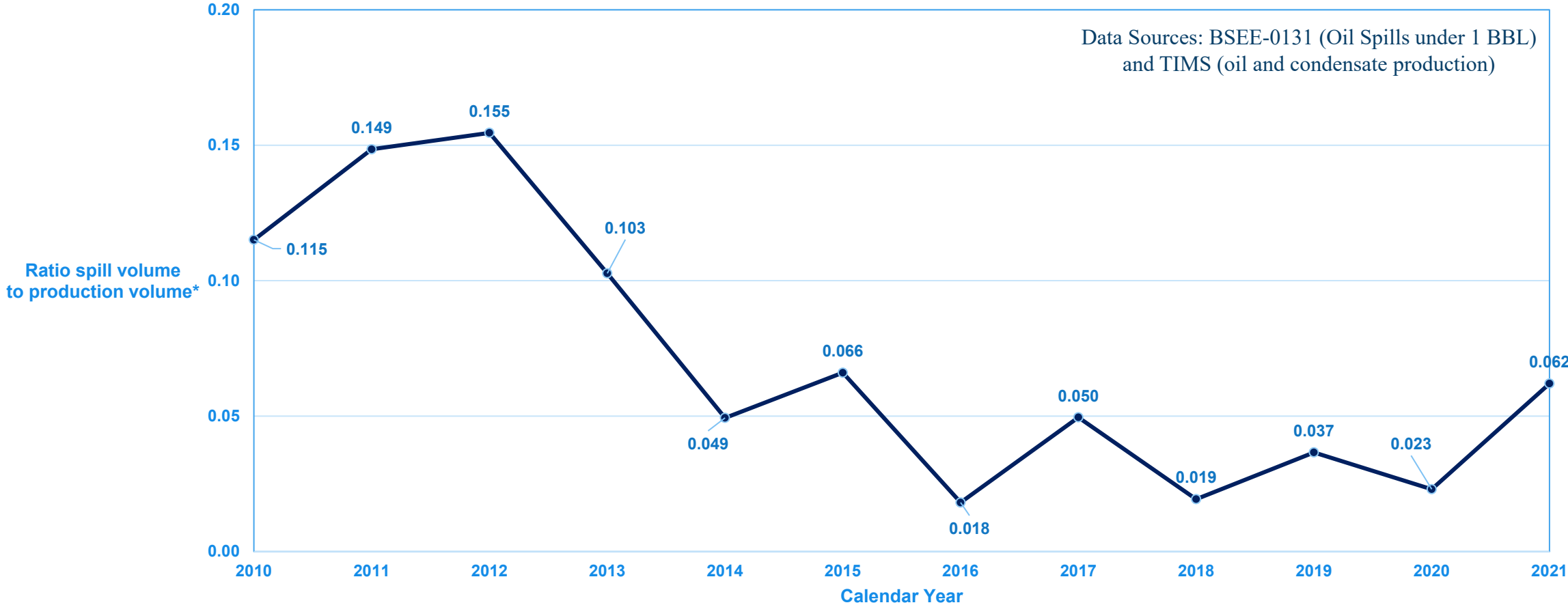
*Ratio of number of spills between 1 and 49.99 BBL to number of platforms and active drill rigs for entire OCS.
Data does not distinguish between the types of operations from which the oil was spilled.

Incident Rate for Oil Spills \geq 50 BBL



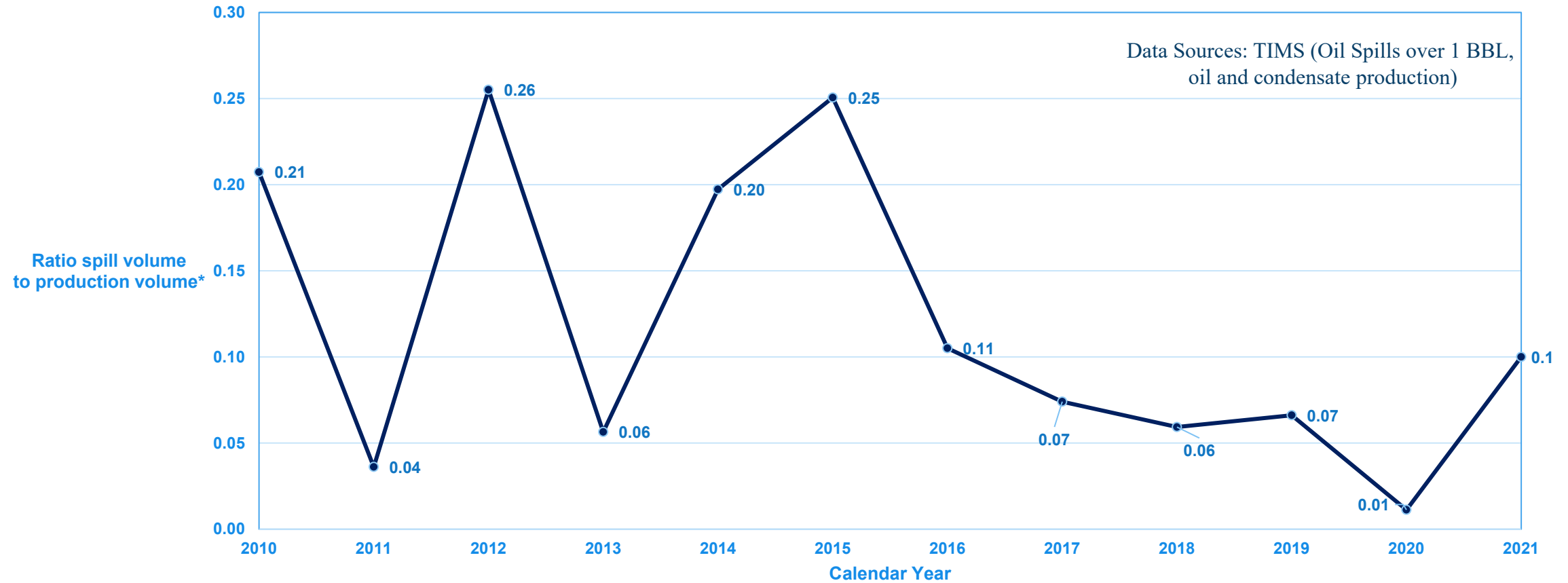
*Ratio of number of spills of 50 BBL or more to number of platforms and active drill rigs for entire OCS. Data does not distinguish between the types of operations from which the oil was spilled. The reason for a separate chart for oil spills > 50 BBL is that per 30 CFR 254.46, they have additional reporting requirements

Ratio of Oil Spill Volumes to Production Volumes for Oil Spills <1 BBL



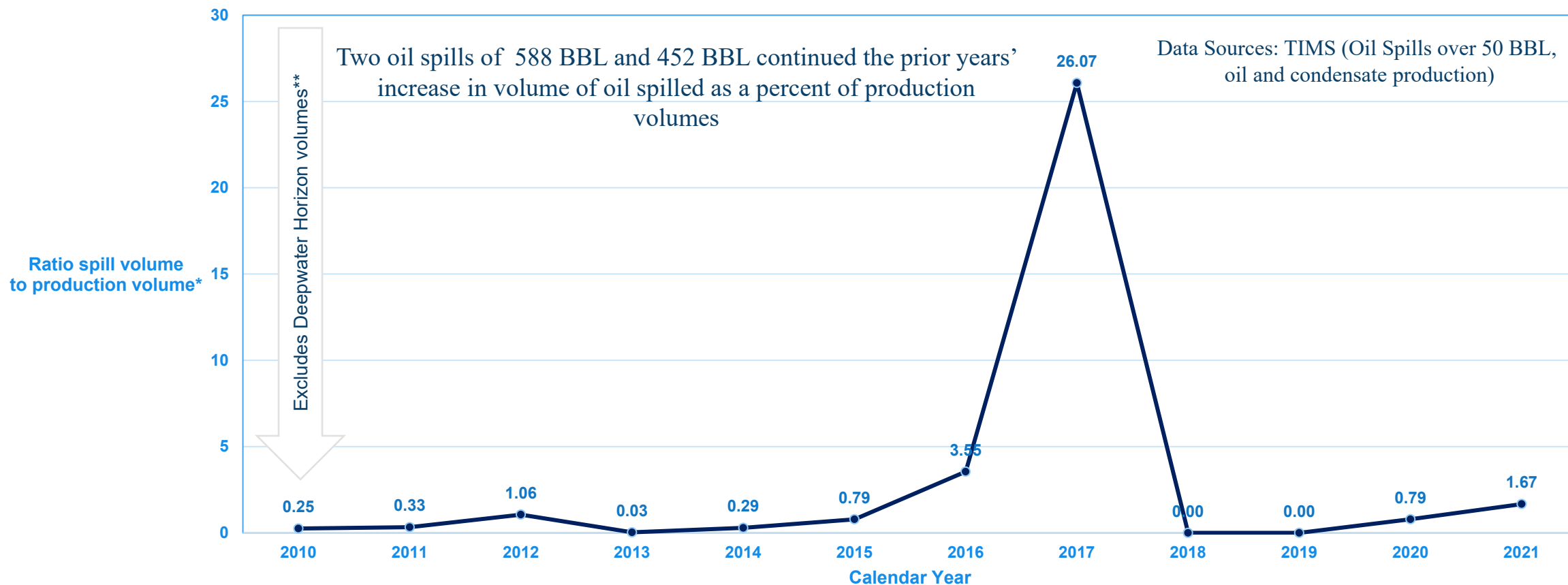
*BBL spilled per 1,000,000 BBL of oil and condensate produced for operators that submitted BSEE-0131 forms.
Data does not distinguish between the types of operations from which the oil was spilled.

Ratio of Oil Spill Volumes to Production Volumes for Oil Spills ≥ 1 BBL and < 50 BBL



*BBL spilled per 1,000,000 BBL of oil and condensate produced for entire OCS.
Data does not distinguish between the types of operations from which the oil was spilled.

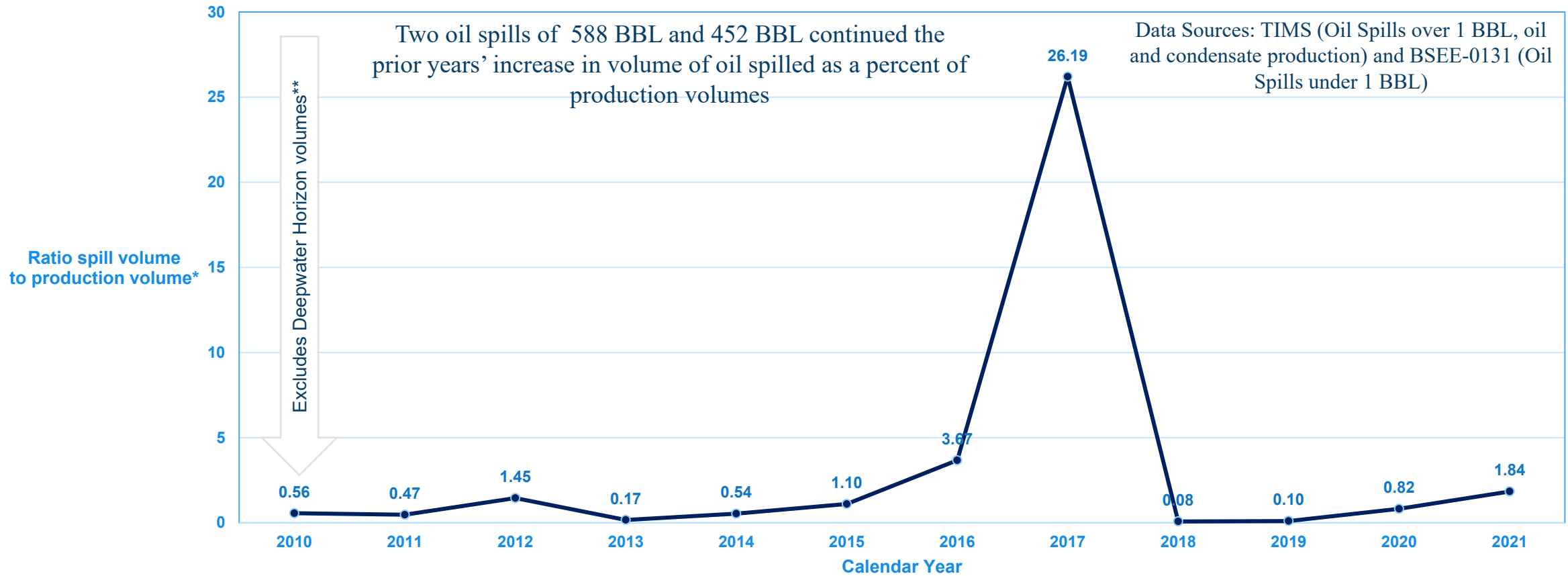
Ratio of Oil Spill Volumes to Production Volumes for Oil Spills ≥ 50 BBL



*BBL spilled per 1,000,000 BBL of oil and condensate produced for entire OCS. Data does not distinguish between the types of operations from which the oil was spilled.

**The CY 2010 oil spill rate excludes the volume released from the Deepwater Horizon incident, estimated by the U.S Coast Guard in an Incident-Specific Preparedness Review at 4,928,100 BBL. If it were included, this would increase the high-volume oil spill rate for CY 2010 to 8,358 BBL spilled per 1,000,000 BBL oil produced.

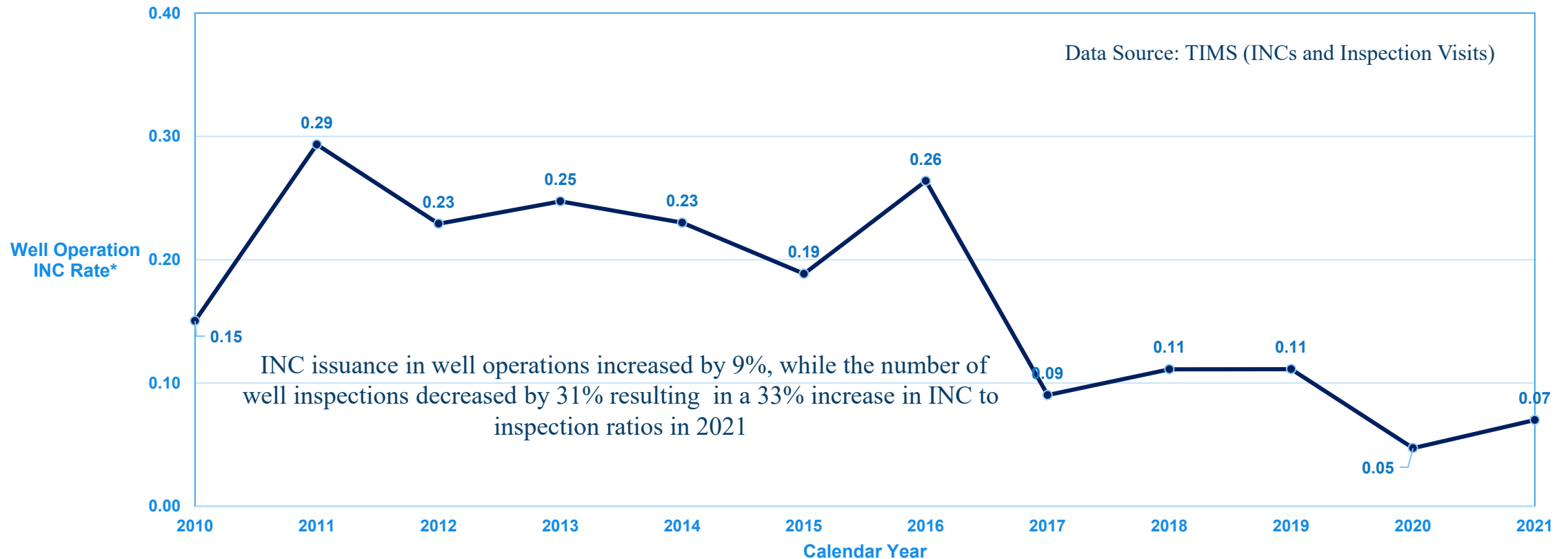
Ratio of Oil Spill Volumes to Oil Production Volumes for all Oil Spills independent of their volume



*BBL spilled per 1,000,000 BBL of oil and condensate produced. Less than one barrel category data derives from operators who submitted BSEE-0131 forms, whereas the 1 to 50 and over 50-barrel categories derive from other incident reports (entire OCS). Data does not distinguish between the types of operations from which the oil was spilled.

**The CY 2010 oil spill rate excludes the volume released from the Deepwater Horizon incident, estimated by the U.S Coast Guard in an Incident-Specific Preparedness Review at 4,928,100 BBL. If it were included, this would increase the total oil spill rate for CY 2010 to 8,359 BBL spilled per 1,000,000 BBL oil produced.

Well Operations Incident of Noncompliance (INC) Rate (based on inspection visits)



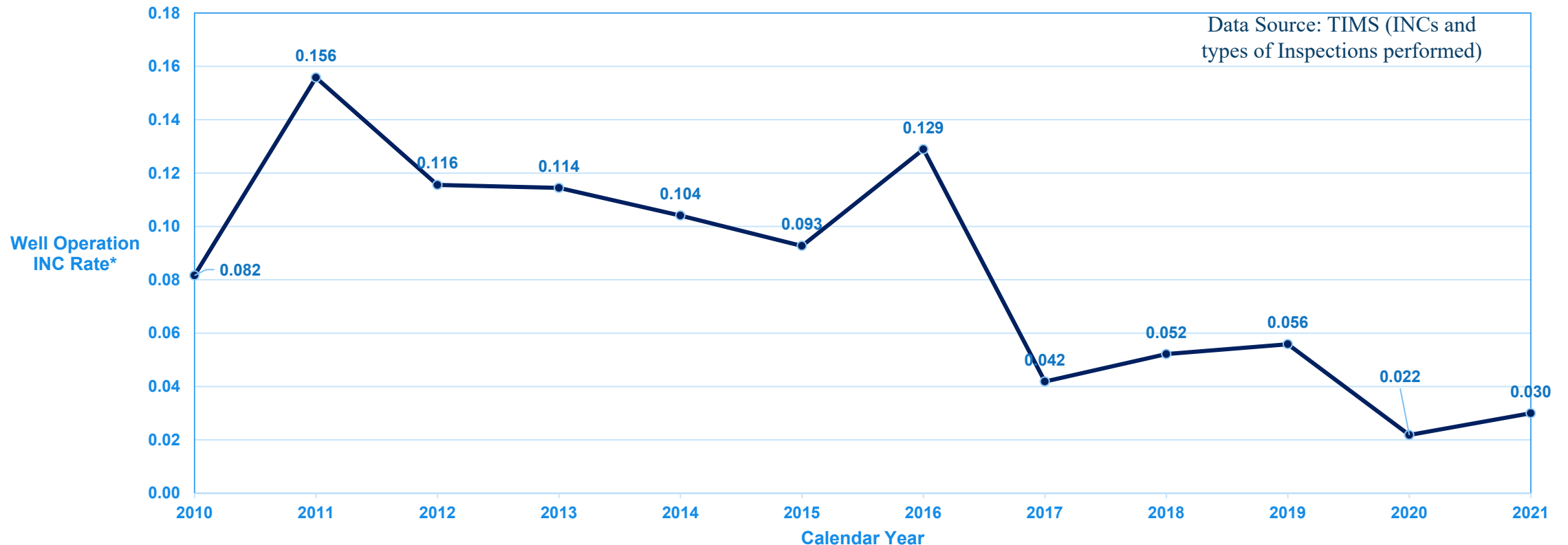
*Ratio of well operation INCs written to the number of drilling rig and non-rig inspection visits conducted for entire OCS.

** Because COVID-19 travel restrictions were eased, inspectors were able to visit a larger number of facilities, and that resulted in inspection and INC issuance returning to typical, historical ranges.

Well Operations

Incident of Noncompliance (INC) Rate

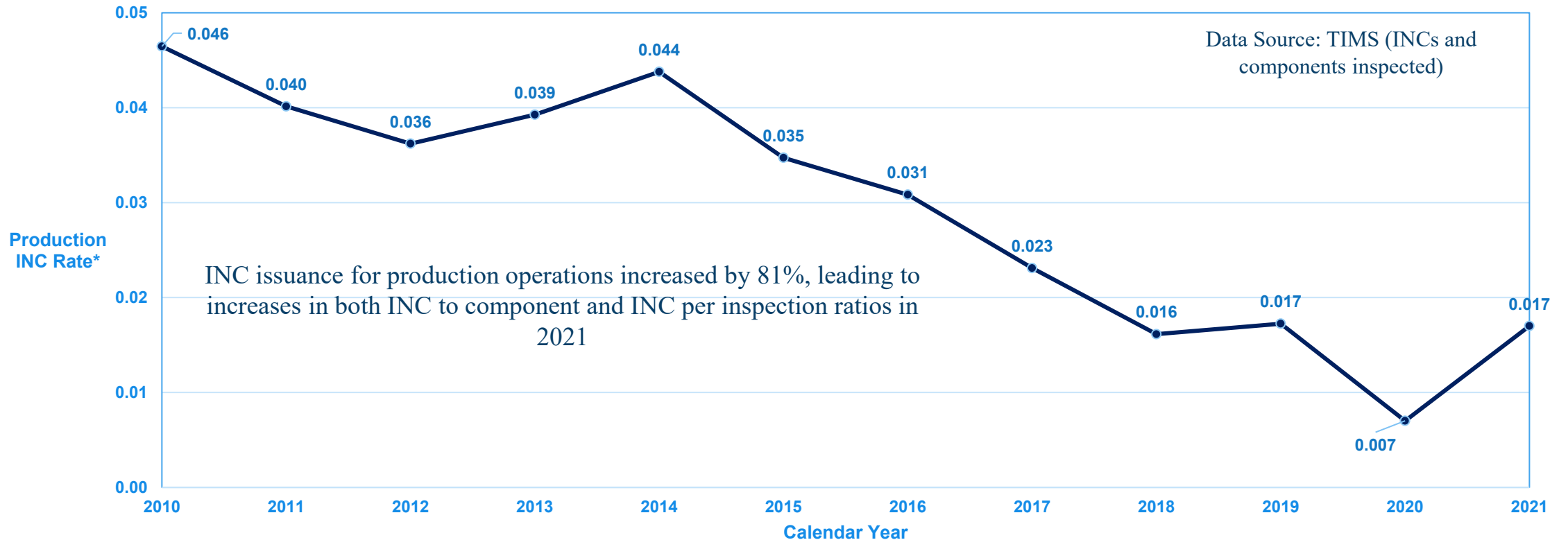
(based on inspections performed)



*Ratio of well operation INCs written to the number of drilling rig and non-rig inspection types performed on the entire OCS. Each inspection visit may incorporate multiple inspection types, e.g., a wireline and a BOP inspection.

** Because COVID-19 travel restrictions were eased, inspectors were able to visit a larger number of facilities, and that resulted in inspections and INC issuance returning to typical, historical ranges.

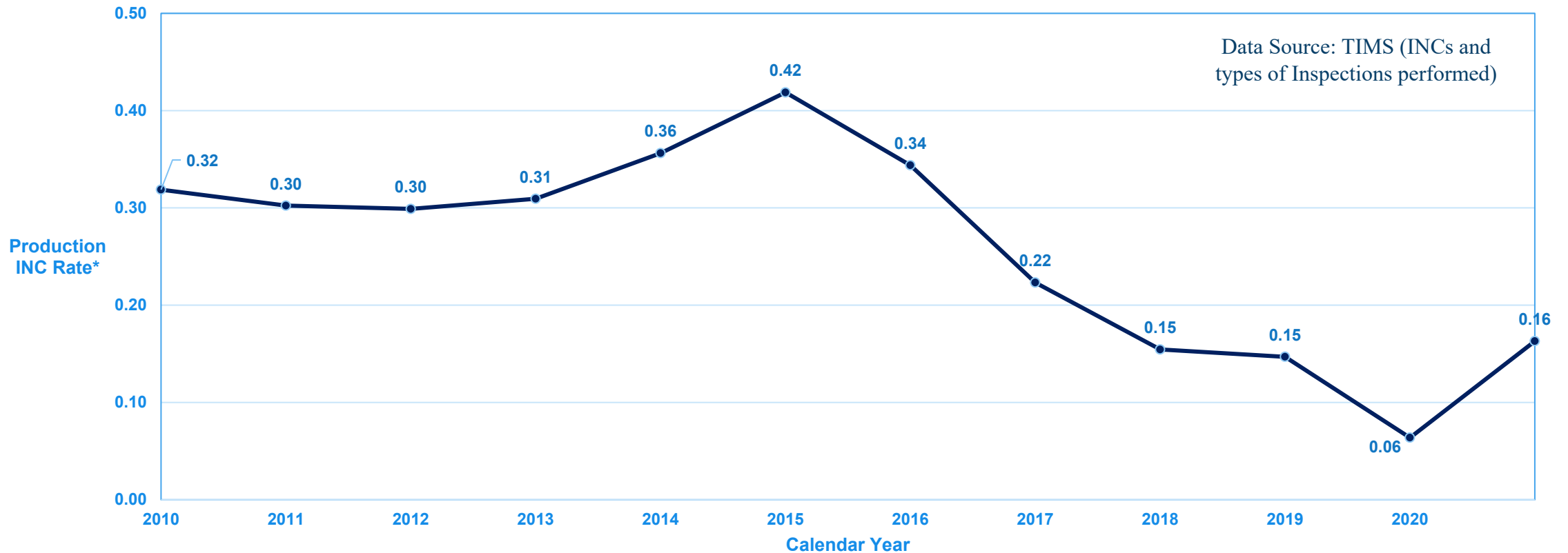
Production Incident of Noncompliance (INC) Rate (based on components inspected)



*Ratio of production INCs written to number of components inspected for entire OCS. The method used to count components changed starting 2018; complex equipment began to be counted not as one component but as the sum of several components. Pressure monitors, temperature monitors, and high-level alarm or shutoff switches, are examples of safety system components.

** Because COVID-19 travel restrictions were eased, inspectors were able to visit a larger number of facilities, and that resulted in inspections and INC issuance returning to typical, historical ranges.

Production Incident of Noncompliance (INC) Rate (based on inspections performed)



*Ratio of production INCs written to the total count of types of production inspections performed for entire OCS. Each inspection visit may involve multiple inspection types, e.g., a Production Complete and an Environmental inspection.

** Because COVID-19 travel restrictions were eased, inspectors were able to visit a larger number of facilities, and that resulted in inspections and INC issuance to return to typical, historical ranges.

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