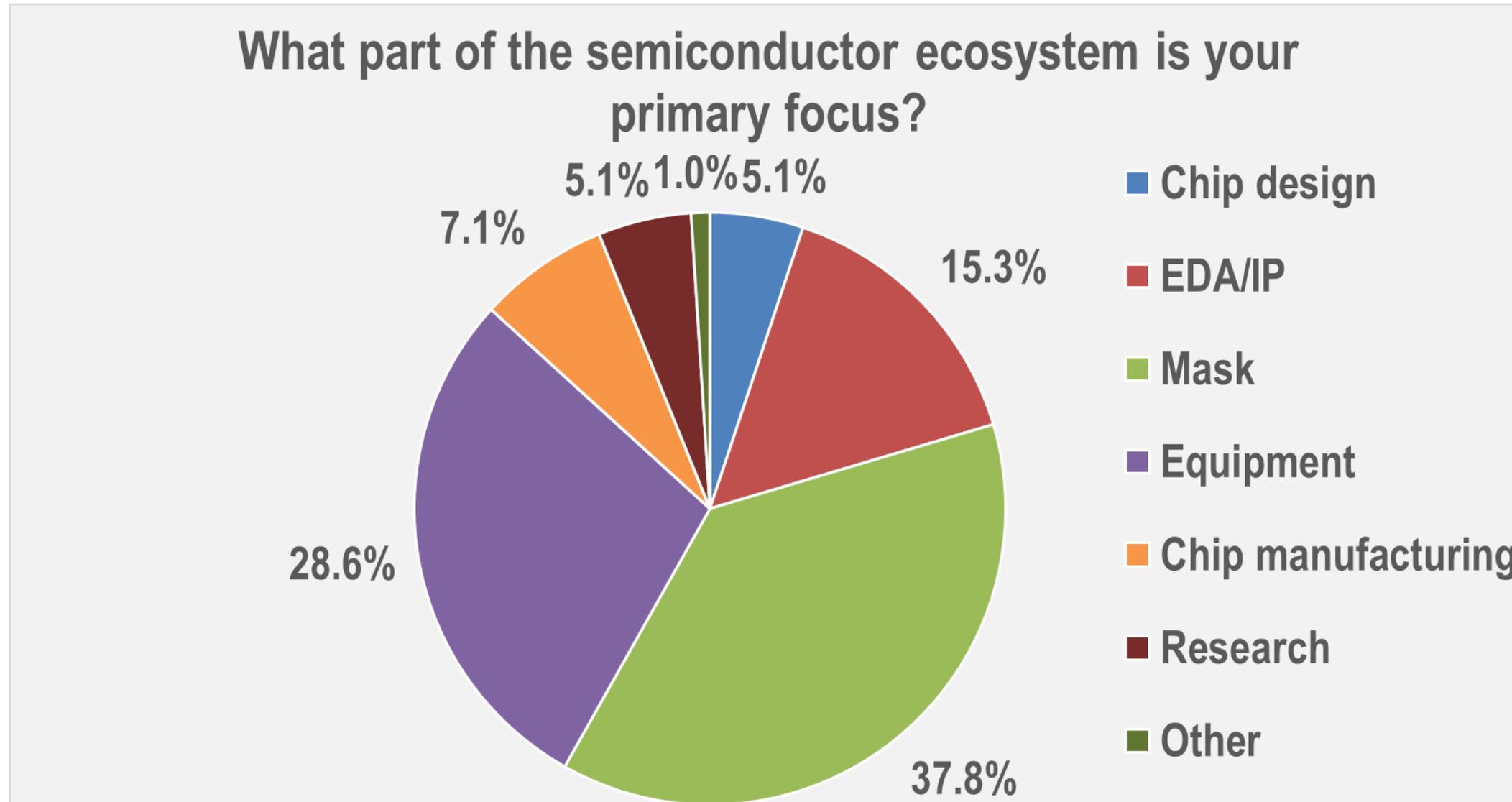


# Our 6<sup>th</sup> Annual Perceptions Survey – 2017

40 companies represented this year - 10 more than last year



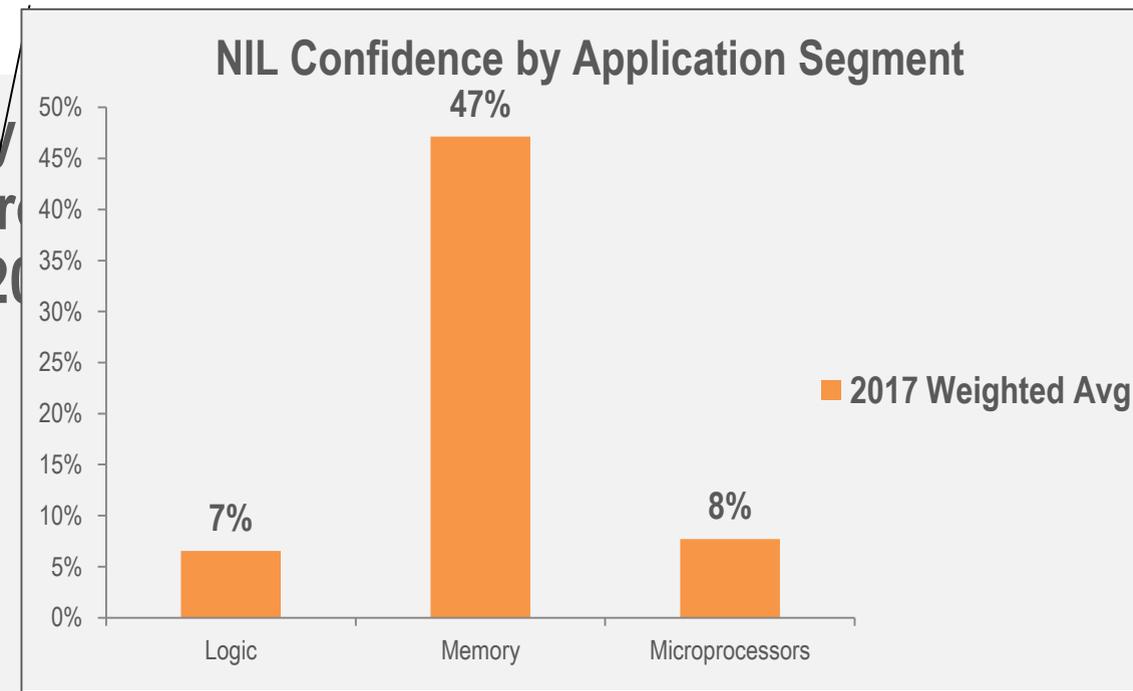
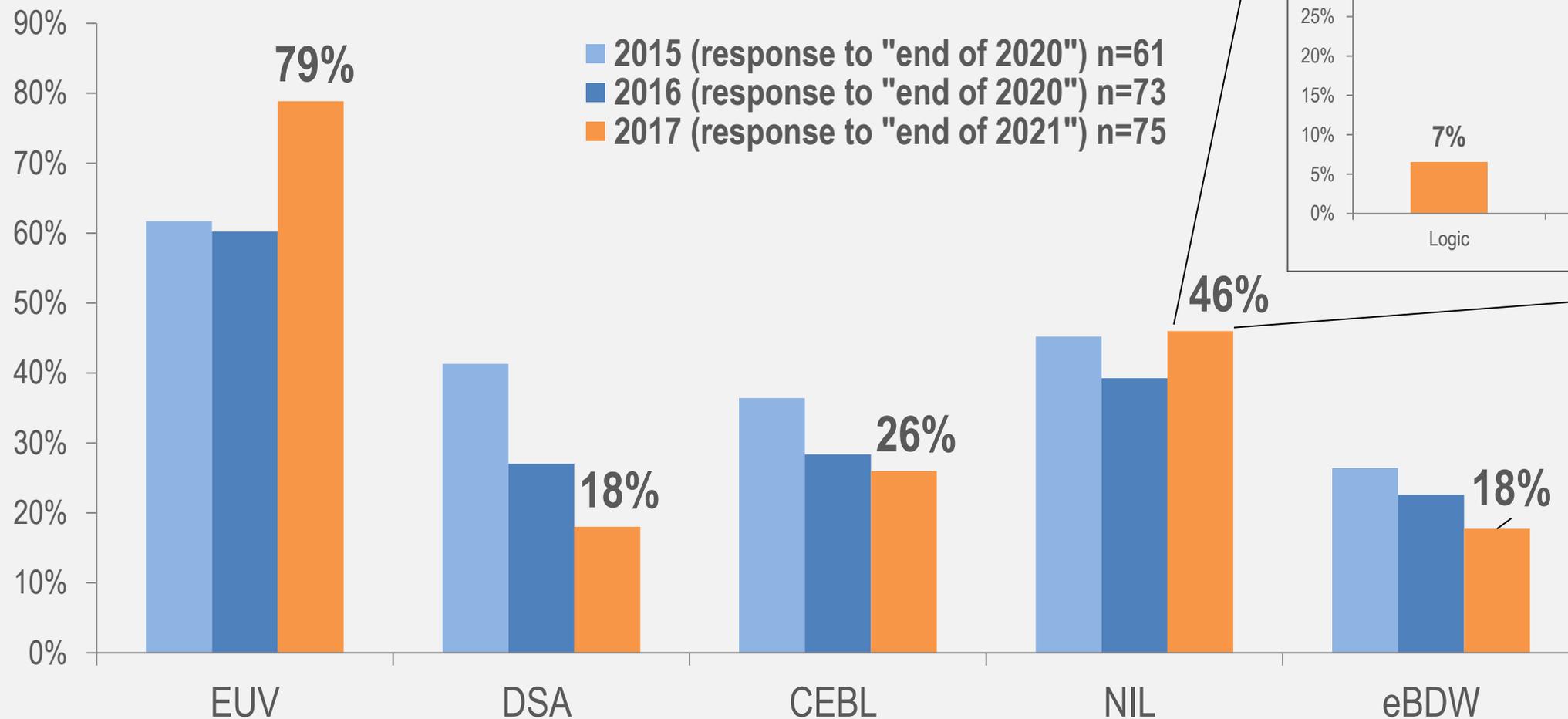
Thank you to the 75 luminaries and members for your responses!

# EUV Confidence Reflected in Survey Results

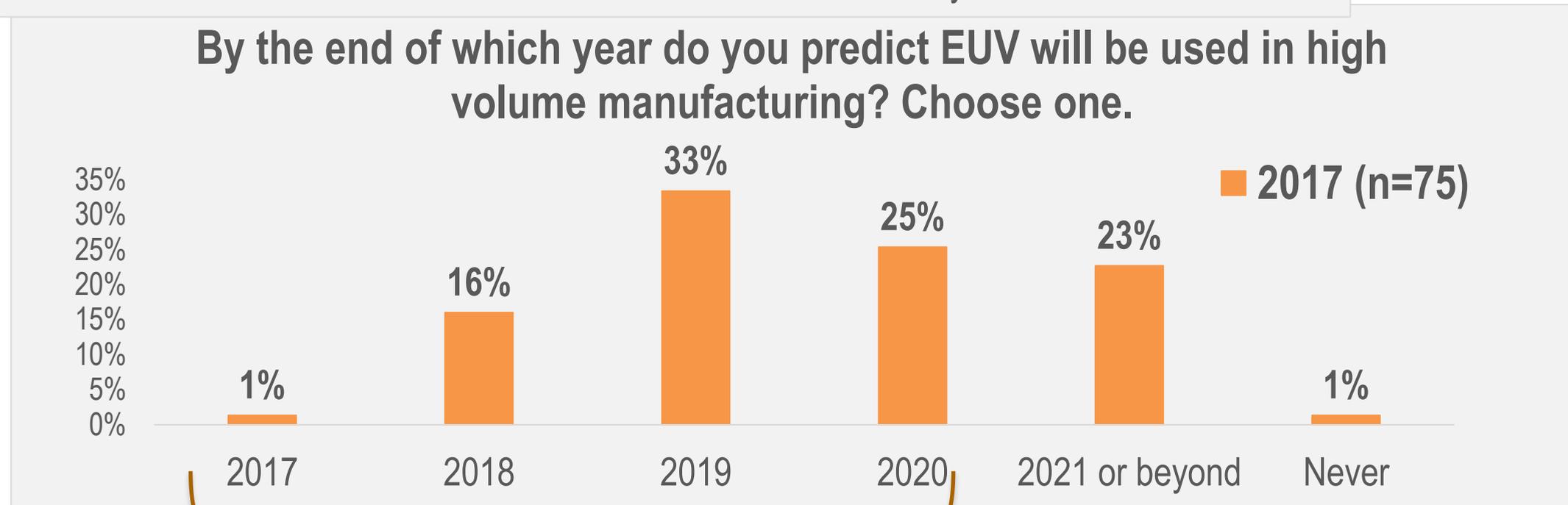
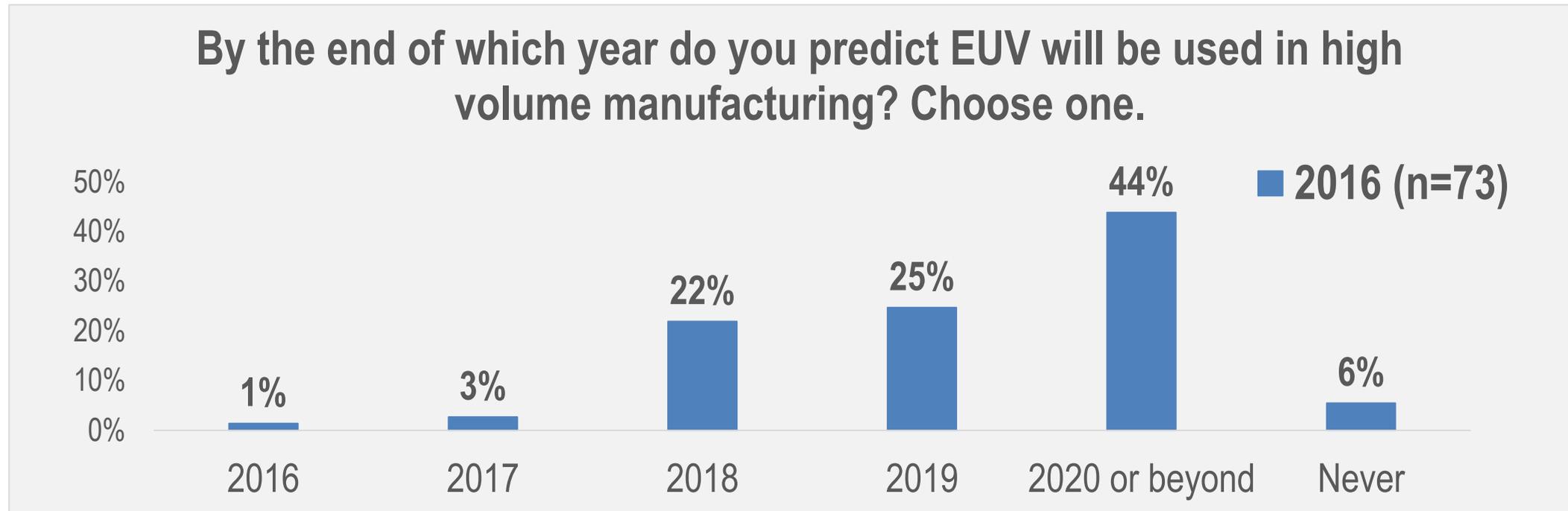
## NIL confidence remains driven by Memory applications



Please rate your confidence that the following lithography used for at least one manufacturing step of at least one product being manufactured in the world by the end of 2020



# 75% Predict EUV in HVM by End of 2020



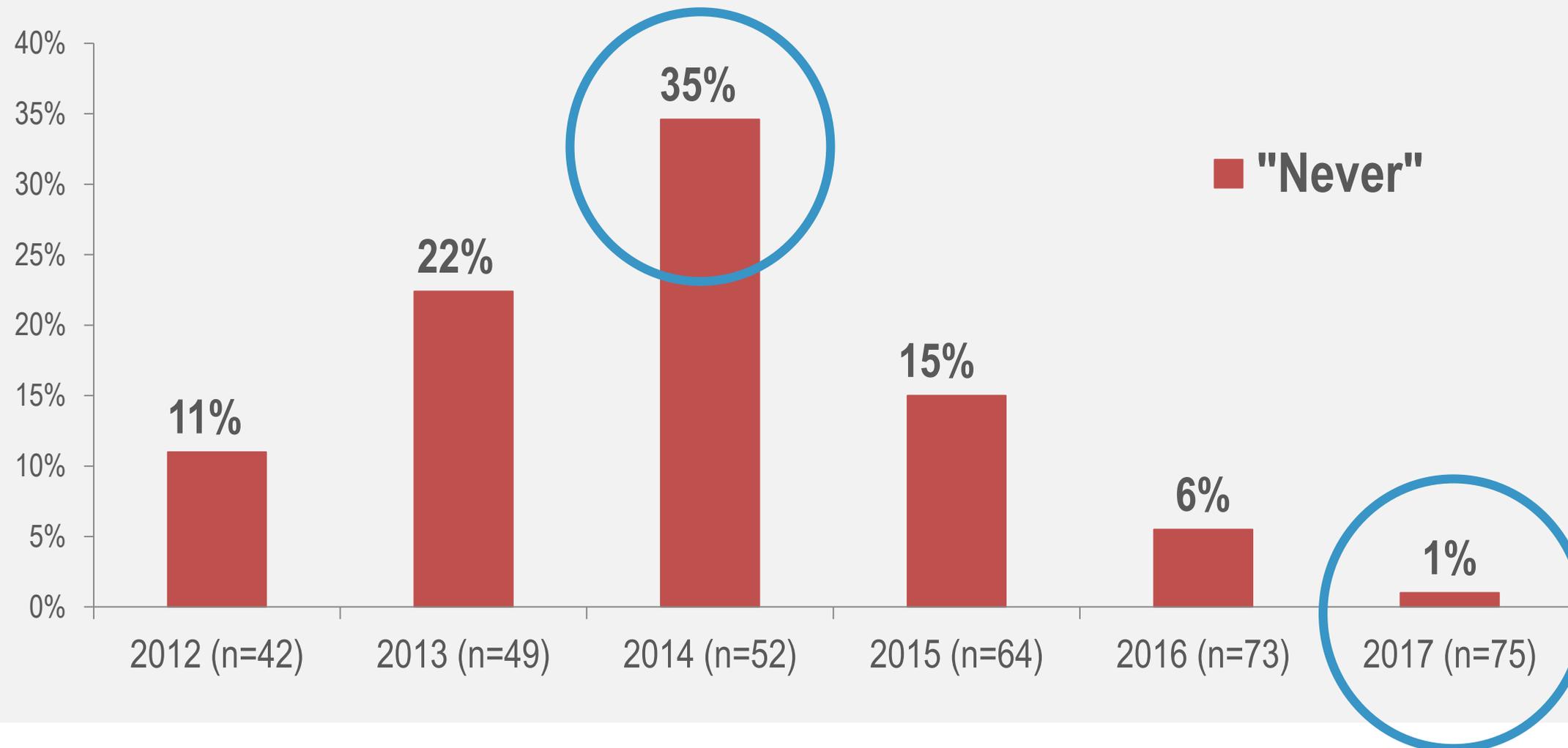
75%

\* Answer choices expanded in 2017 survey – see X axis in two charts above

# EUV Pessimism Now Negligible

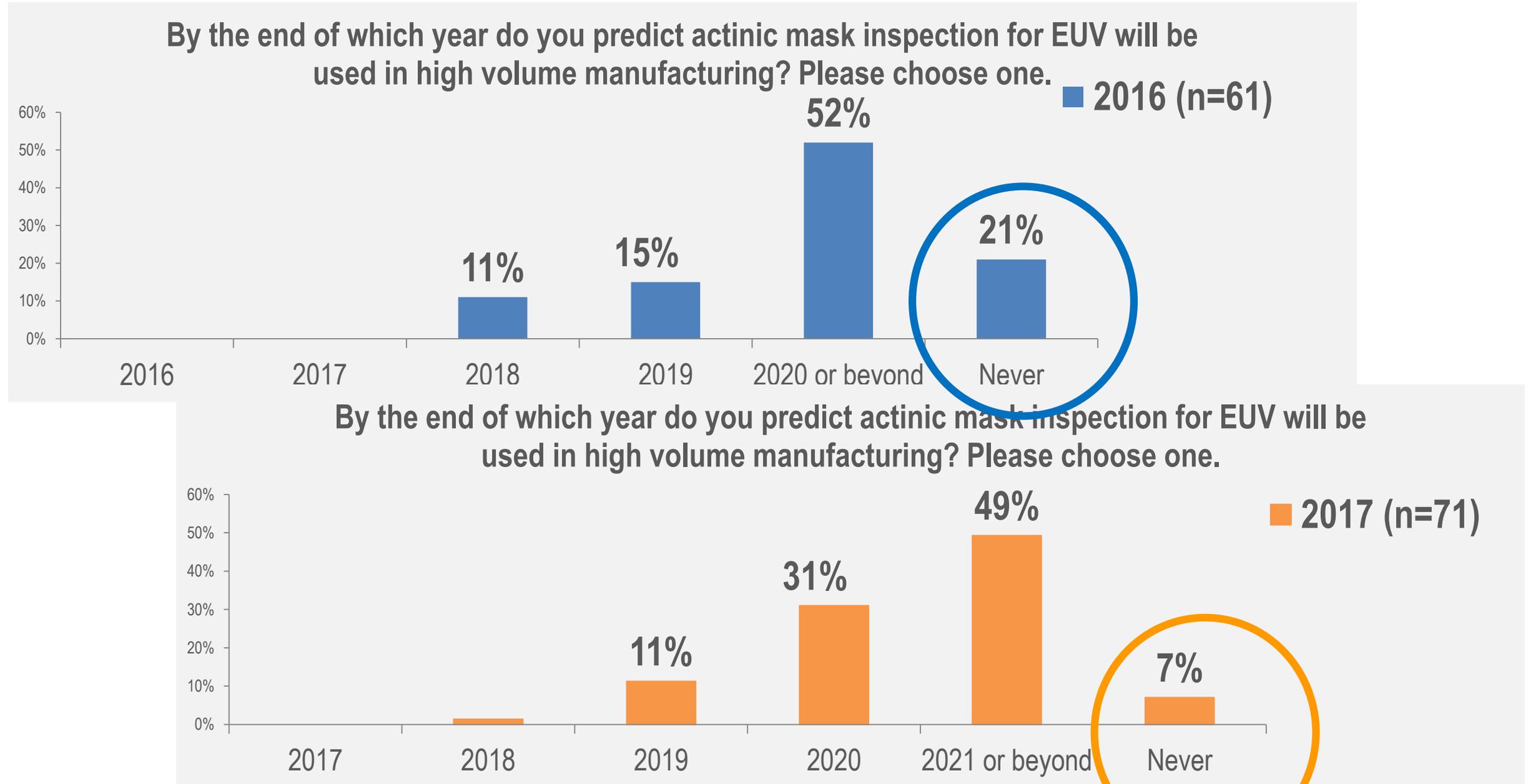
Only 1% predict "Never" this year vs 35% in 2014

% of Respondents Indicating EUV will "Never" be used in HVM



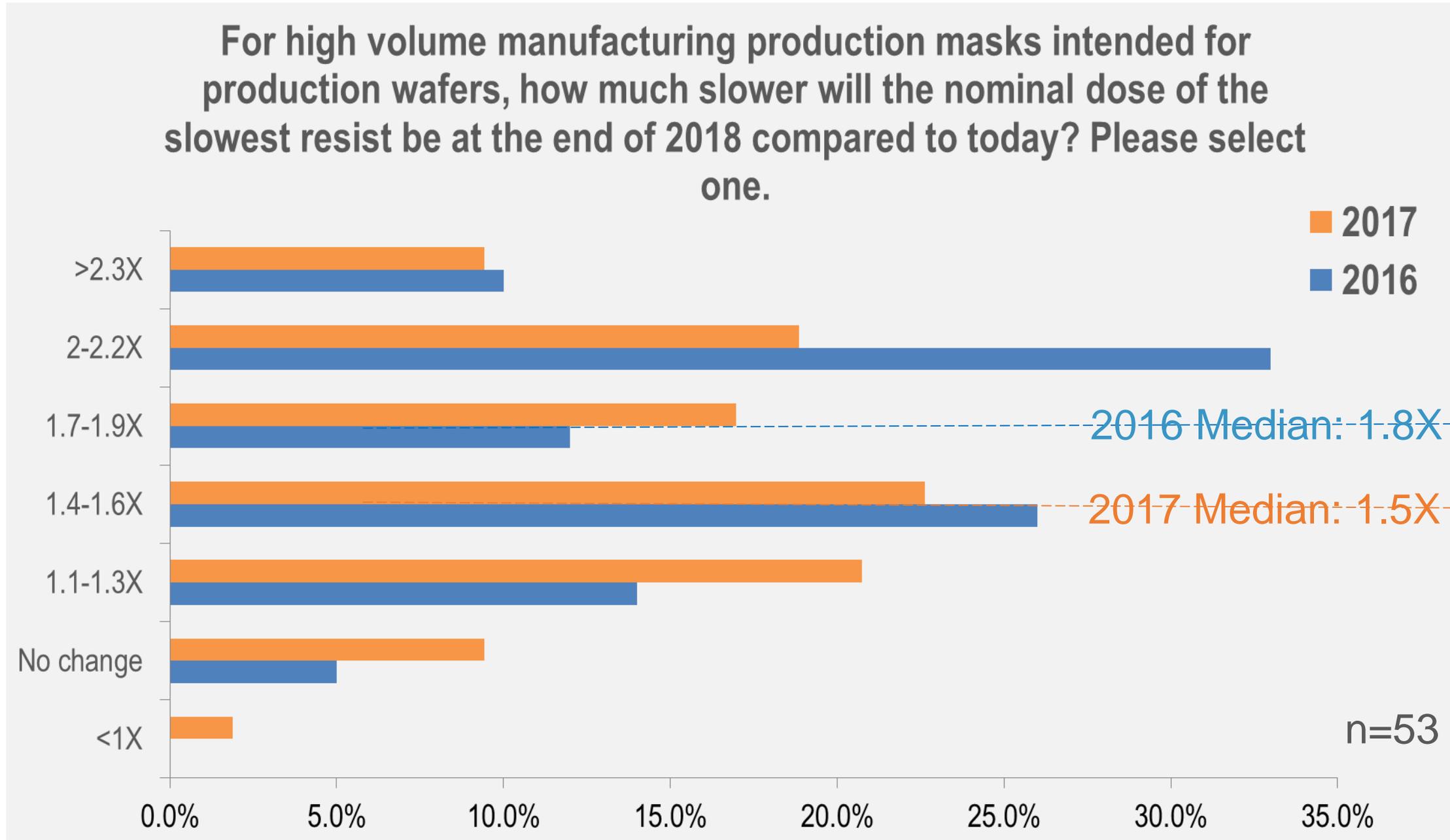
# Actinic Inspection Predictions More Hopeful

## Only 7% predict “Never” this year vs 21% in 2016



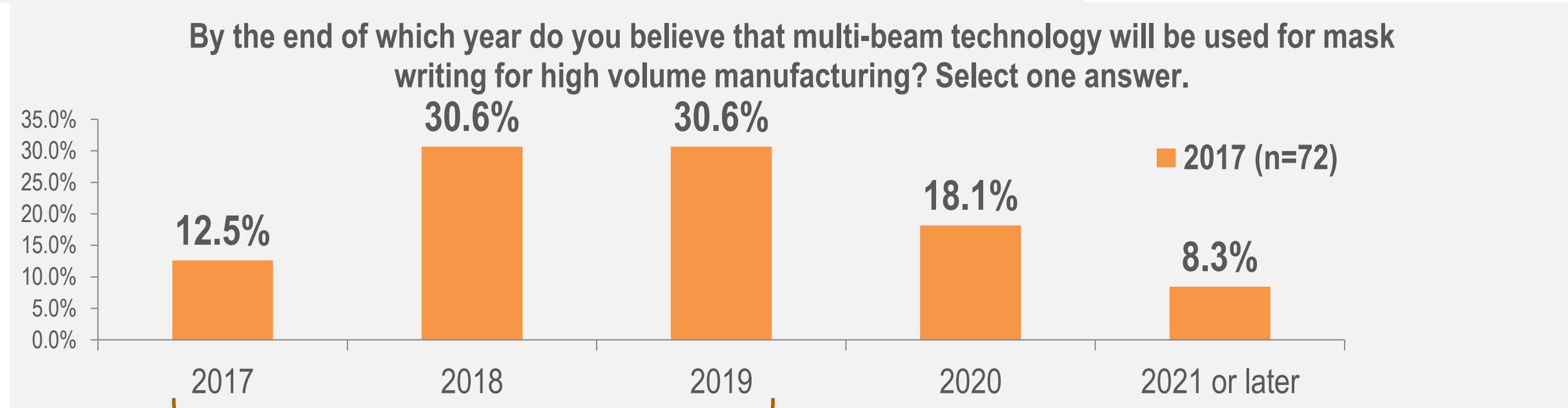
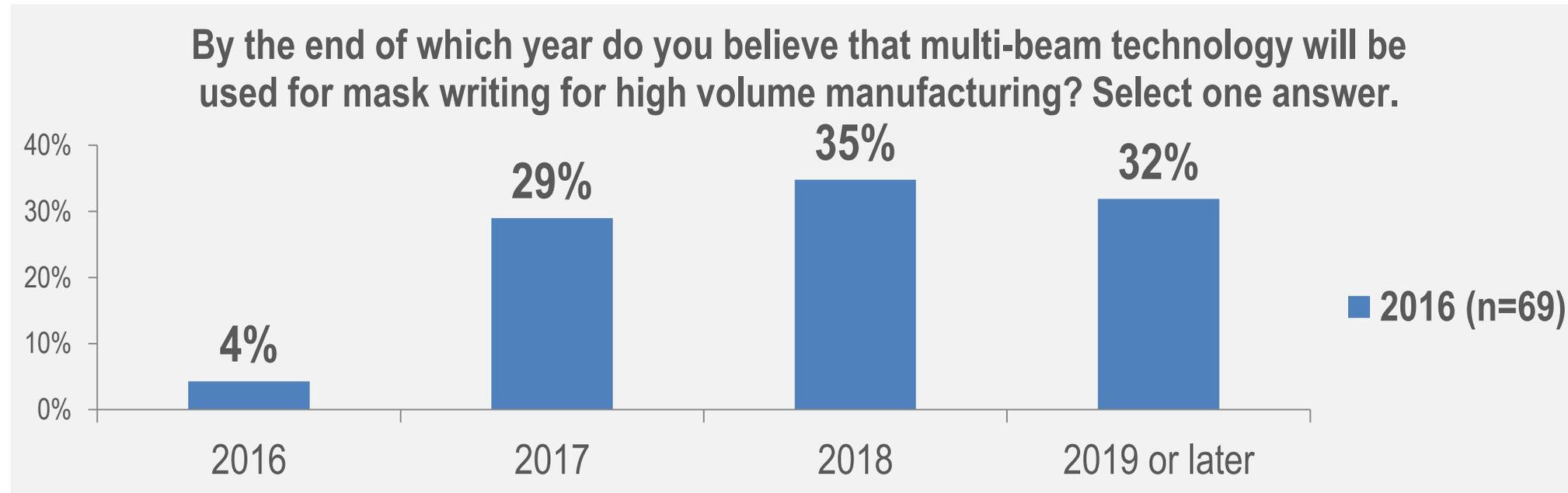
\* Answer choices expanded in 2017 survey – see X axis in two charts above

# Consistent View: Slower Mask Resists Predicted



# 74% Say Multi-beam HVM by end of 2019

## Predictions extend 2016 survey\* results by >10 months

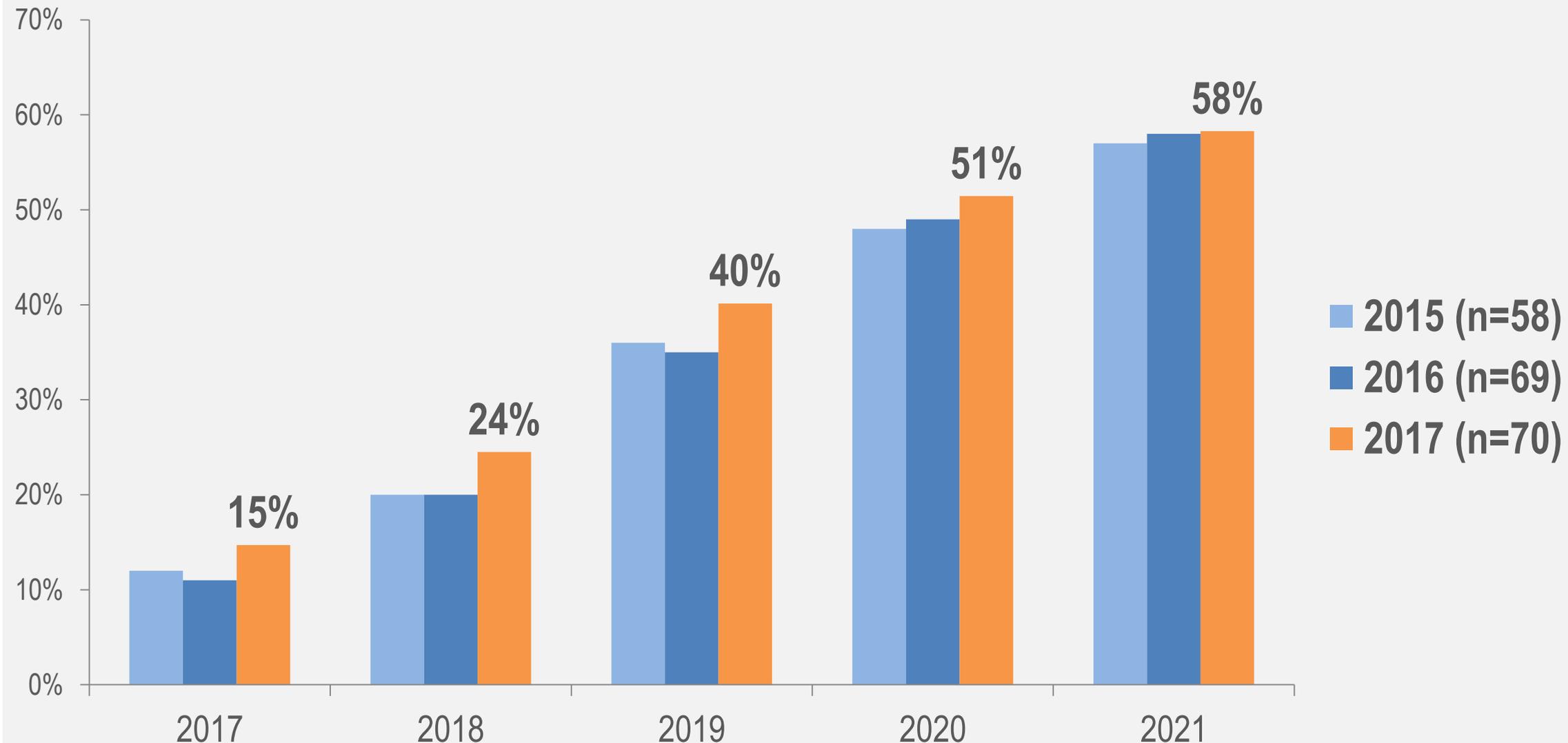


74%

\* Answer choices expanded in 2017 survey – see X axis in two charts above

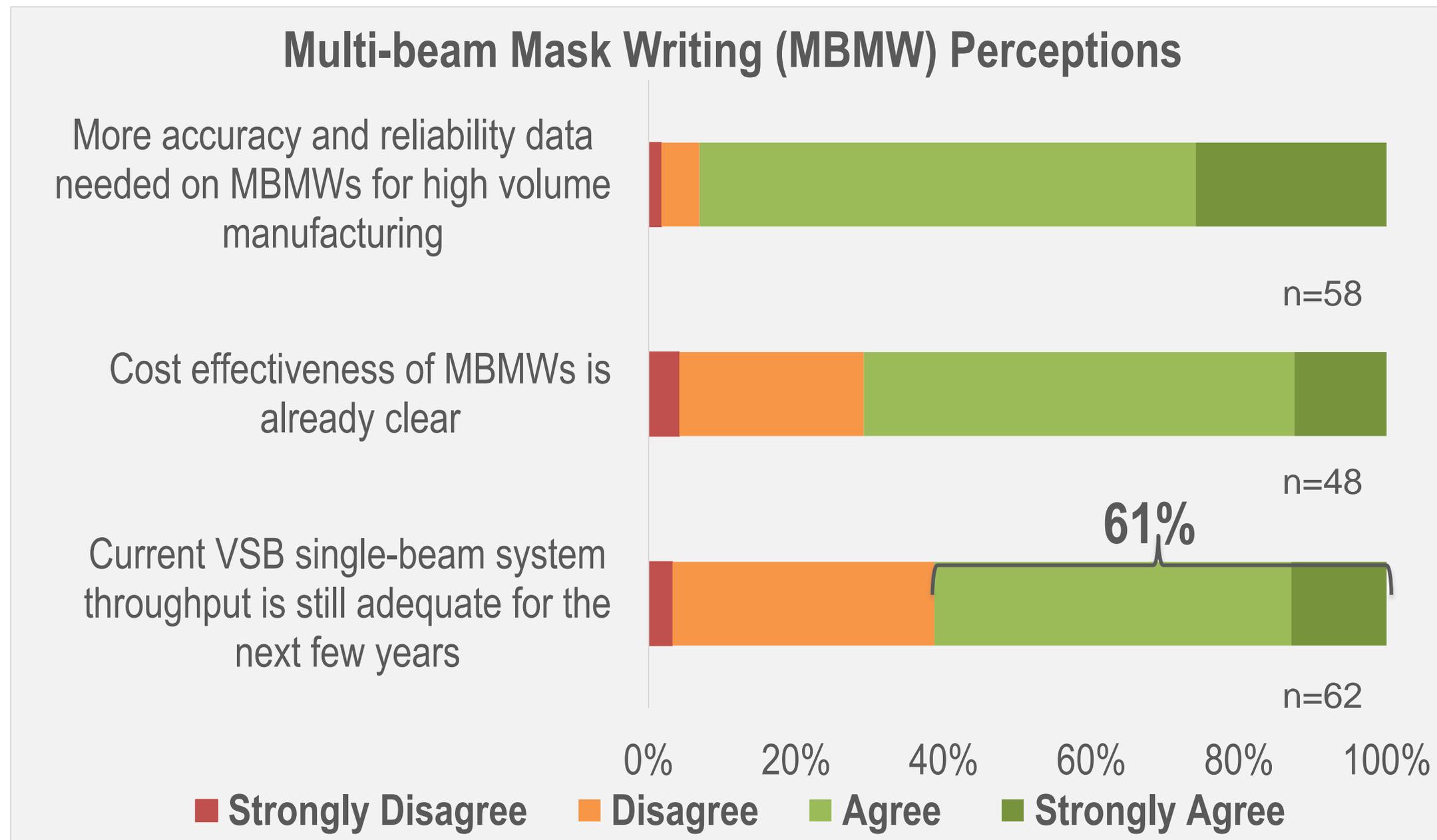
# Yet Multi-beam Purchasing Predictions Increased

What percentage of new eBeam mask writers purchased worldwide will be multi-beam writers? Please answer for each year.

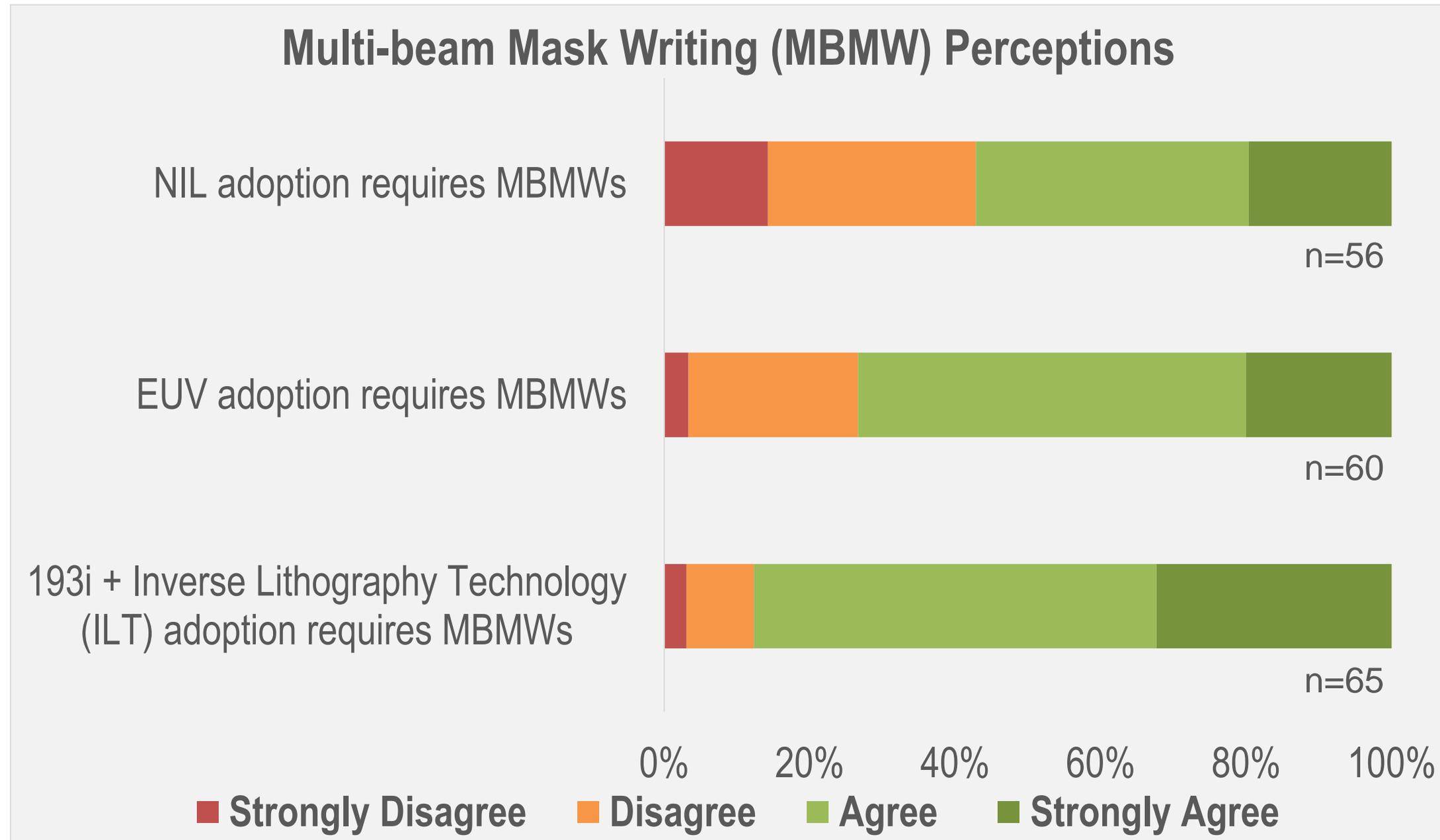


# Multi-beam Perceptions Reflect Early Days

## 61% say VSB eBeam throughput adequate next few years

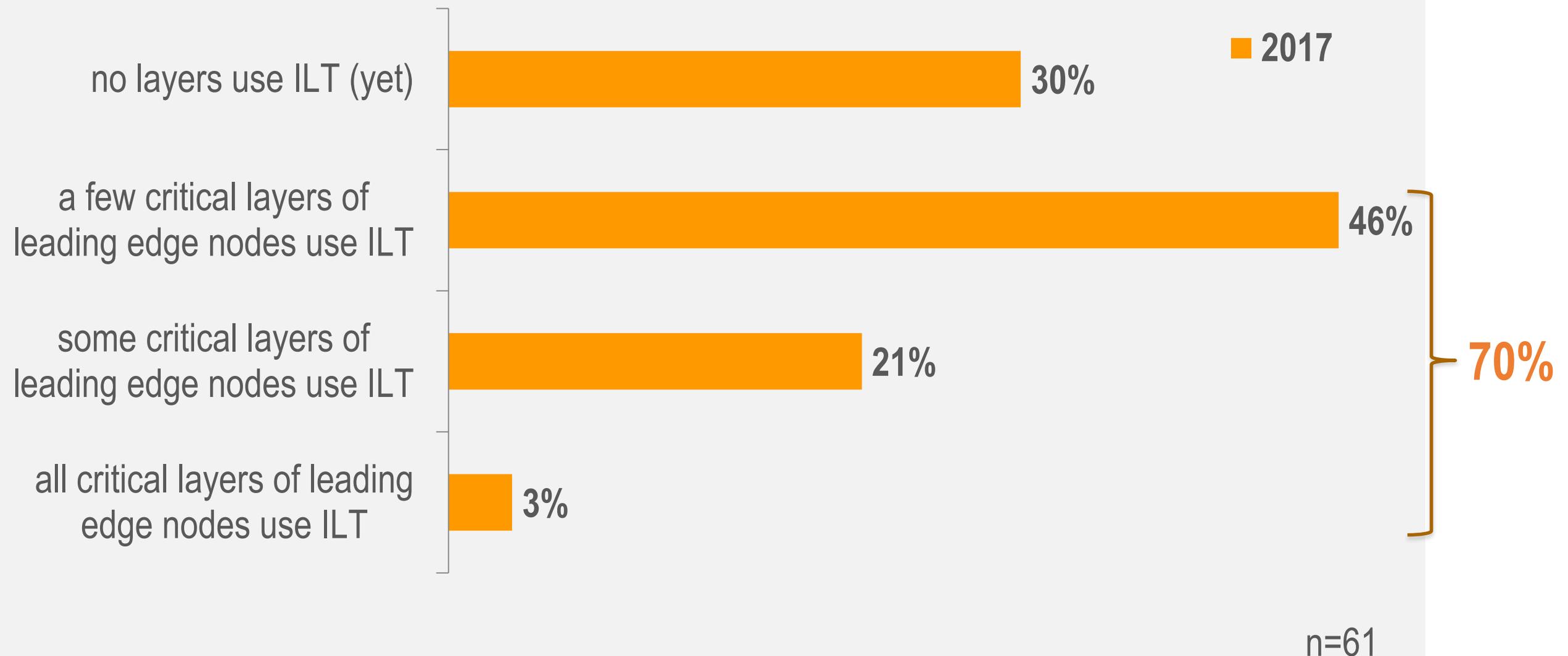


# Majority Perceive MBMW Required for ILT & EUV



# 70% Think ILT Usage Starting at Leading Edge

How broadly is inverse lithography technology (ILT) used for production chips today (2017)? Select one answer.

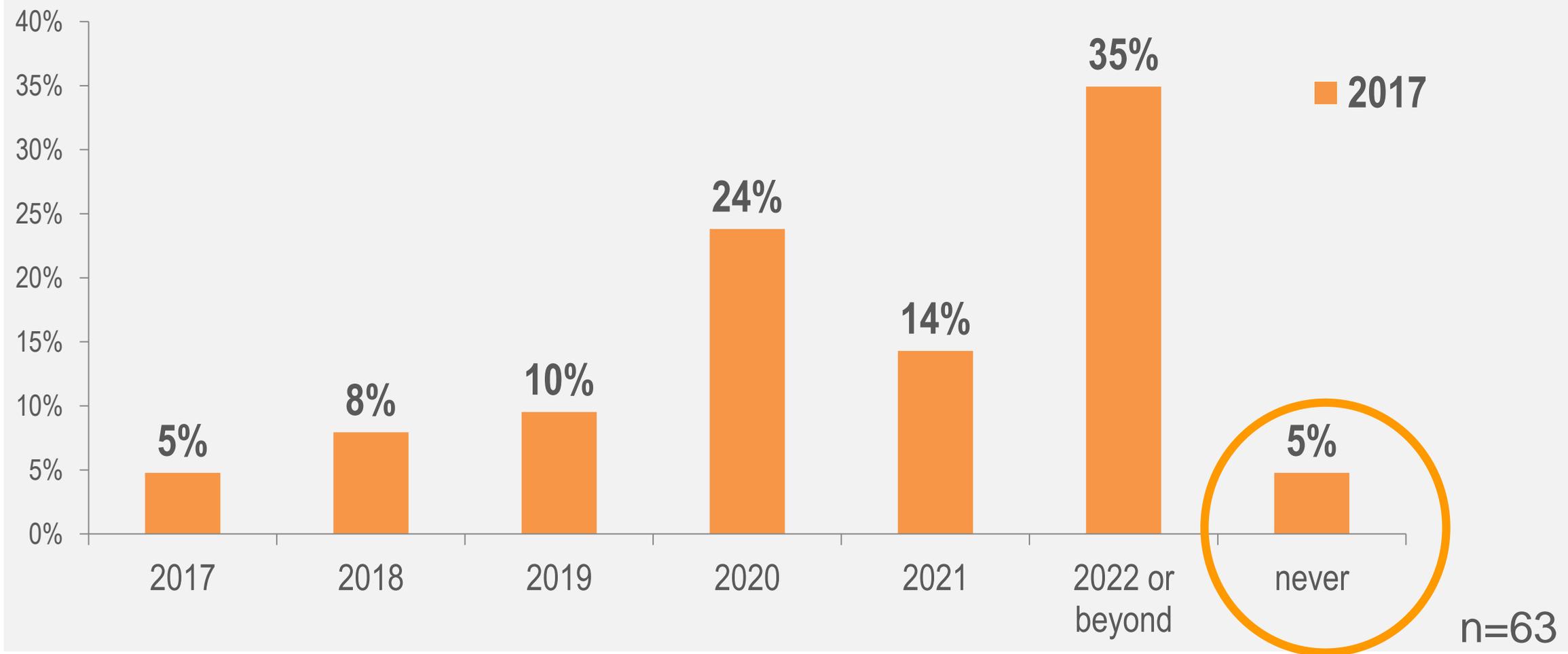


# ILT Predicted to be a Future Need for EUV

## Only 5% said "Never"



There will be at least one layer of a high volume production chip that will use ILT for EUV lithography by what year? Select one answer.



# A New Era Has Begun



- EUV greater confidence and optimism reflected throughout survey
- Multi-beam expectations remain high while timeframe has shifted
- VSB and multi-beam mask writers predicted to co-exist
- ILT believed to be used in a few layers of many leading-edge chips

**Thank you to those who participated  
in the survey!**

**Feedback and questions for future surveys welcome – send to  
[jan@williscalibra.com](mailto:jan@williscalibra.com)**