



ANADARKO PETROLEUM EXPLORATION LOOKBACK 2004-18:

LESSONS LEARNED FOR CONVENTIONAL EXPLORATION RISK AND UNCERTAINTY PREDICTIONS

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OCCIDENTAL PETROLEUM CORPORATION

CAUTIONARY STATEMENT

Cautionary Note to U.S. Investors

The SEC permits oil and gas companies, in their filings with the SEC, to disclose only proved, probable and possible reserves. Any reserve estimates provided in this presentation that are not specifically designated as being estimates of proved reserves may include “potential” reserves and/or other estimated reserves not necessarily calculated in accordance with, or contemplated by, the SEC’s latest reserve reporting guidelines. U.S. investors are urged to consider closely the oil and gas disclosures in our 2018 Form 10-K and other reports and filings with the SEC. Copies are available from the SEC and through our website www.oxy.com



CLARIFICATIONS

- Discovered volumes are based on the first post-drill estimate of the discovery resource size. For purposes of this lookback, the volumes are not updated after appraisal and development of the discovery.
- Risk and volume predictions should not involve external corporate and market influences. This lookback tries to focus on improving future geologic predictions without questioning the corporate decisions of strategy and funding.



15+ BILLION BOE
DISCOVERED
FROM 173 WELLS
DURING
2004-2018

- Success is not due to chance.
- This was a concerted effort by Anadarko to add long-term corporate value
 - Train exploration teams in proper risking methods
 - Use analytical software built for risk and uncertainty predictions (Rose and Assoc MMRA, MZM and SAAM).
 - Create a Risk Consistency Team to review all prospects pre- and post-drill
 - Analyze well results and compare to predictions for any lessons learned.
 - Share lessons with the Anadarko exploration community
 - Participate in industry-wide risk consortia and workshops

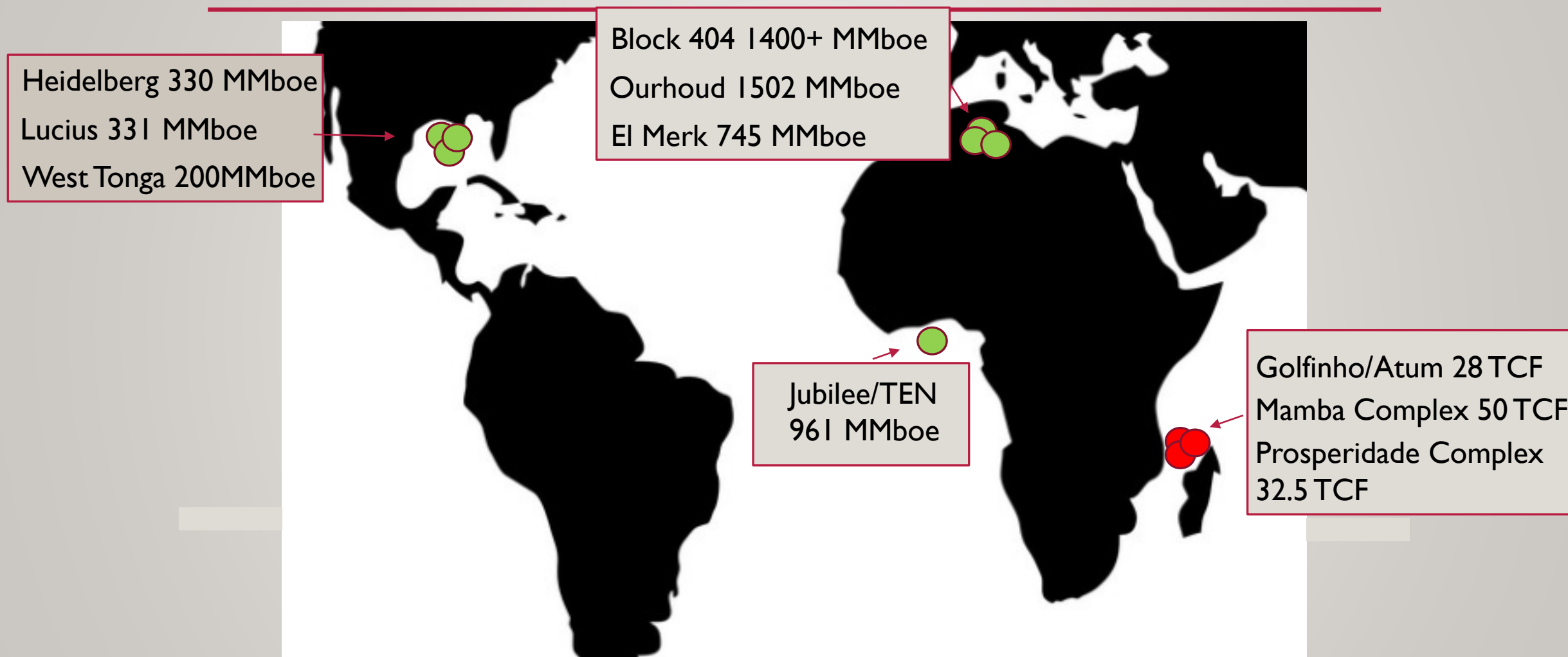


LESSONS LEARNED FROM THIS LOOKBACK

- Successful exploration starts with a healthy prospect inventory. A healthy prospect inventory is:
 - Deep
 - Continually updated
 - Regularly high-graded
 - Keeps pace with drilling activity
- Drilling second-tier prospects from a stale inventory leads to under-performance.
- Drilling a small number of wells creates unpredictable success rates.
- There is a tendency to over-promise and under-deliver resource volumes in successful wells

ANADARKO EXPLORATION SUCCESSES

MAJOR ANADARKO CONVENTIONAL EXPLORATION DISCOVERIES*



15+ Billion boe resources discovered from 173 conventional exploration wells (2004-18)

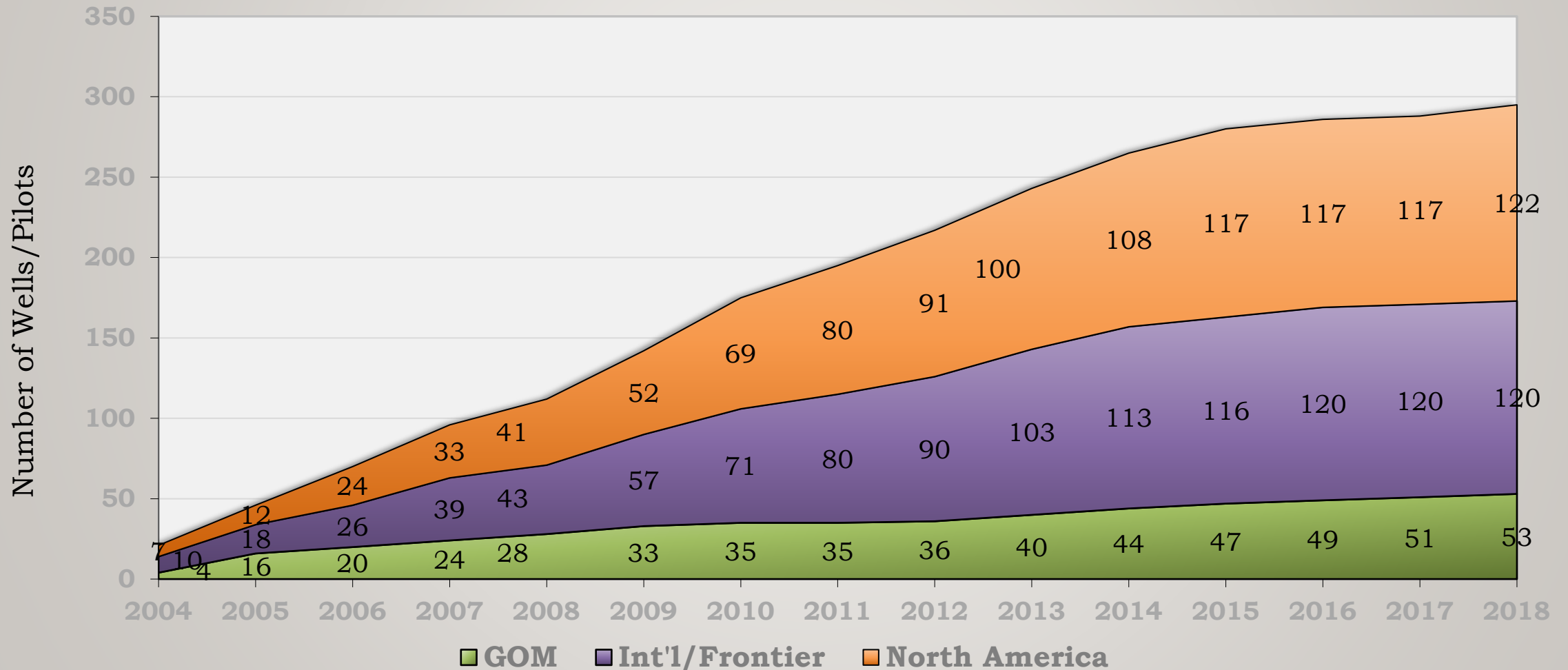
* Resource Volume source: IHS

EXPLORATION WELL COUNT

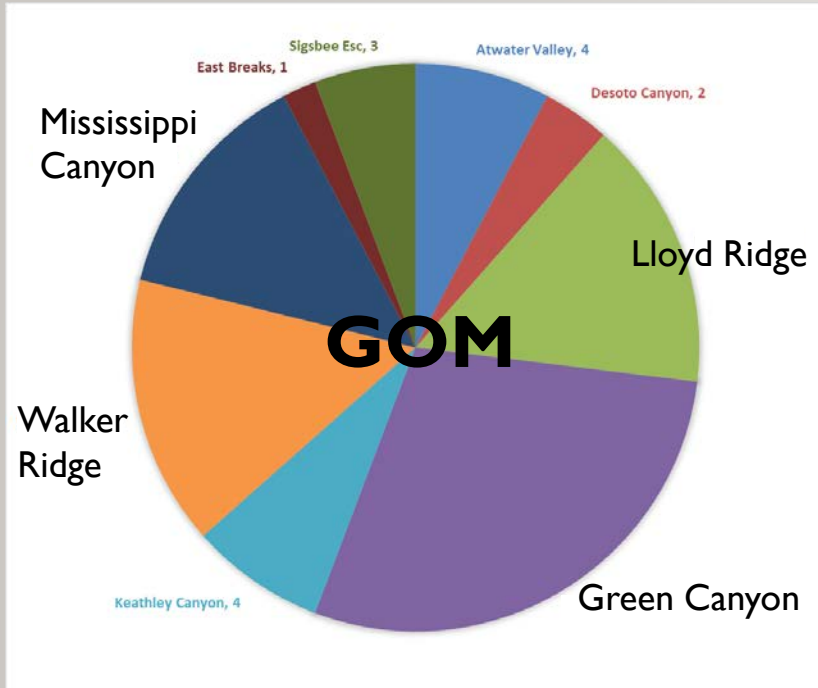
2004-18

The Exploration Program: 2004-2018

Cumulative Conventional and Unconventional Wells
(2004 to 2018)

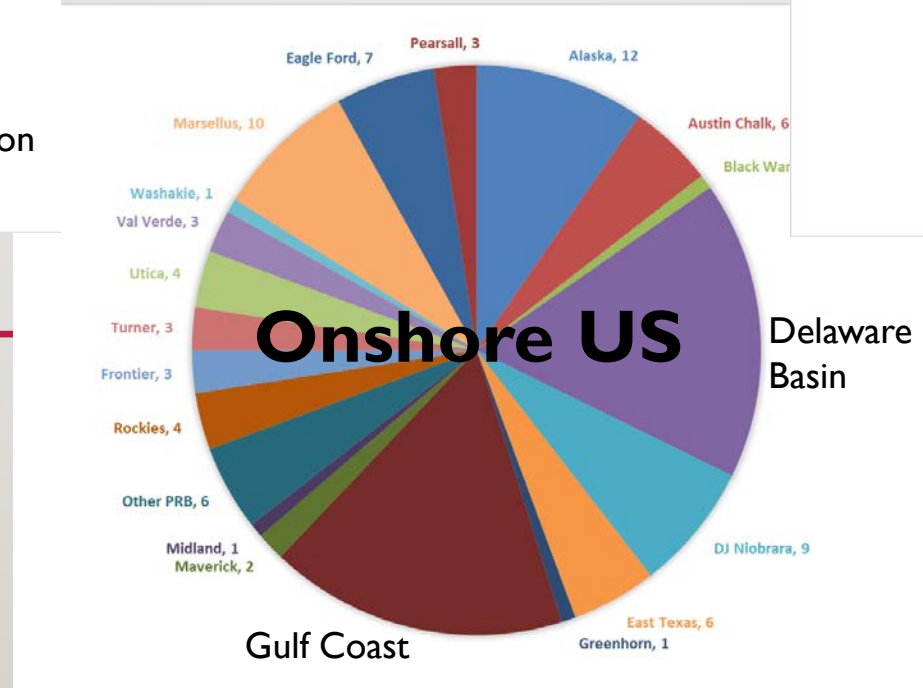
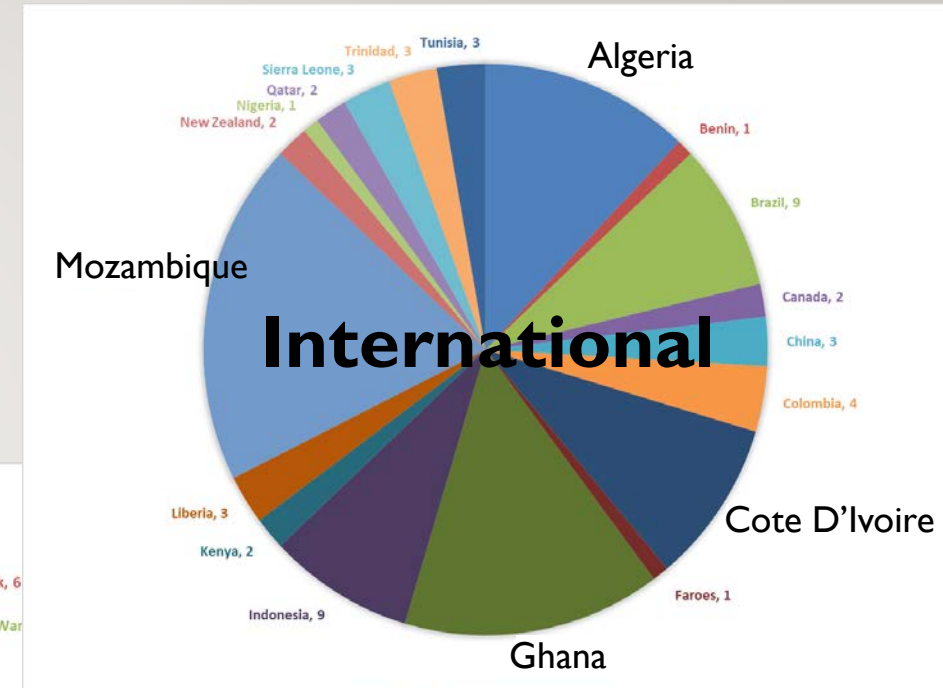


Exploration Wells By Area



295 Total Wells

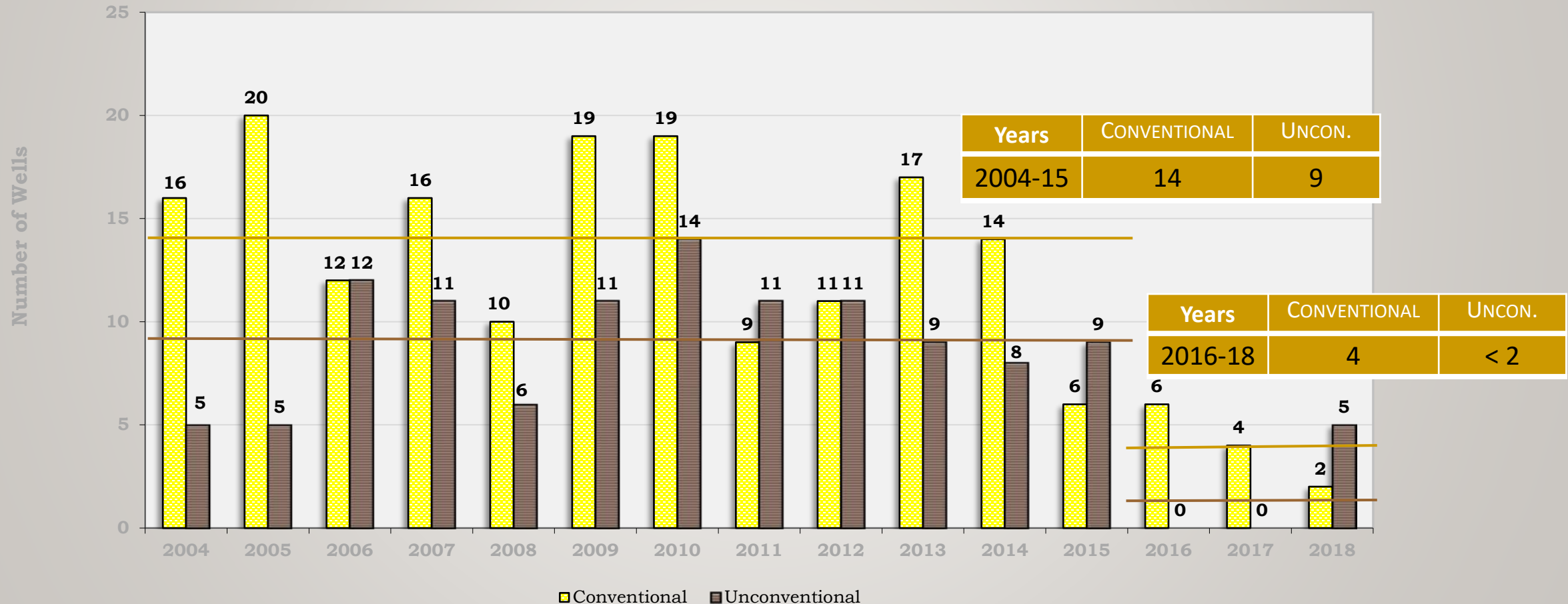
- 122 Onshore US
- 120 International
- 53 GOM





The Exploration Program: The Past 15 Years

Annual Conventional and Unconventional Wells



CONVENTIONAL EXPLORATION RISK PREDICTION 2004-18

Definitions:

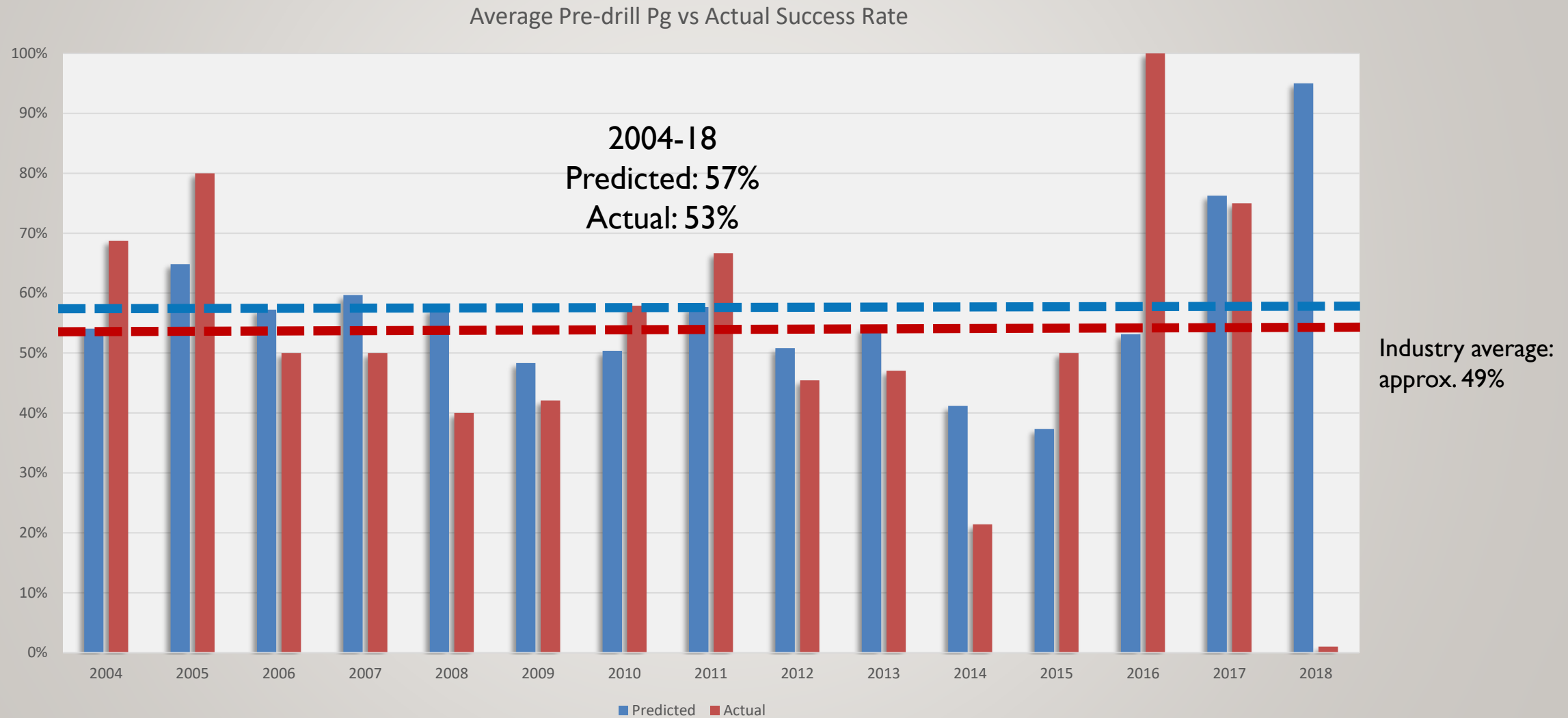
Pg = Well Chance of Success

Average Predrill Pg (Predicted Pg): The average Pg value for all the drilled prospects in a year

Actual Success Rate: The percentage of drilled prospects that are successful in a year.

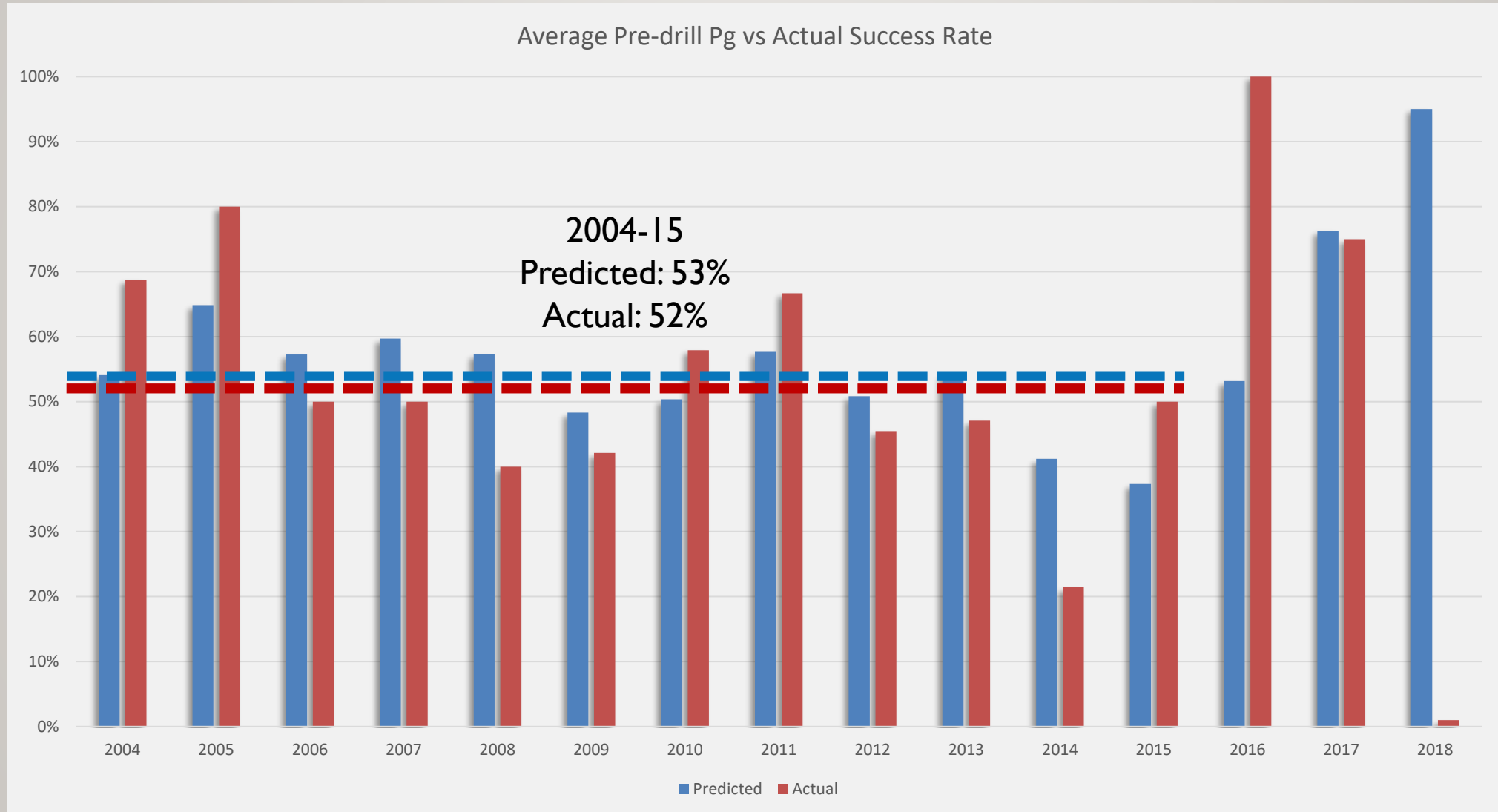


Conventional Pg Prediction vs Actual by Year



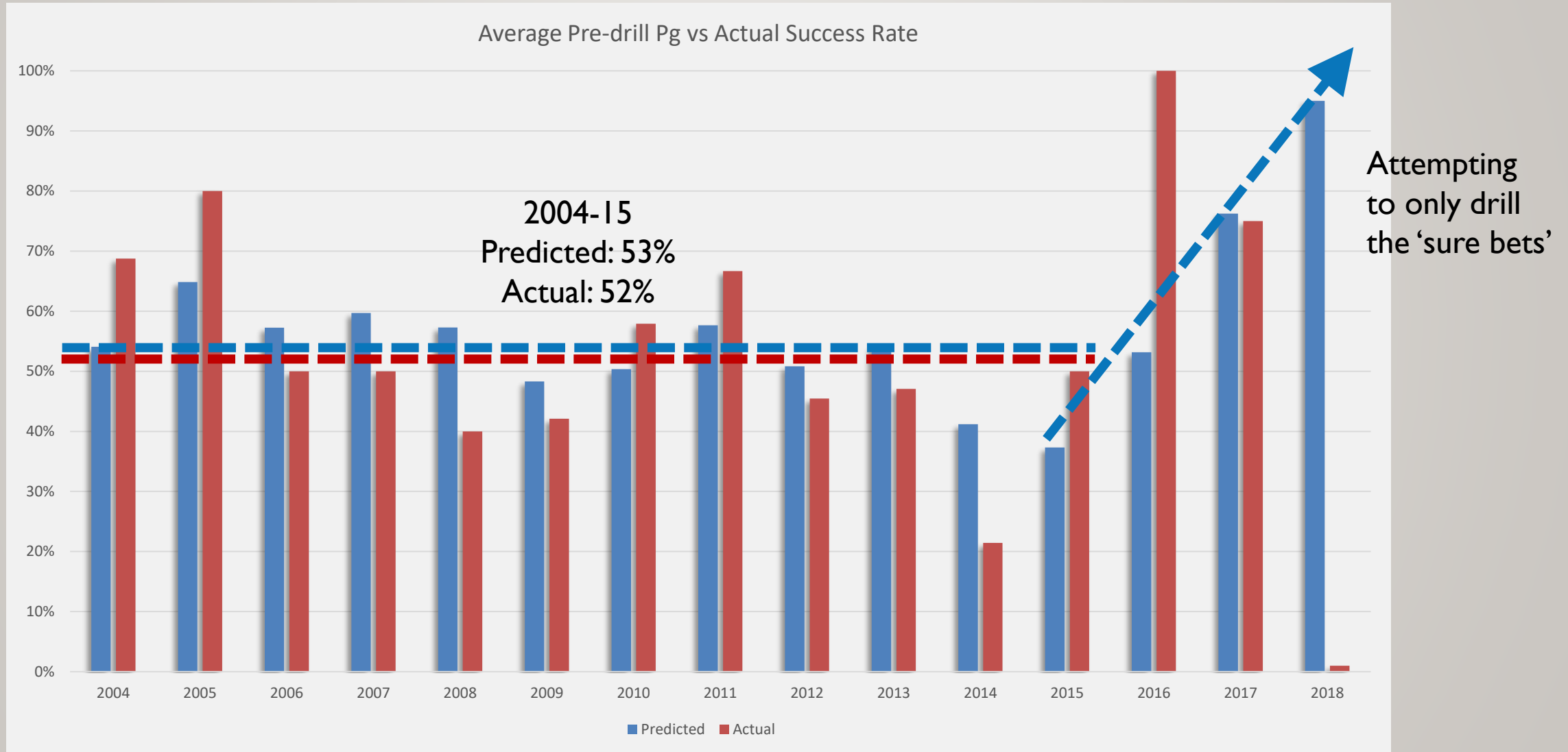


Conventional Pg Prediction vs Actual by Year



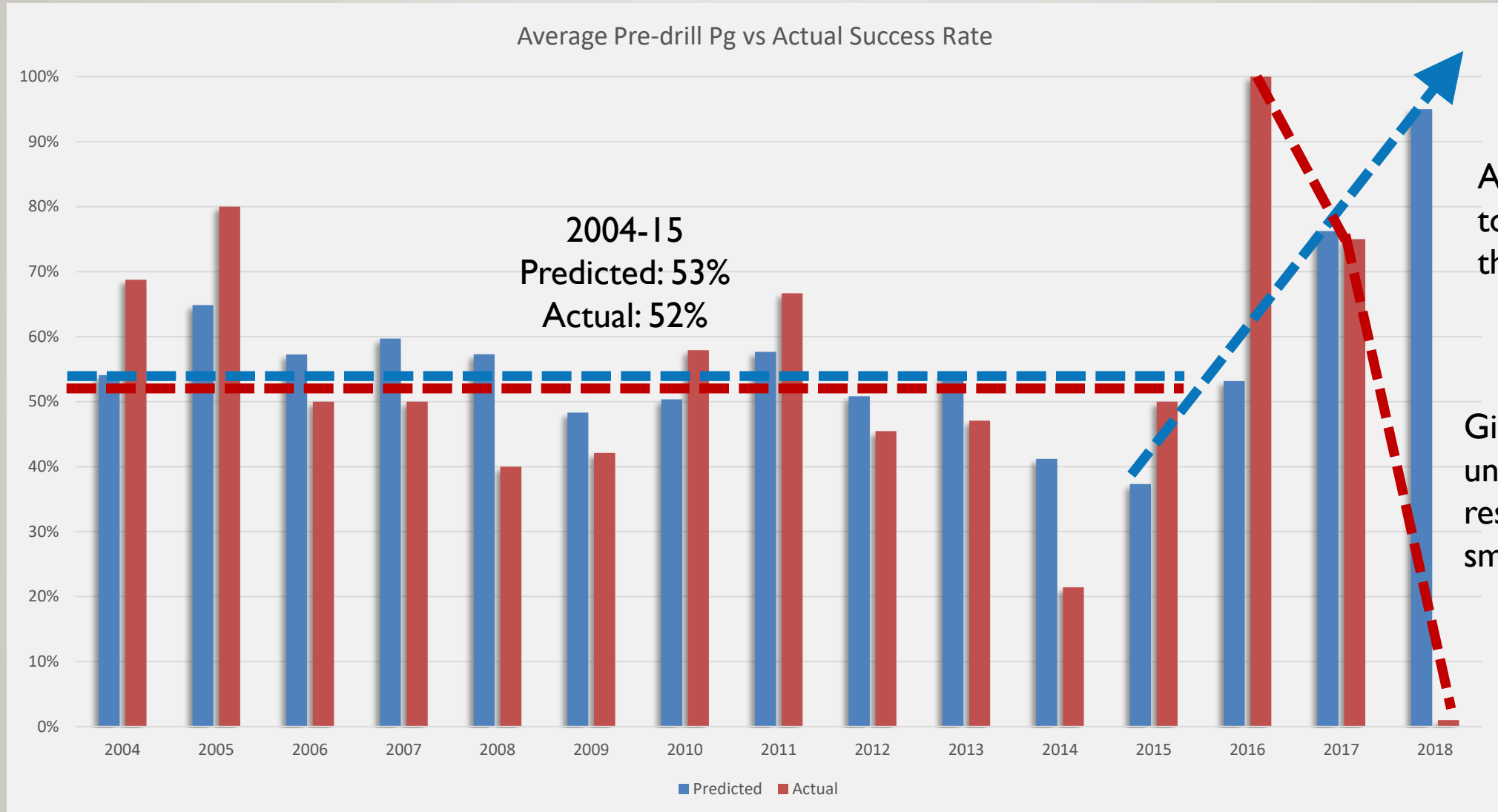


Conventional Pg Prediction vs Actual by Year



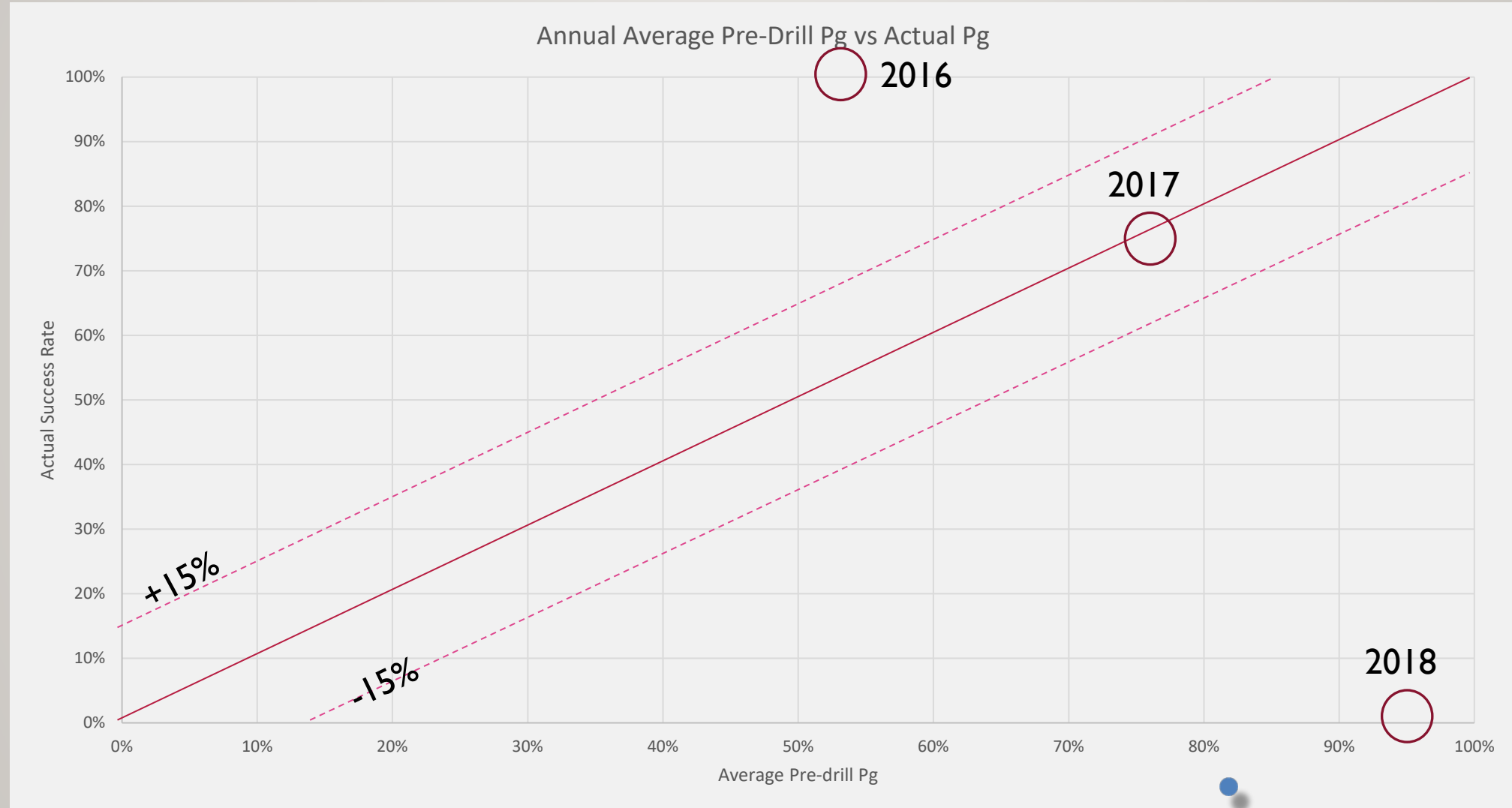


Conventional Pg Prediction vs Actual by Year

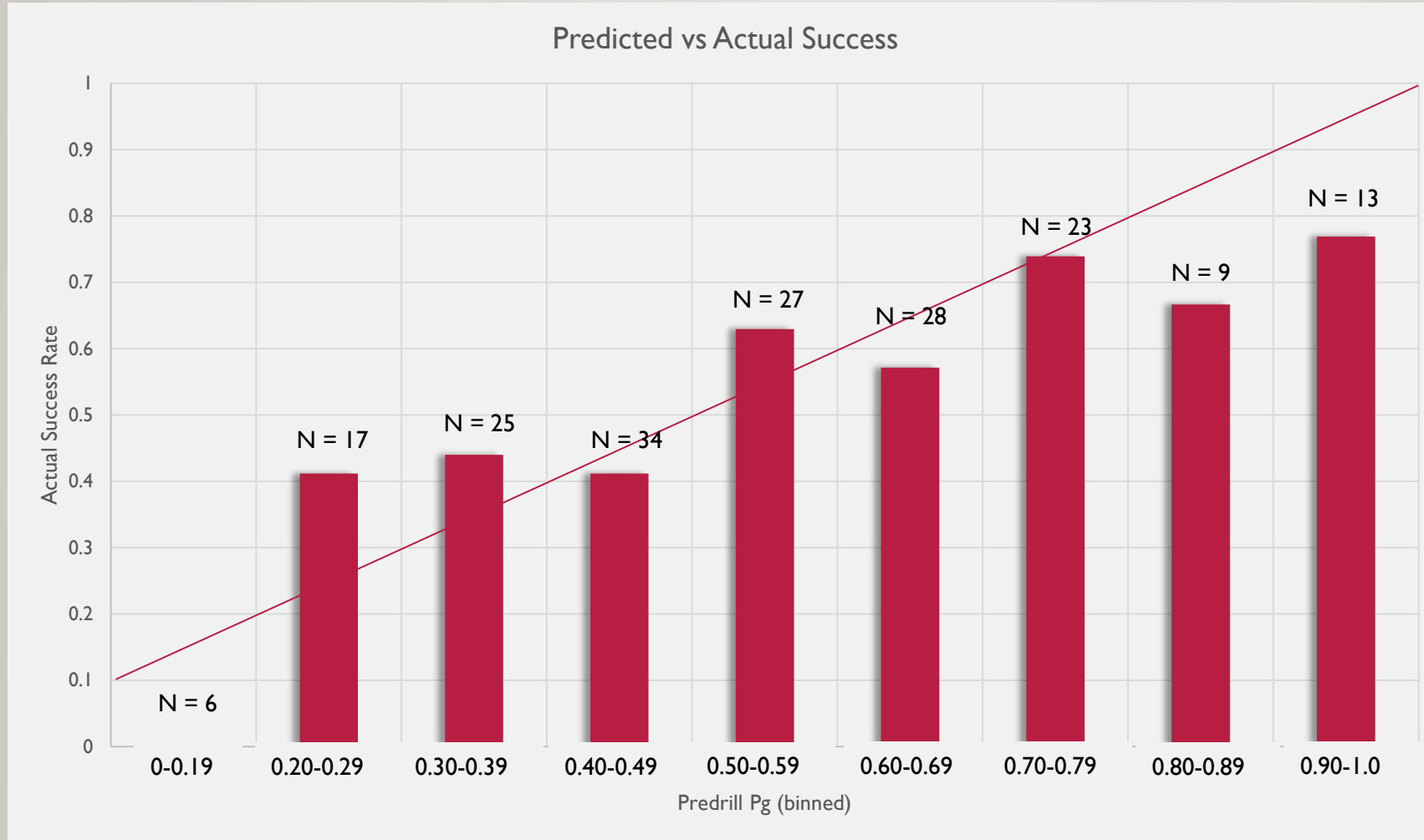




Conventional Pg Prediction vs Actual by Year



Conventional Pg Prediction vs Actual by Pg Decile Bins

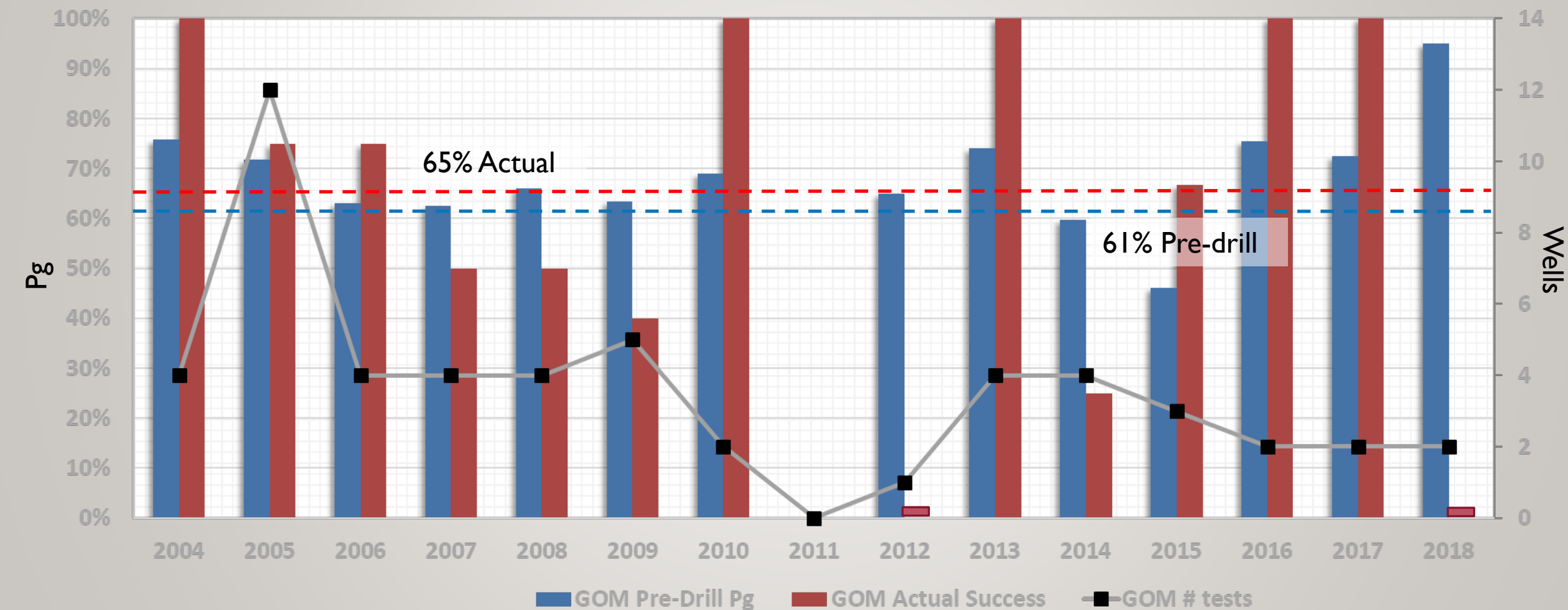


Pedrill Pg Observations:

- Under 20% is a dry hole, but sample size is small
- 20-29% - the results are really 40%
- 80-100% - over-confident

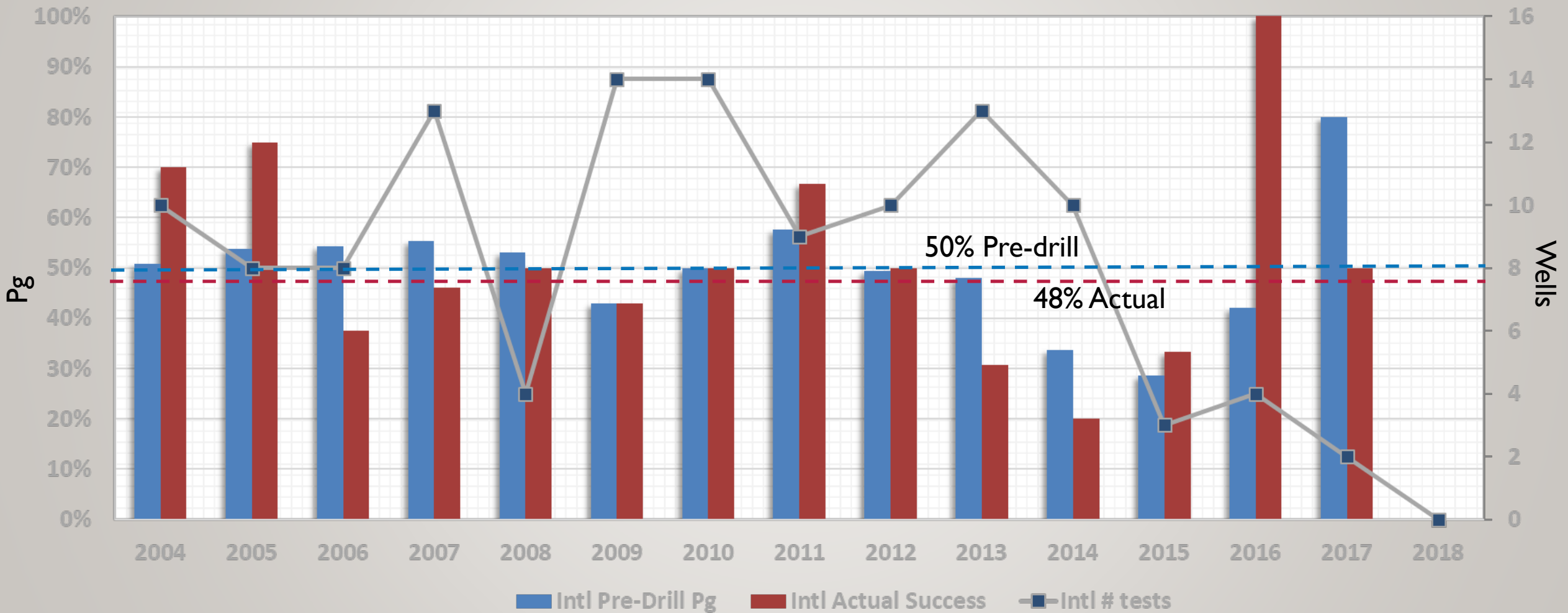


GOM Exploration Program: Pg Predicted vs Actual





International Exploration Program: Pg Predicted vs Actual



RISK PREDICTION LESSONS

- With enough samples, the Pg predictions were very good.
- Be honest with the Pg, especially if only drilling one or two wells for the year.
- Be wary of over-confidence when assessing prospects where perceived Pg >80%
- Perceived Pg of 20-29% may be better than you think.

CONVENTIONAL EXPLORATION RESOURCE PREDICTION 2004-18

Definitions:

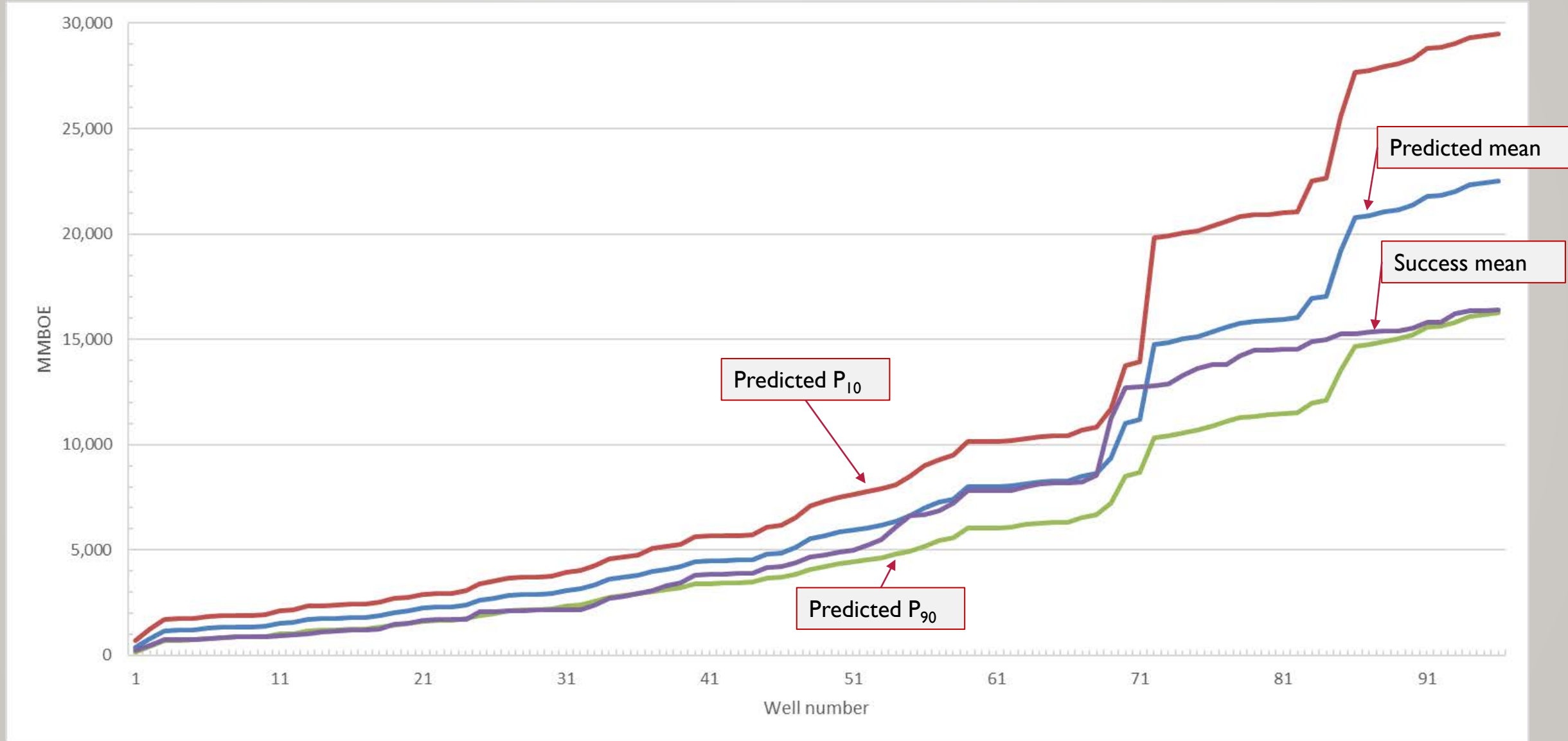
P10 Volume: 10% of the range of resource volume estimates are larger than this amount.

P90 Volume: 90% of the range of resource volume estimates are larger than this amount.

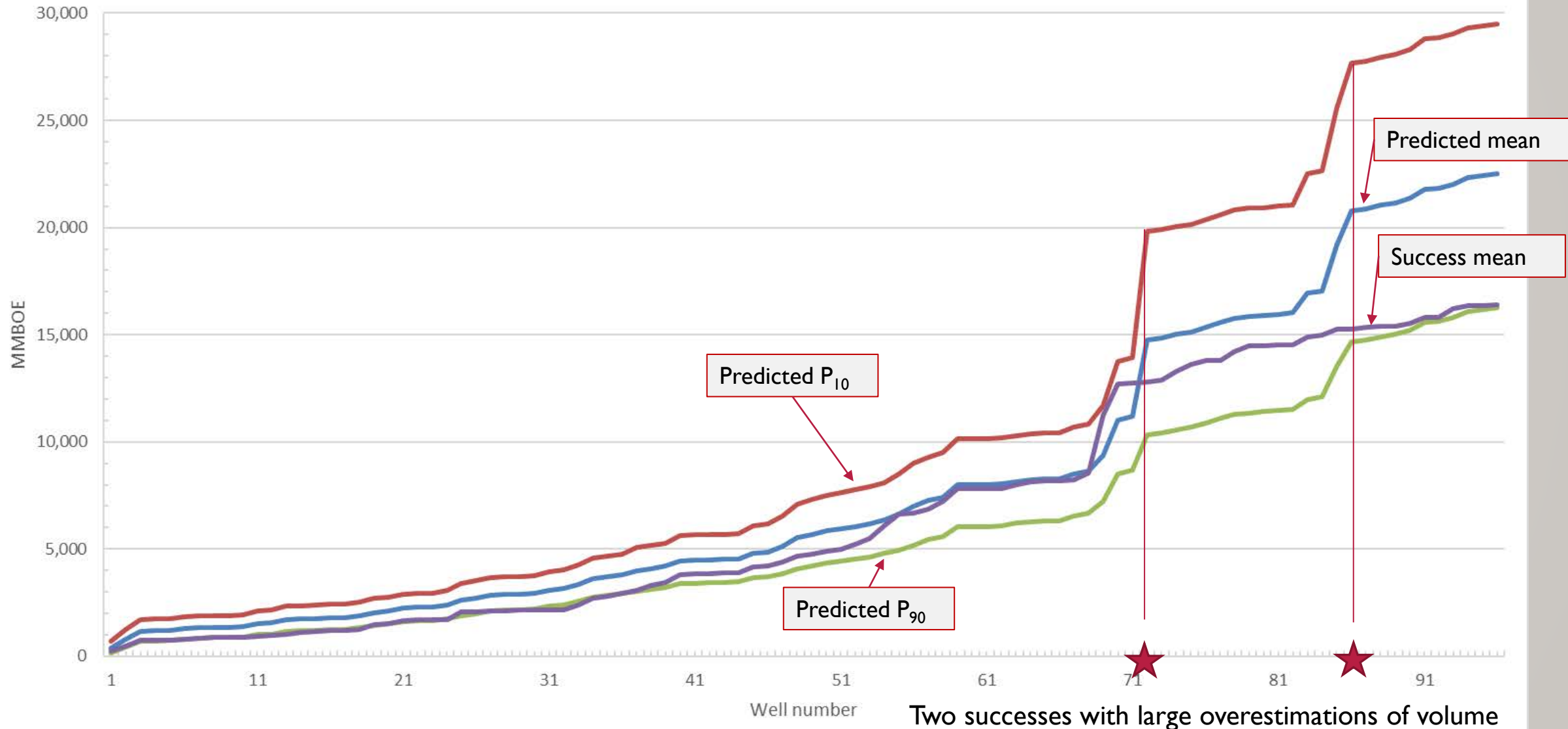
Predrill Mean Resource Volume: The sum of all the risked mean resource volumes for all prospects drilled in a year

Discovered Mean Volume: The sum of the mean resource volumes for all the successful prospects in a year.

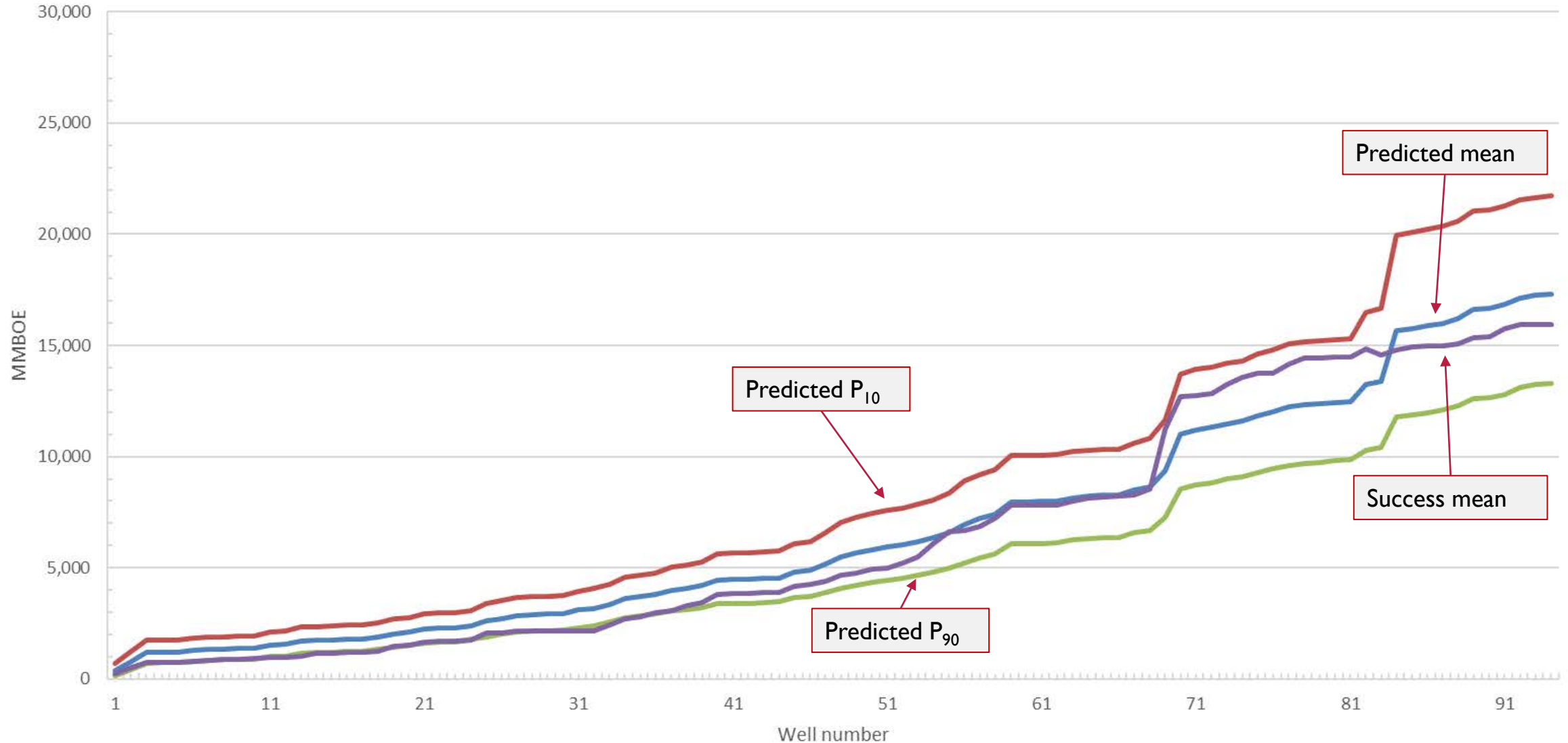
Cumulative Conventional Exploration Volumes Predicted vs Success



Cumulative Conventional Exploration Volumes Predicted vs Success

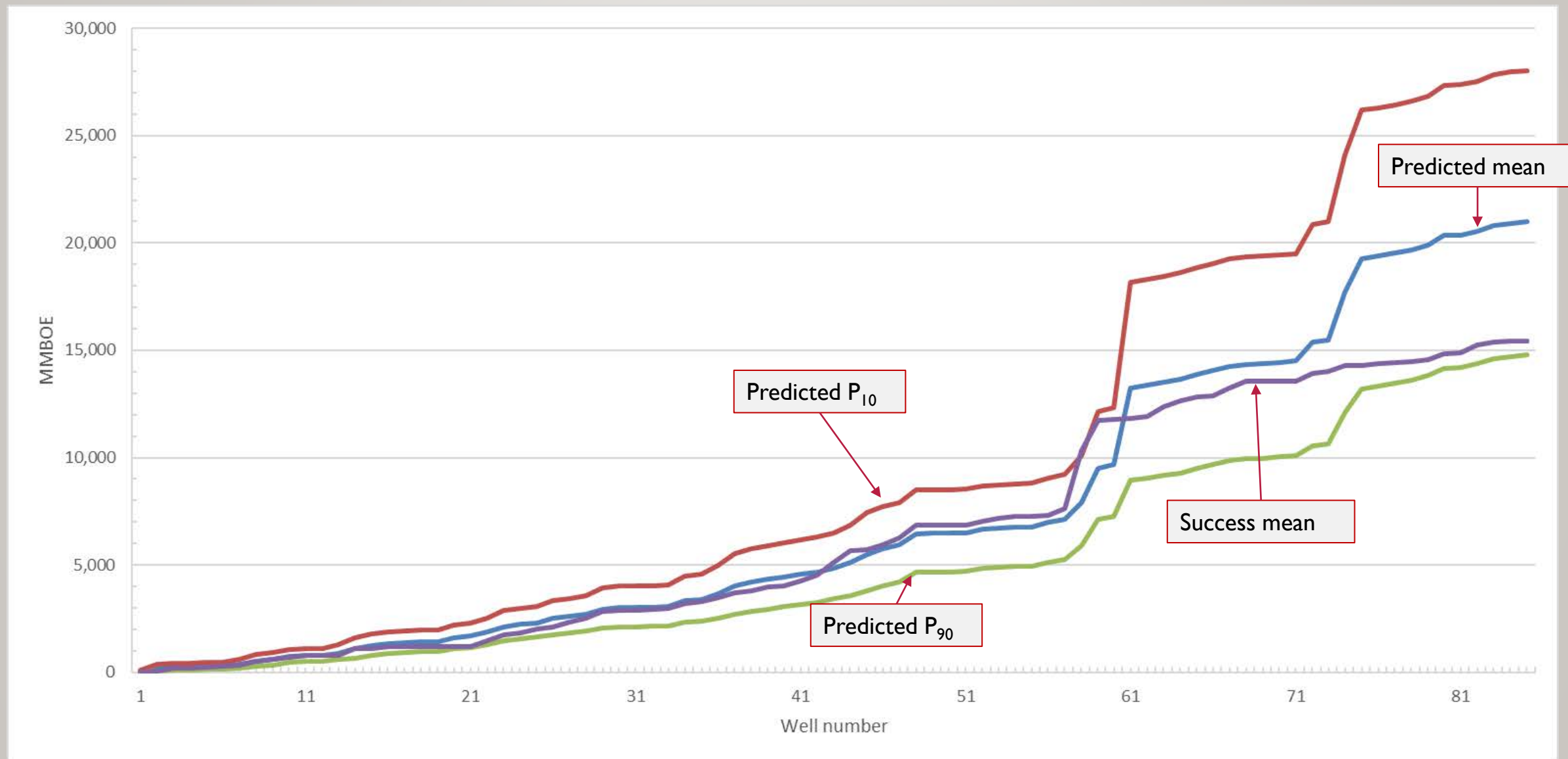


Cumulative Conventional Exploration Volumes Predicted vs Success without two wells



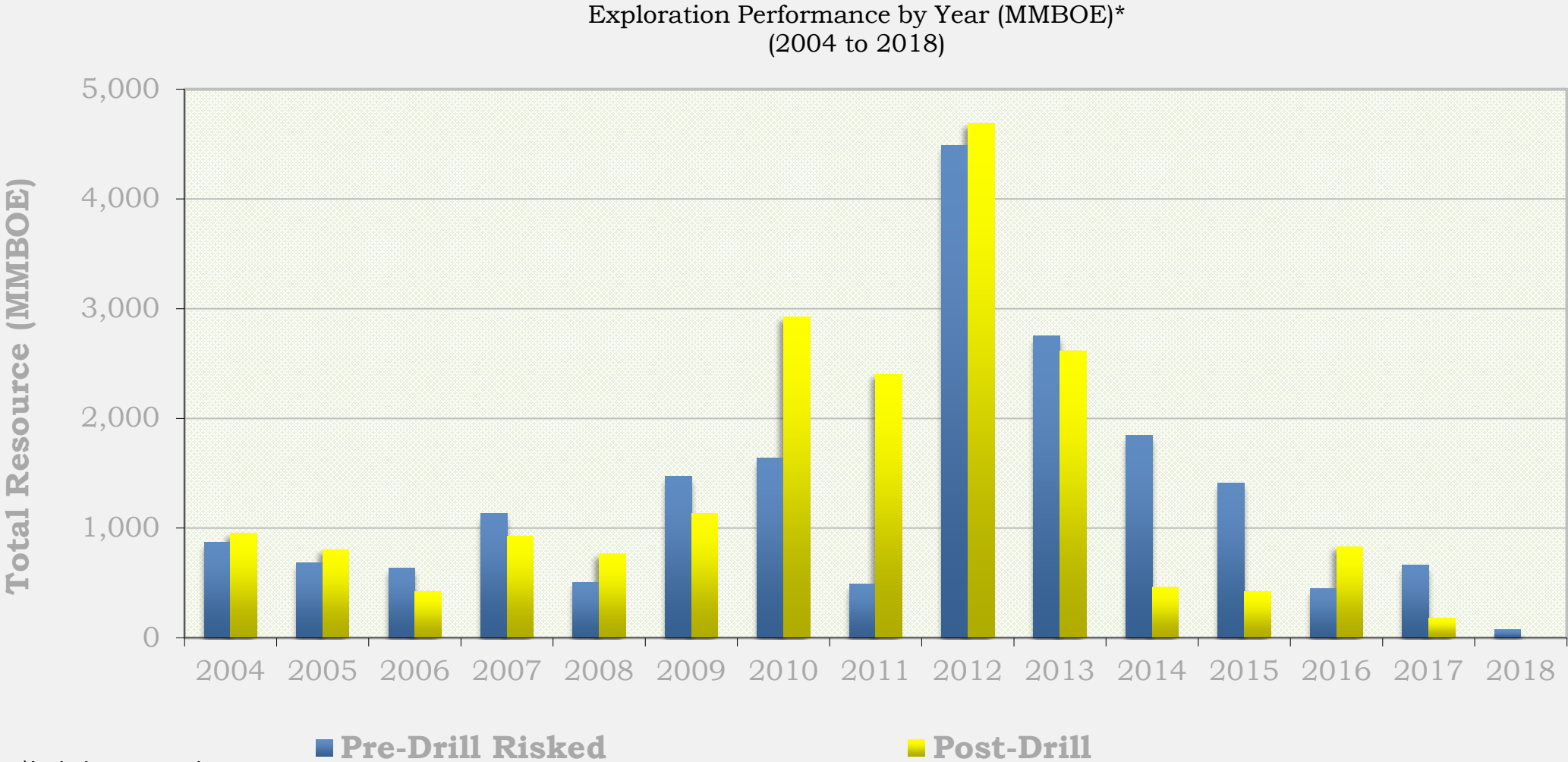


Cumulative Conventional Exploration Volumes Predicted vs Success without 2004





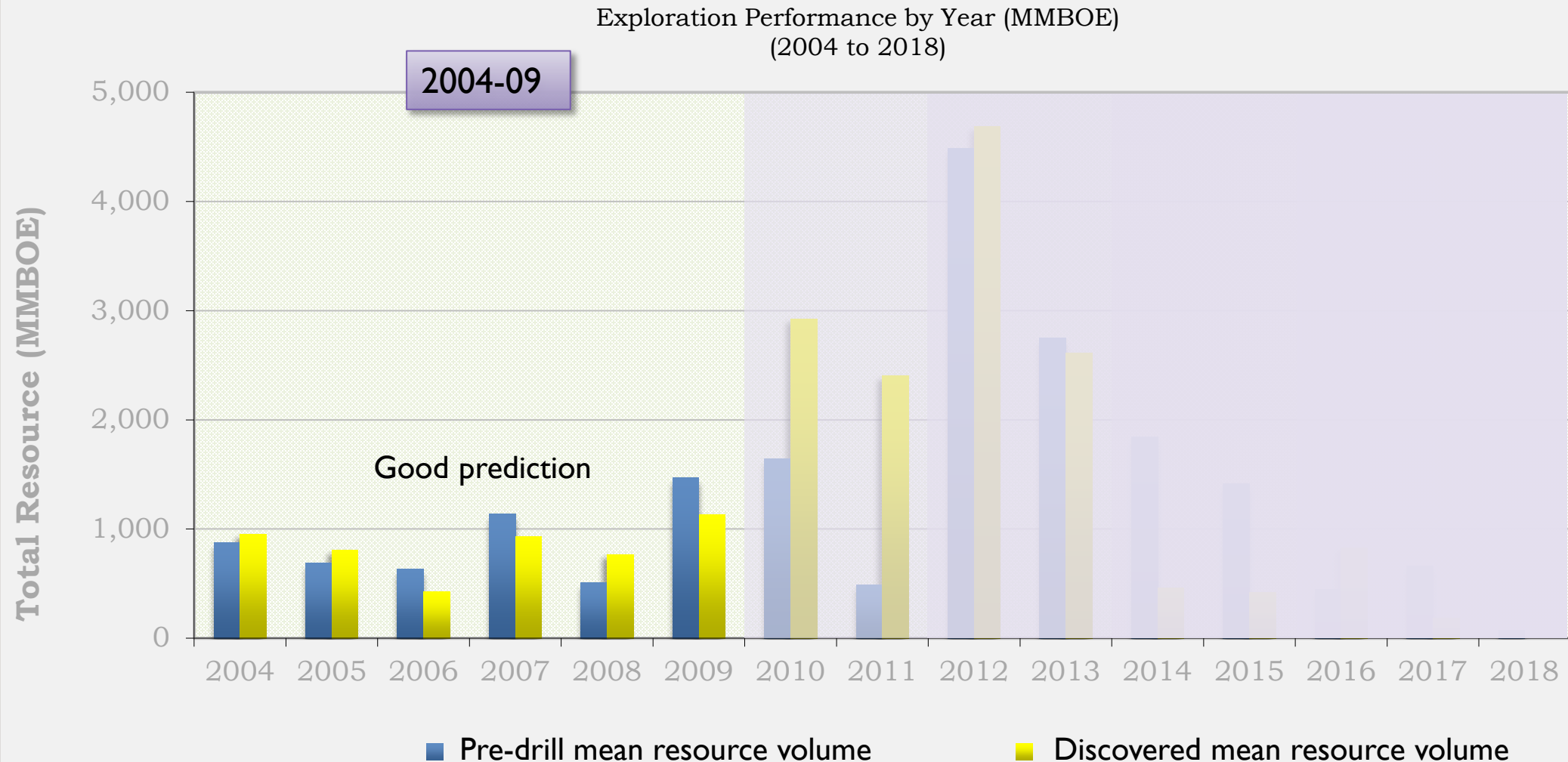
Conventional Exploration Volumes by Year Predicted vs Success



*Includes appraisals

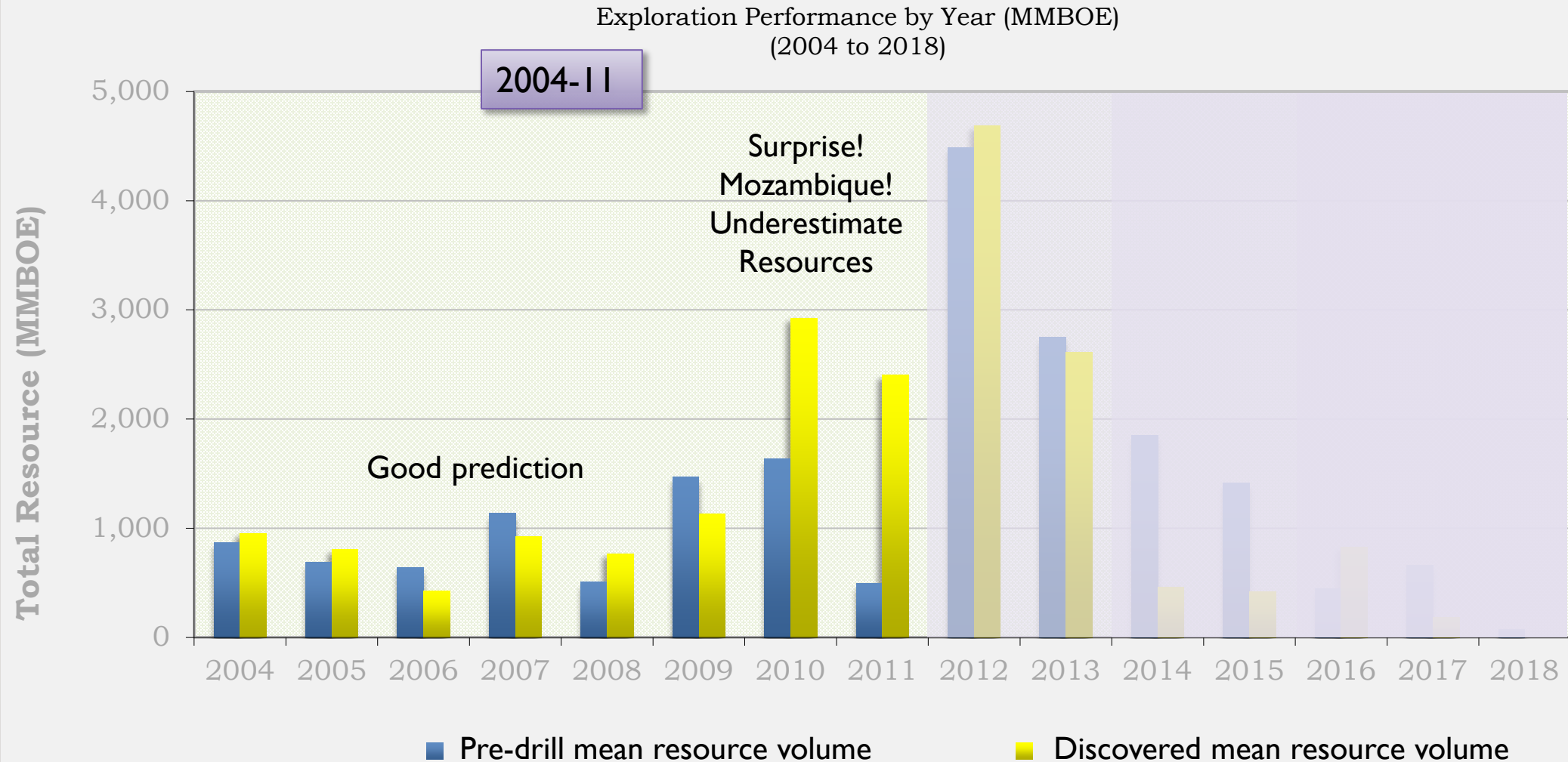
Conventional Exploration Volumes by Year

Predicted vs Success



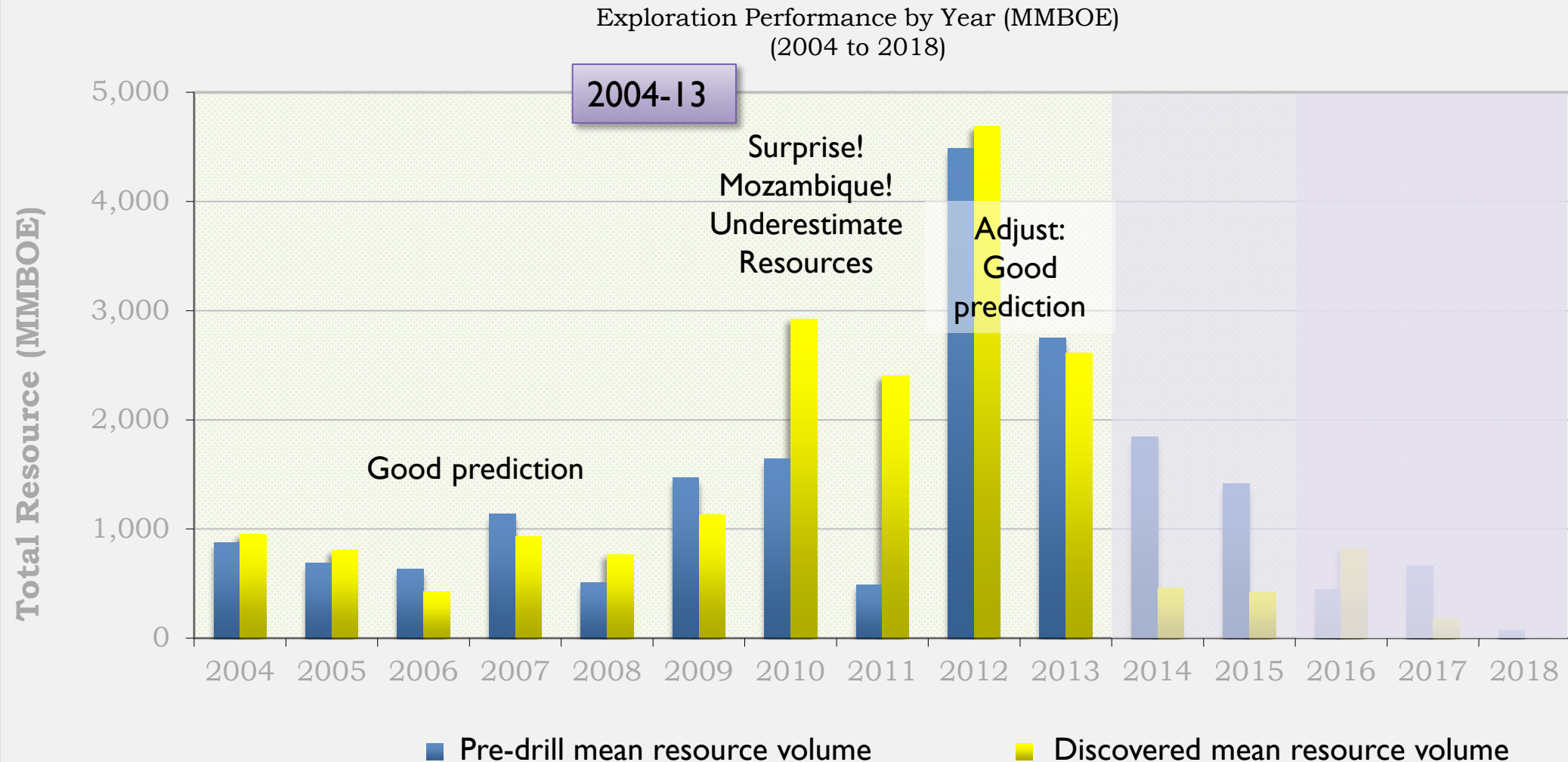
Conventional Exploration Volumes by Year

Predicted vs Success

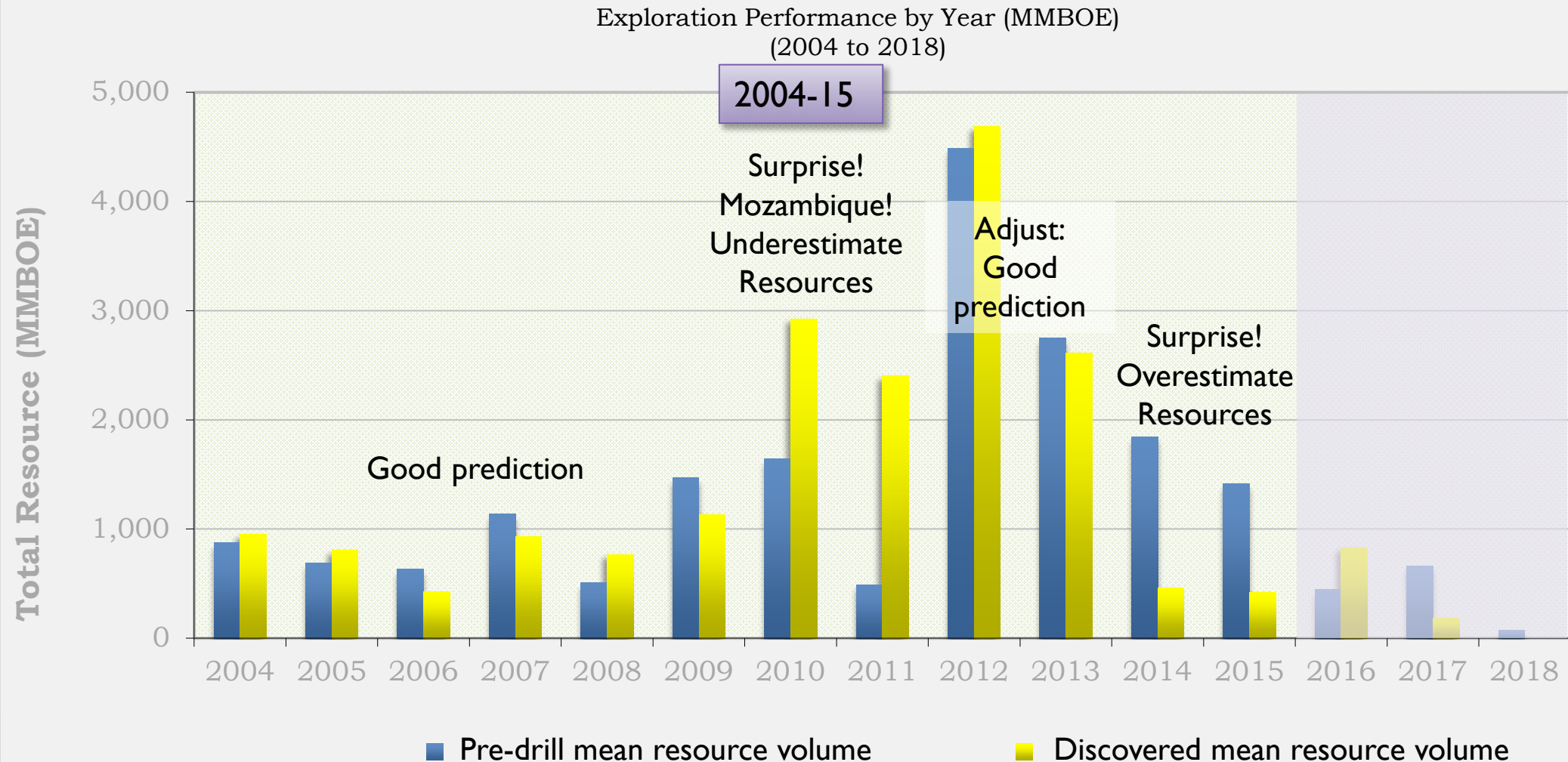


Conventional Exploration Volumes by Year

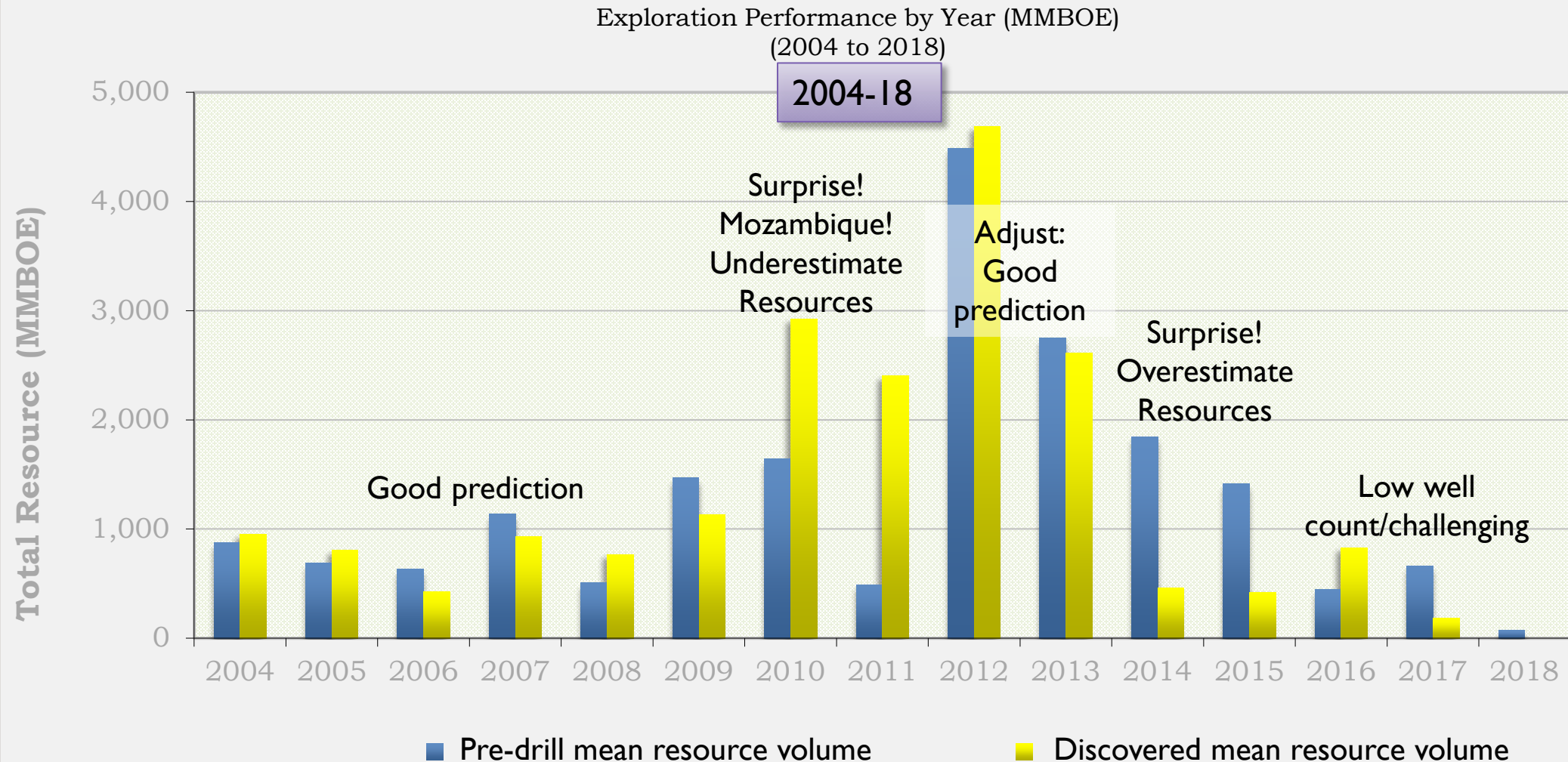
Predicted vs Success



Conventional Exploration Volumes by Year Predicted vs Success

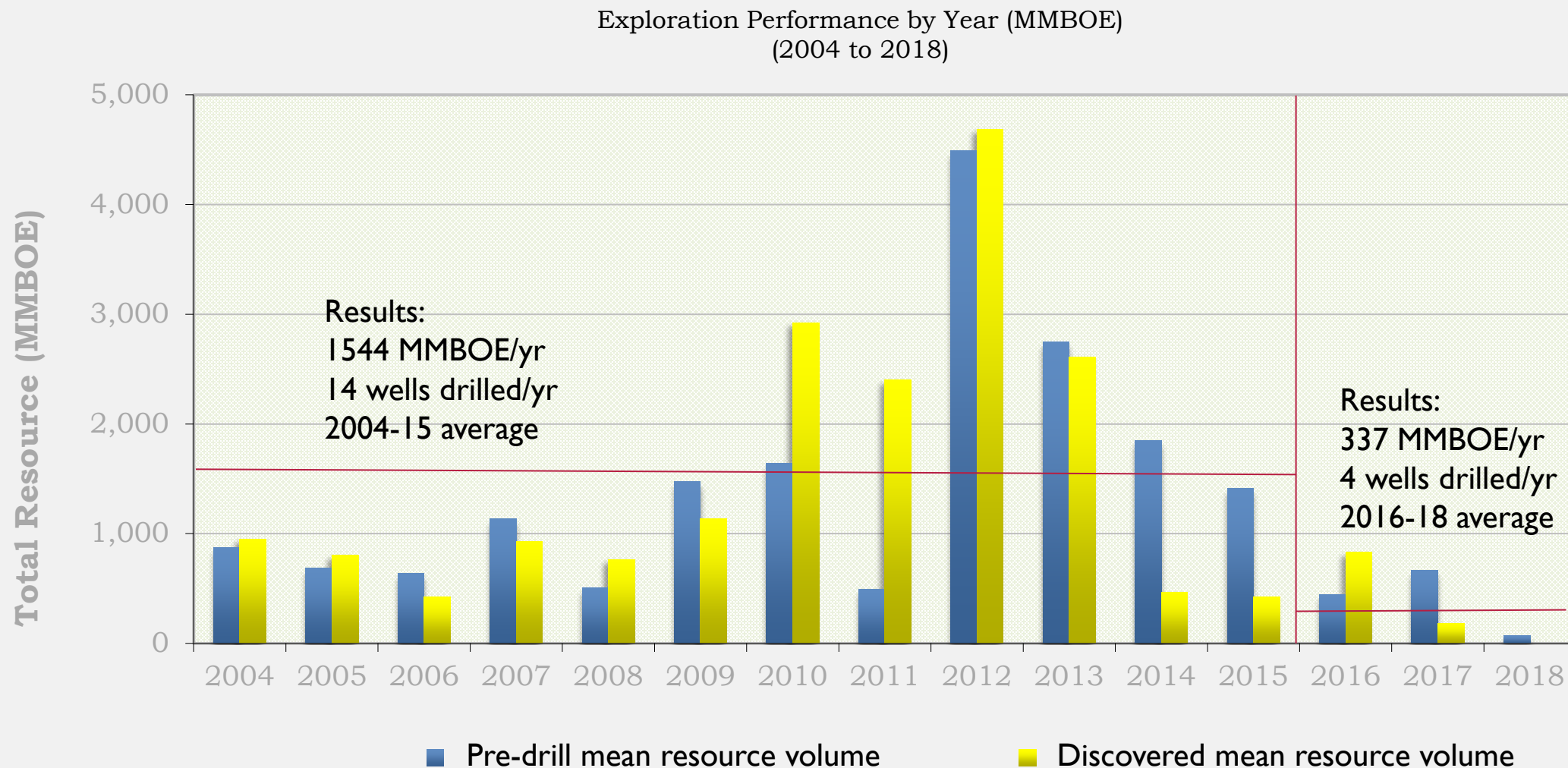


Conventional Exploration Volumes by Year Predicted vs Success



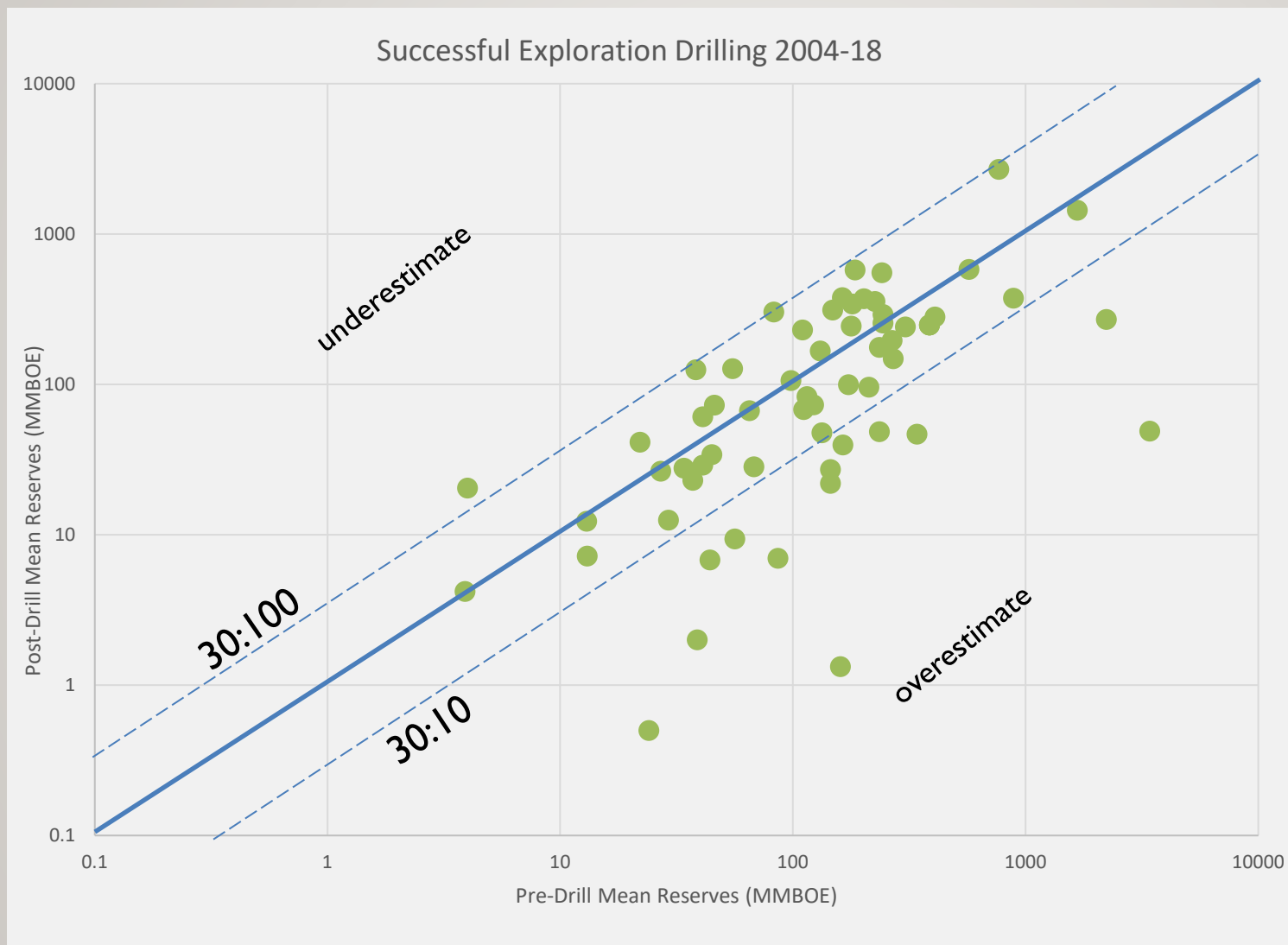


Conventional Exploration Volumes by Year Predicted vs Success





Successful Wells: Reserve Prediction – Int'l Exploration

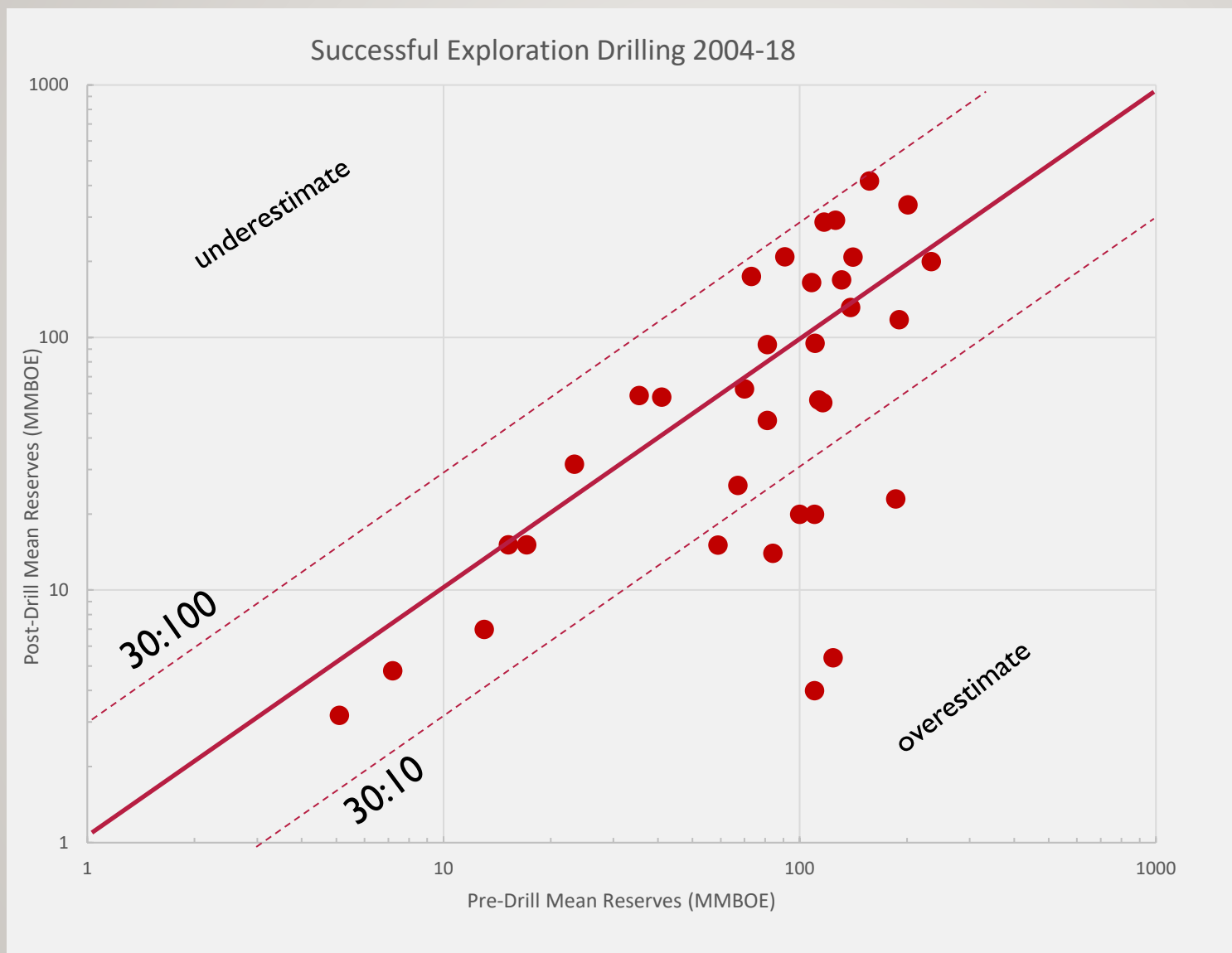


30:100
Pre-drill 30 MMBOE = Post-drill 100 MMBOE

30:10
Pre-drill 30 MMBOE = Post-drill 10 MMBOE



Successful Wells: Reserve Prediction – GOM Exploration



30:100
Pre-drill 30 MMBOE = Post-drill 100 MMBOE

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RESOURCE PREDICTION LESSONS

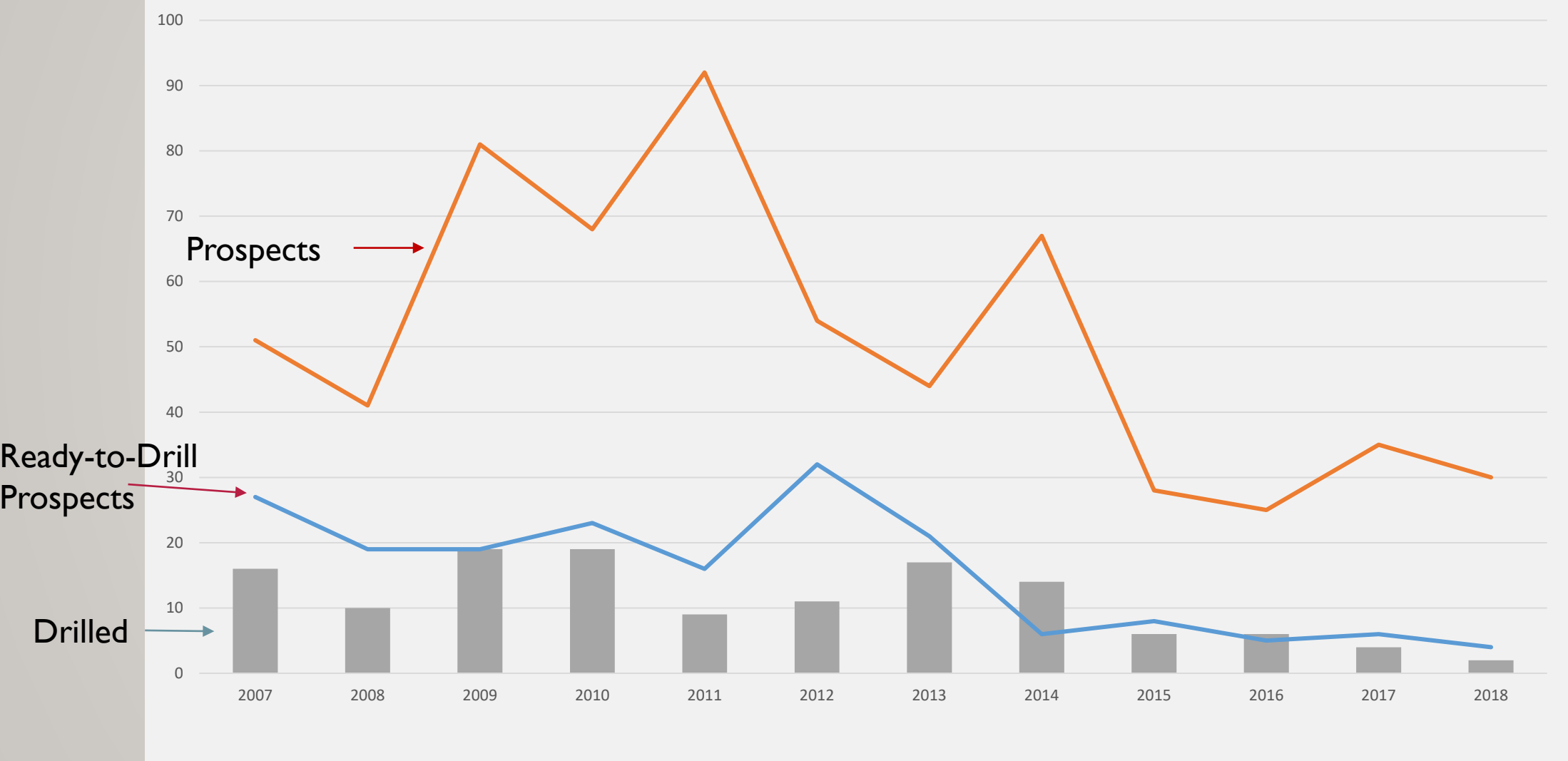
- Pre-drill prospect resource estimates tend to be larger than the actual resources discovered.
- Be vigilant to keep the P_{99} resource volume low to prevent overestimation.
- Keep P_{01} resource volume within geologic parameters

PROSPECT INVENTORY

2007-18

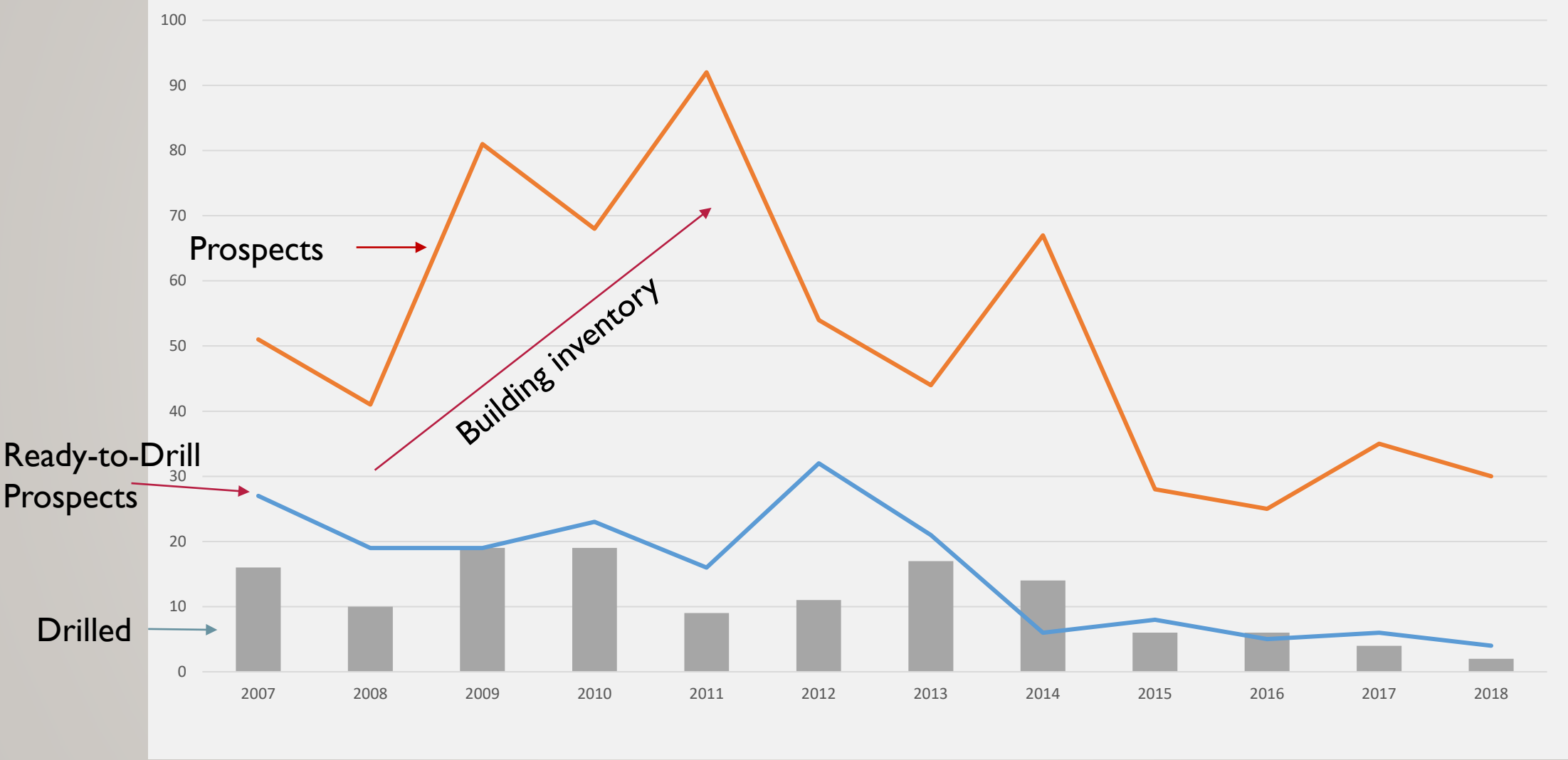


Conventional Exploration Prospect Inventory 2007-18



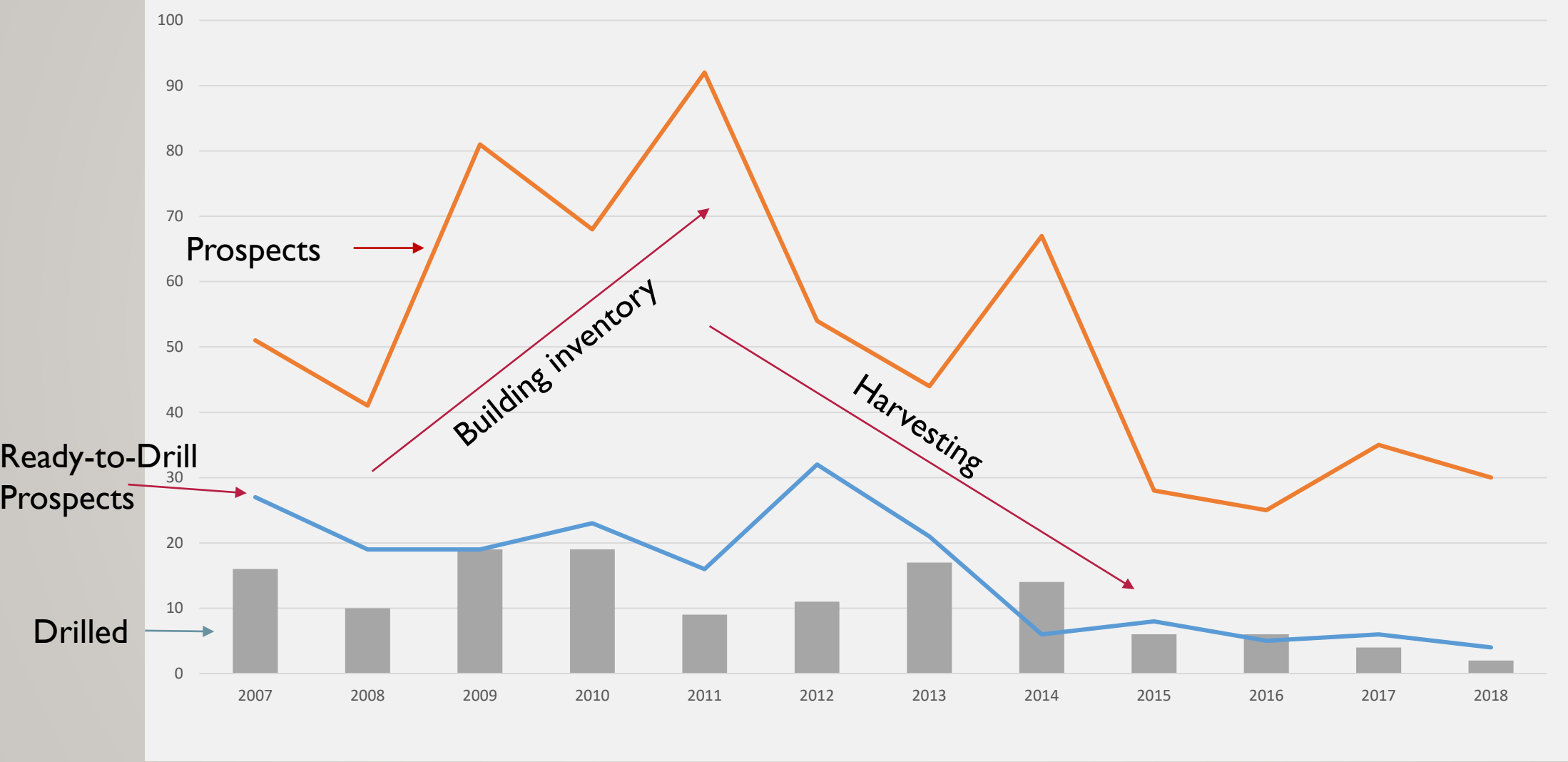


Conventional Exploration Prospect Inventory 2007-18



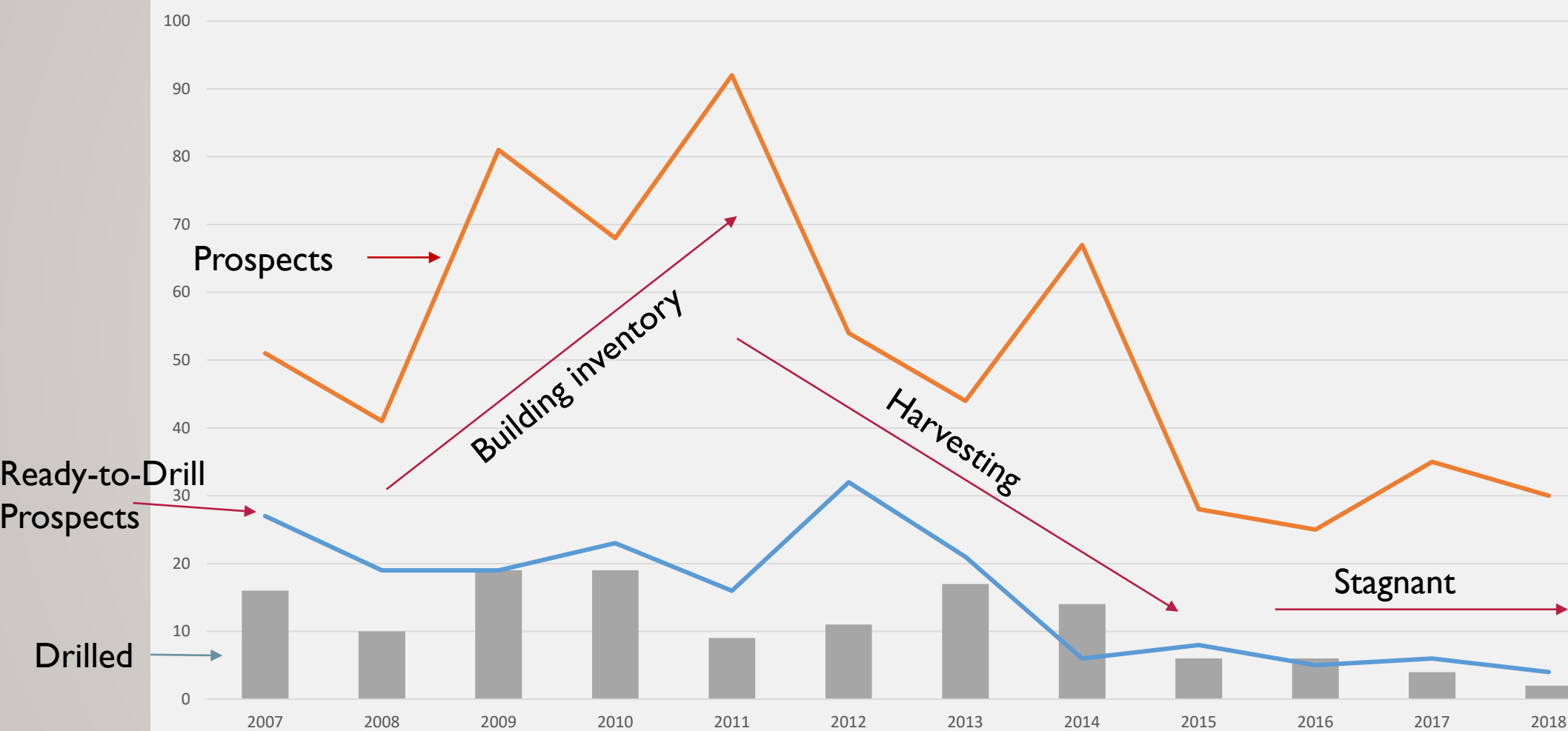


Conventional Exploration Prospect Inventory 2007-18





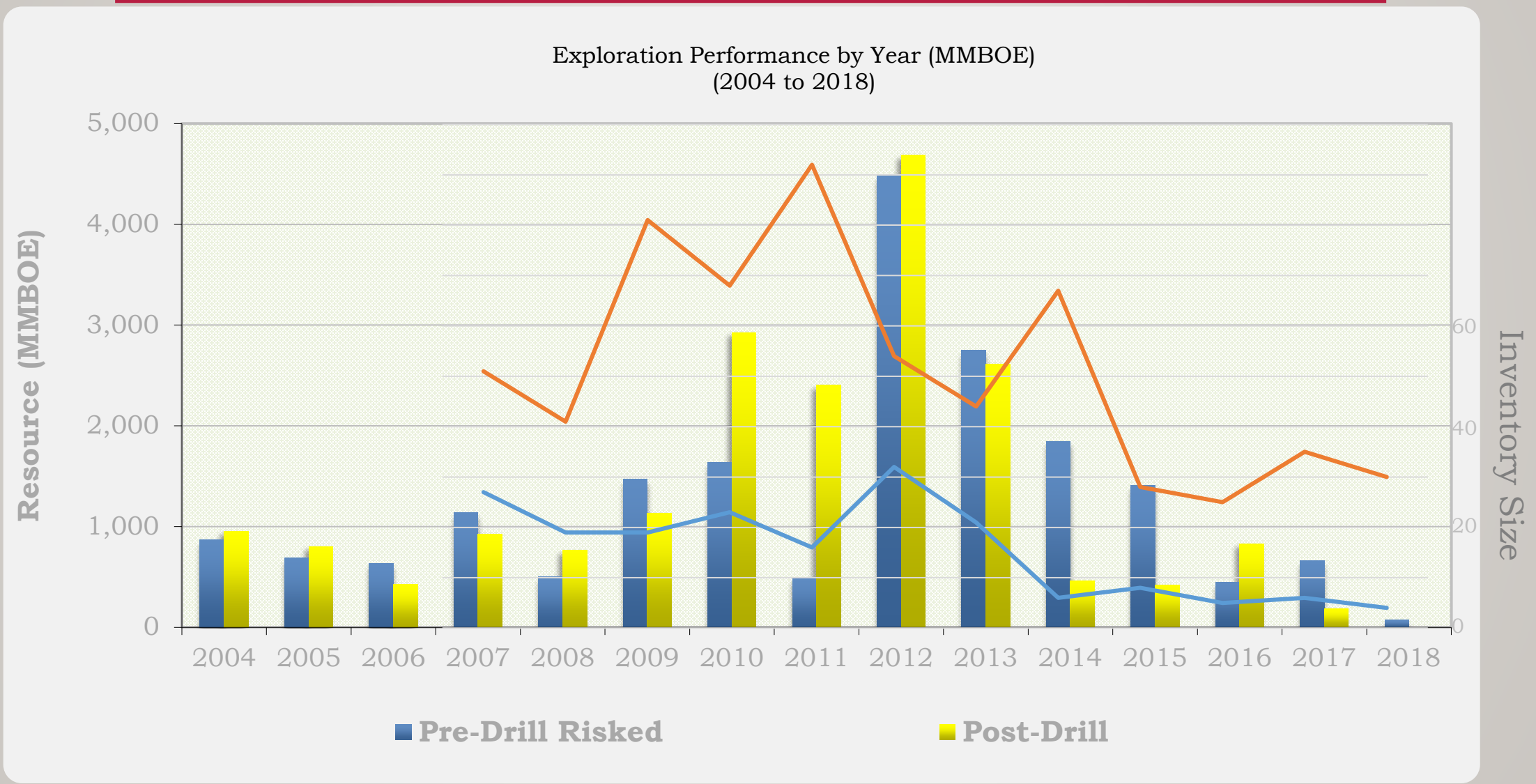
Conventional Exploration Prospect Inventory 2007-18



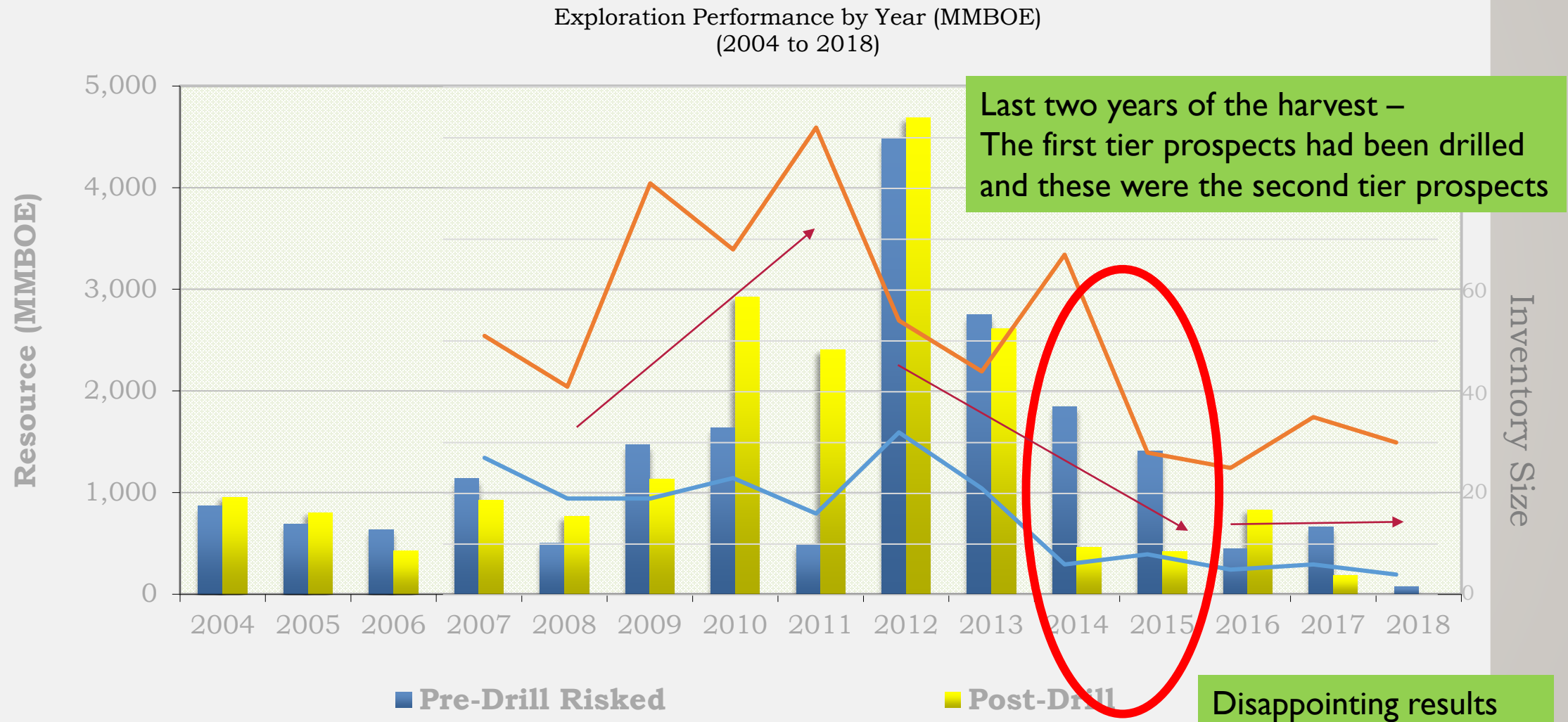


Conventional Exploration Performance by Year

2004-18



Conventional Exploration Performance by Year 2004-18



PROSPECT INVENTORY LESSONS

- A healthy prospect inventory is as vital to exploration success as good Pg and volume prediction.
- The effects of a dwindling prospect inventory may not be seen for many years.
- Prospects have an “expiration date”. They need to be constantly competing with new prospects in the inventory.
- The number of new prospects being delivered to the inventory needs to keep ahead of the drilling rate.
- Without replenishment and competition, second-tier prospects appear better than they really are.



LESSONS LEARNED FROM THIS LOOKBACK

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 - Deep
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FINAL LESSON LEARNED:

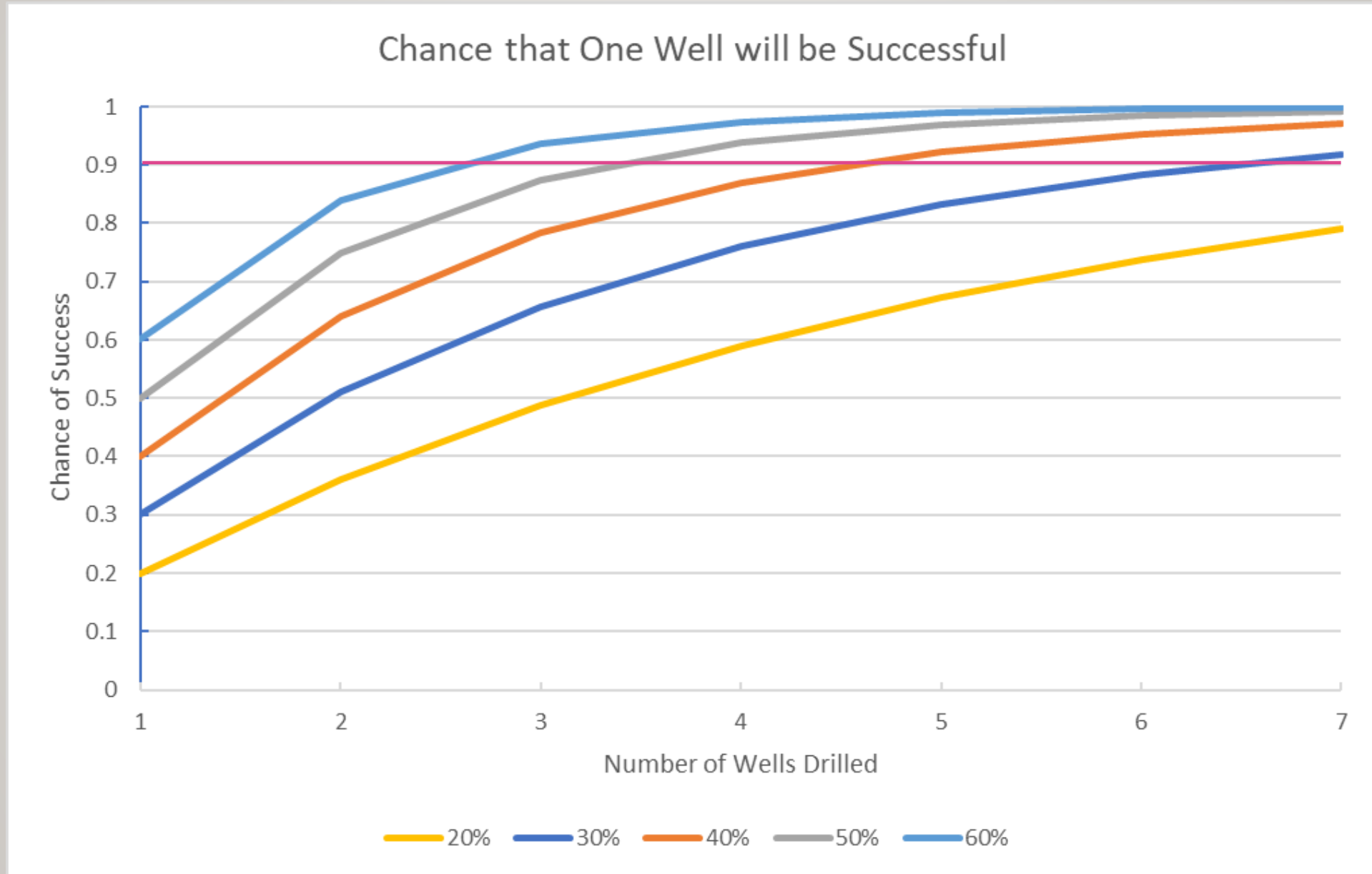
ANADARKO WAS PRETTY GOOD AT EXPLORATION

Acknowledgements:

- Occidental Petroleum Corporation
- Dr.Alexei Milkov, Colorado School of Mines
- Matt Morris, Anadarko
- Diane Williams, Anadarko
- The many past Anadarko employees who were a part of the Risk Consistency Team and maintained the Risk Consistency database

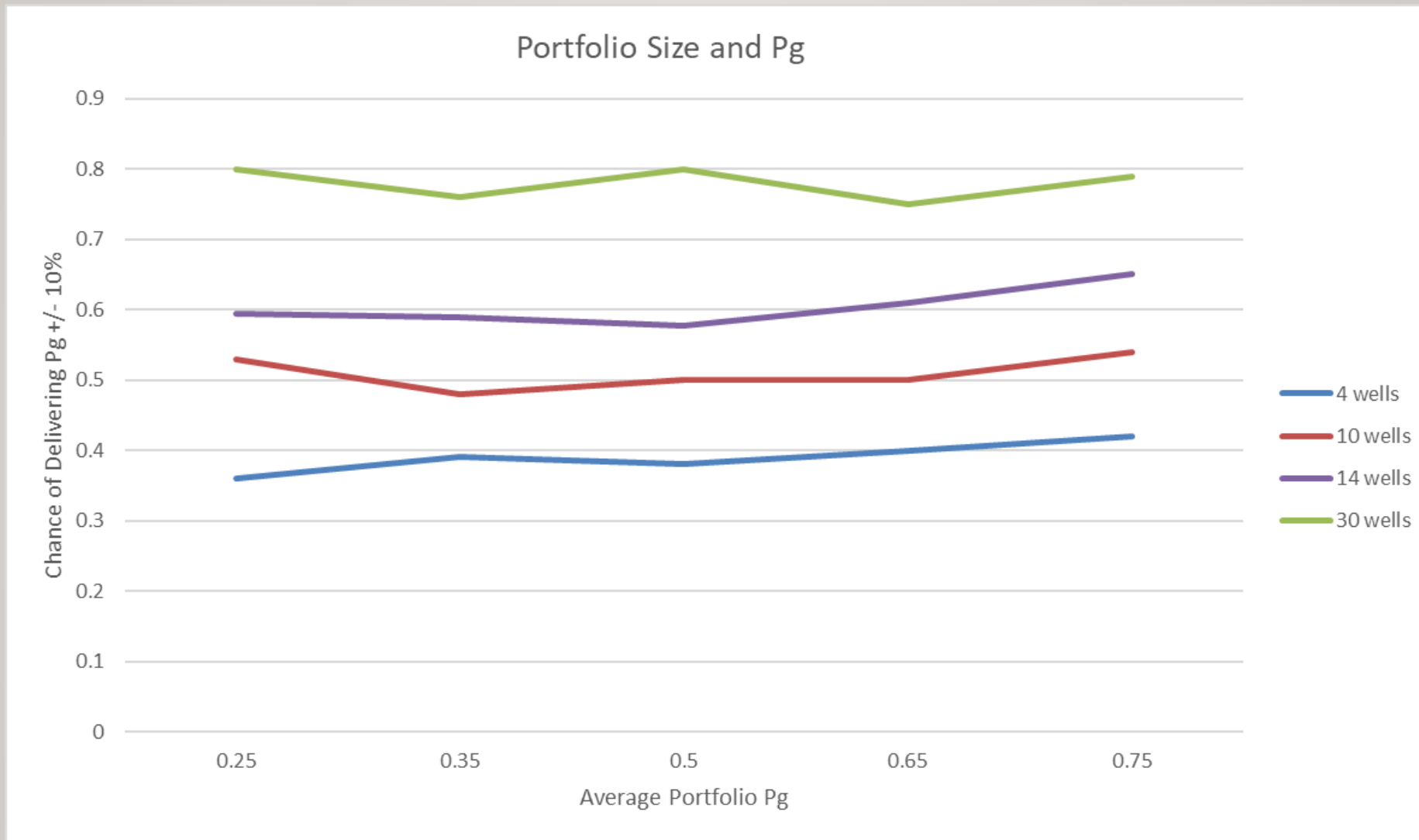
BACKUP

SWINGS OF THE BAT



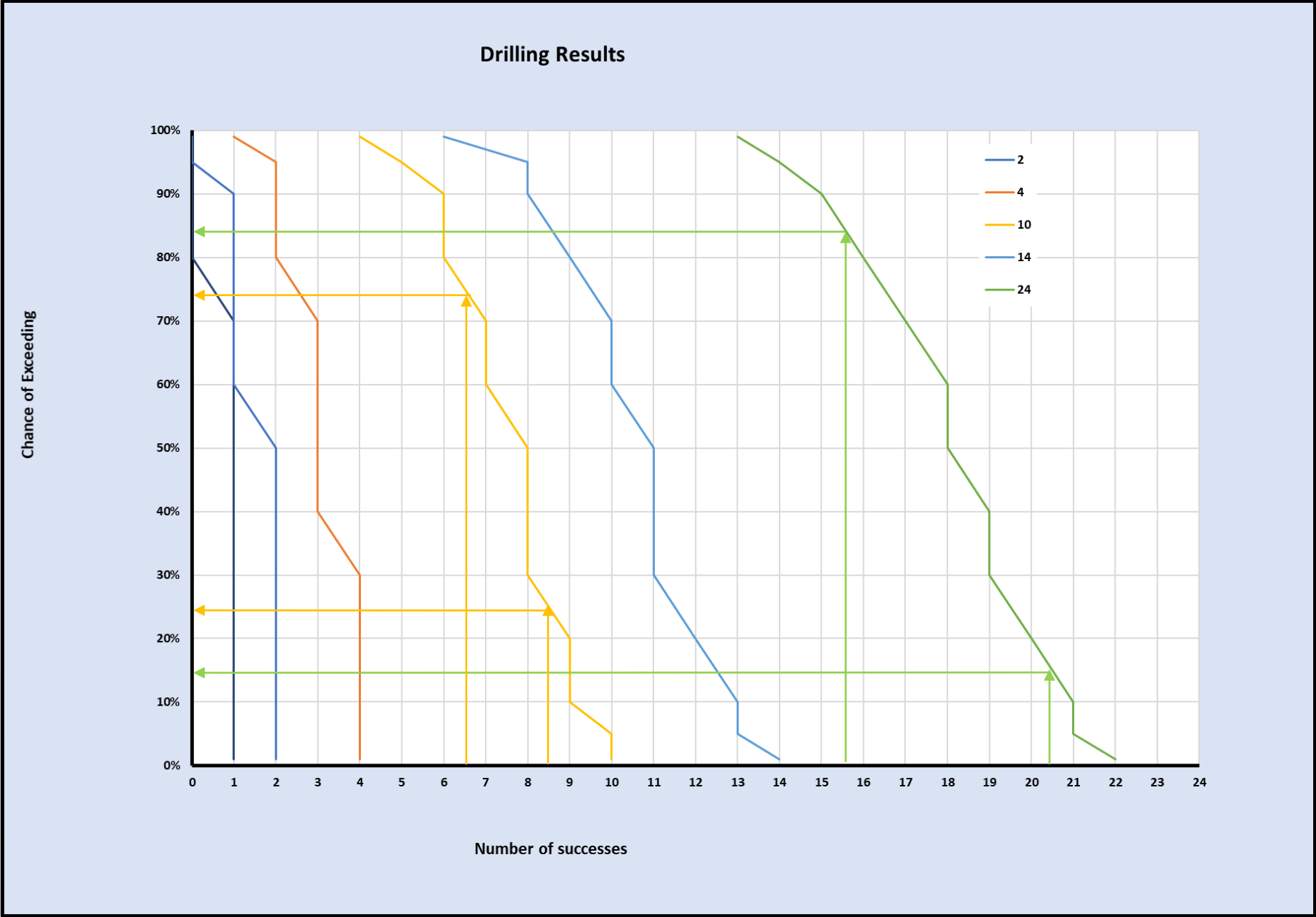


A PERFECT PG PREDICTION (+/- 10%) FOR VARIOUS PORTFOLIO SIZES



With more than 10 wells, a bad Pg portfolio outcome is more likely due to poor prediction than bad luck.
With 10 wells or fewer, luck determines the outcome and not predictive ability

A 75% COS PORTFOLIO



A 25% COS PORTFOLIO

