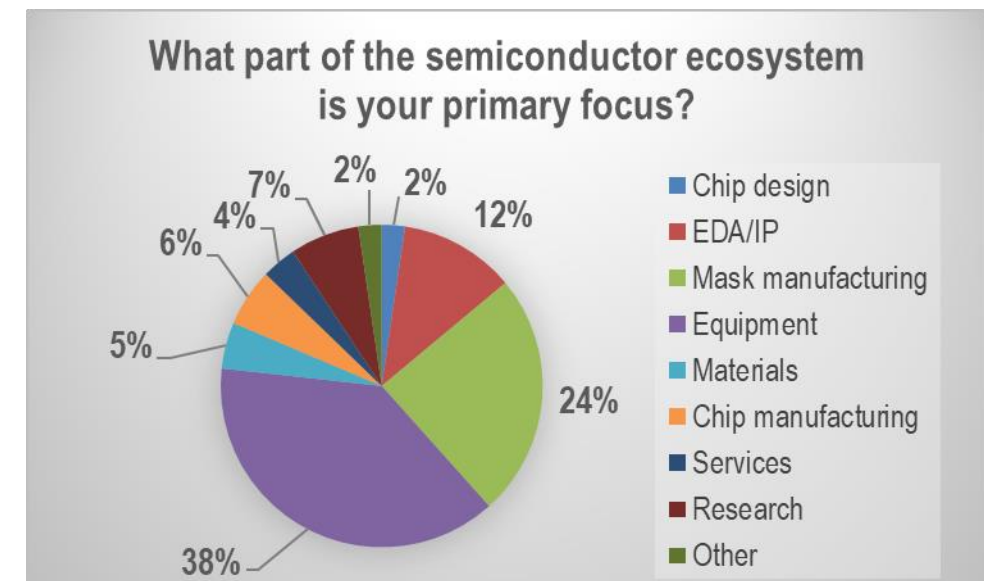
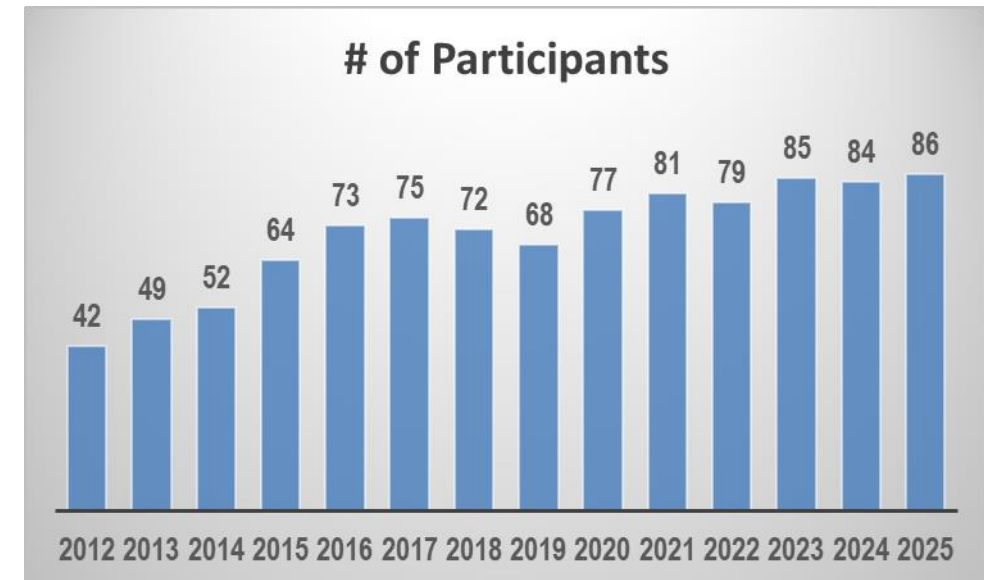


Thanks for Supporting the Survey 14 years!

- 86 luminaries in July 2025
- 51 different companies
- 62% equipment and mask manufacturing combined

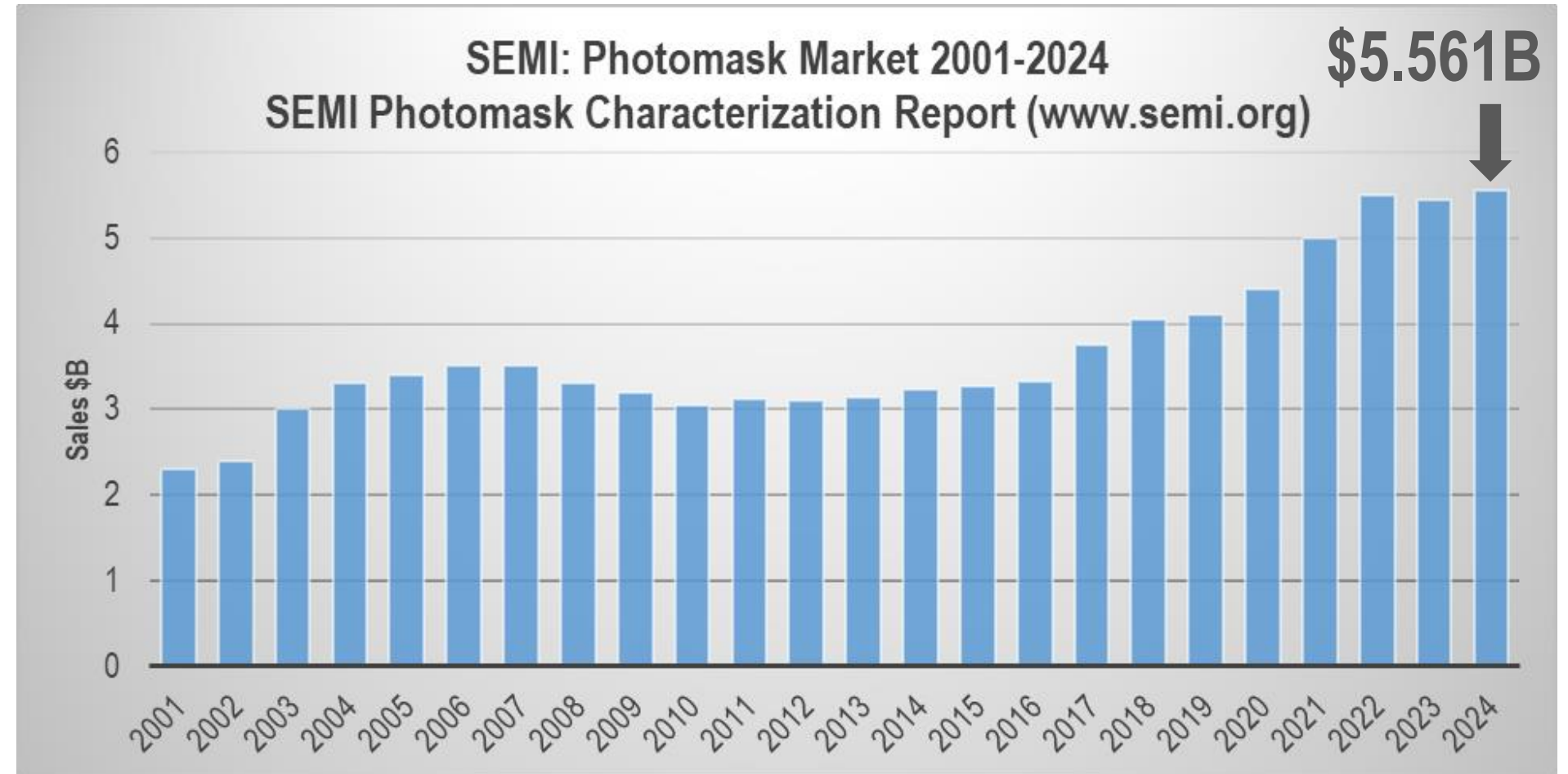


Luminaries Were Right: 2024 Mask Revenues Increased

SEMI reported \$5.561B, 2% YOY increase for 2024 vs 2023 in their report at www.semi.org



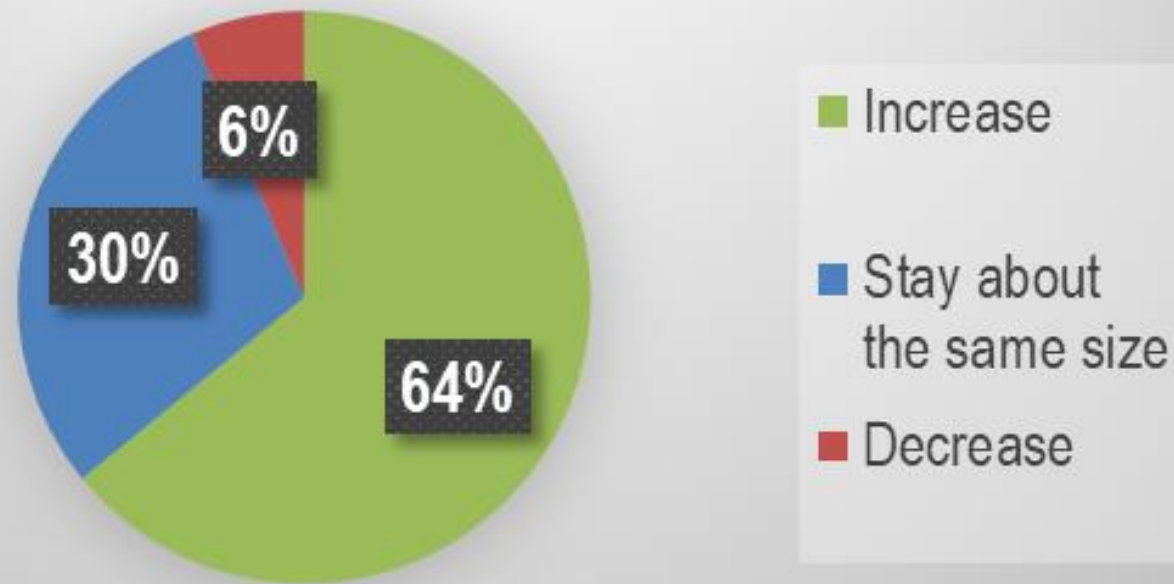
From Last Year's 2024 Luminaries Survey



This Year 64% Say 2025 Mask Revenues Increase vs 2024

SEMI predicts 5% YOY growth for 2025 in their latest report at www.semi.org

What will happen to total mask revenues
for 2025 compared to 2024? n=78

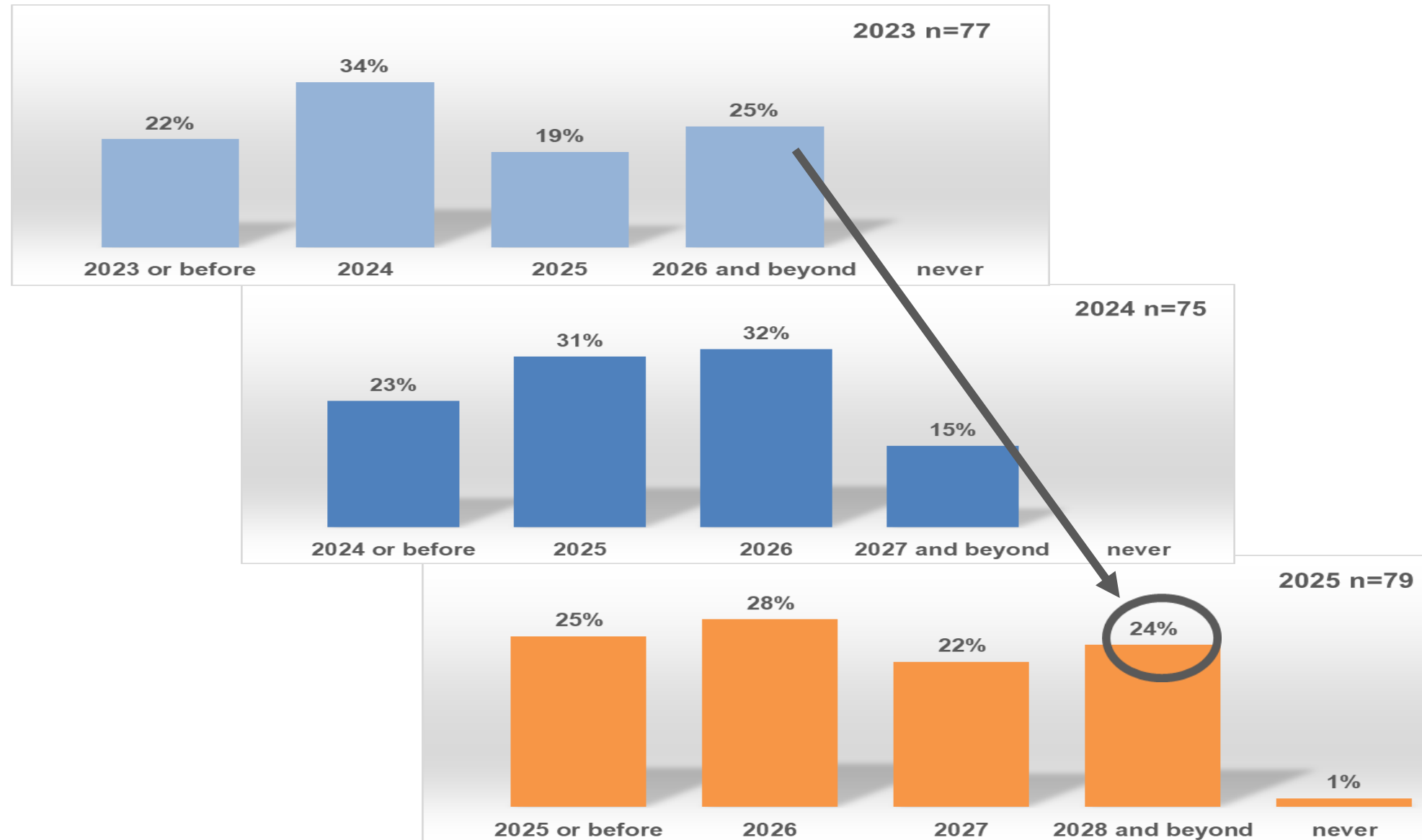


Predictions of Deep Learning Competitive Advantage Slip



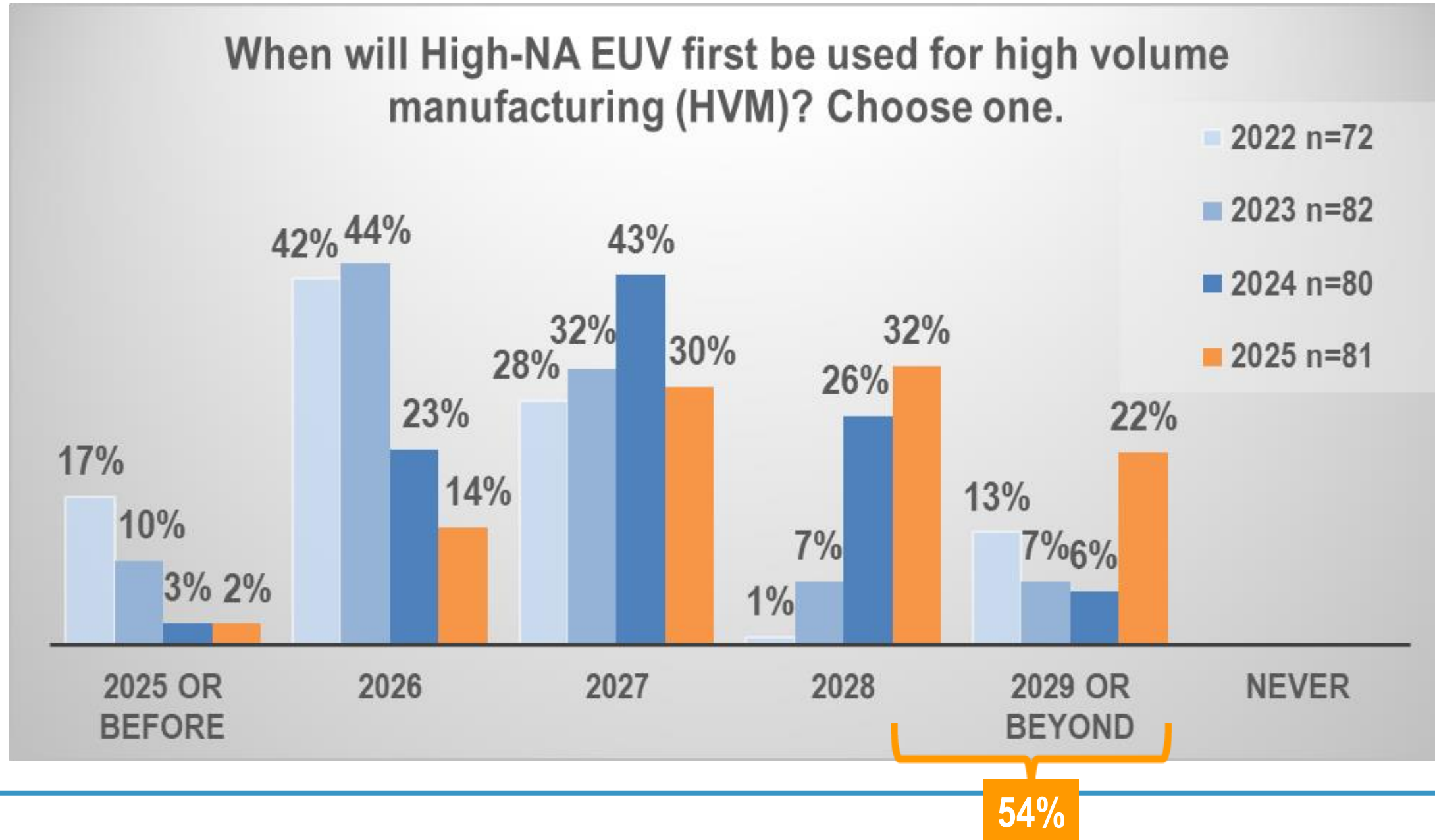
“Three years from now” trend has gone back up to 24%

In the mask industry, when will capabilities based on deep learning become a competitive advantage for any step in the mask making process?



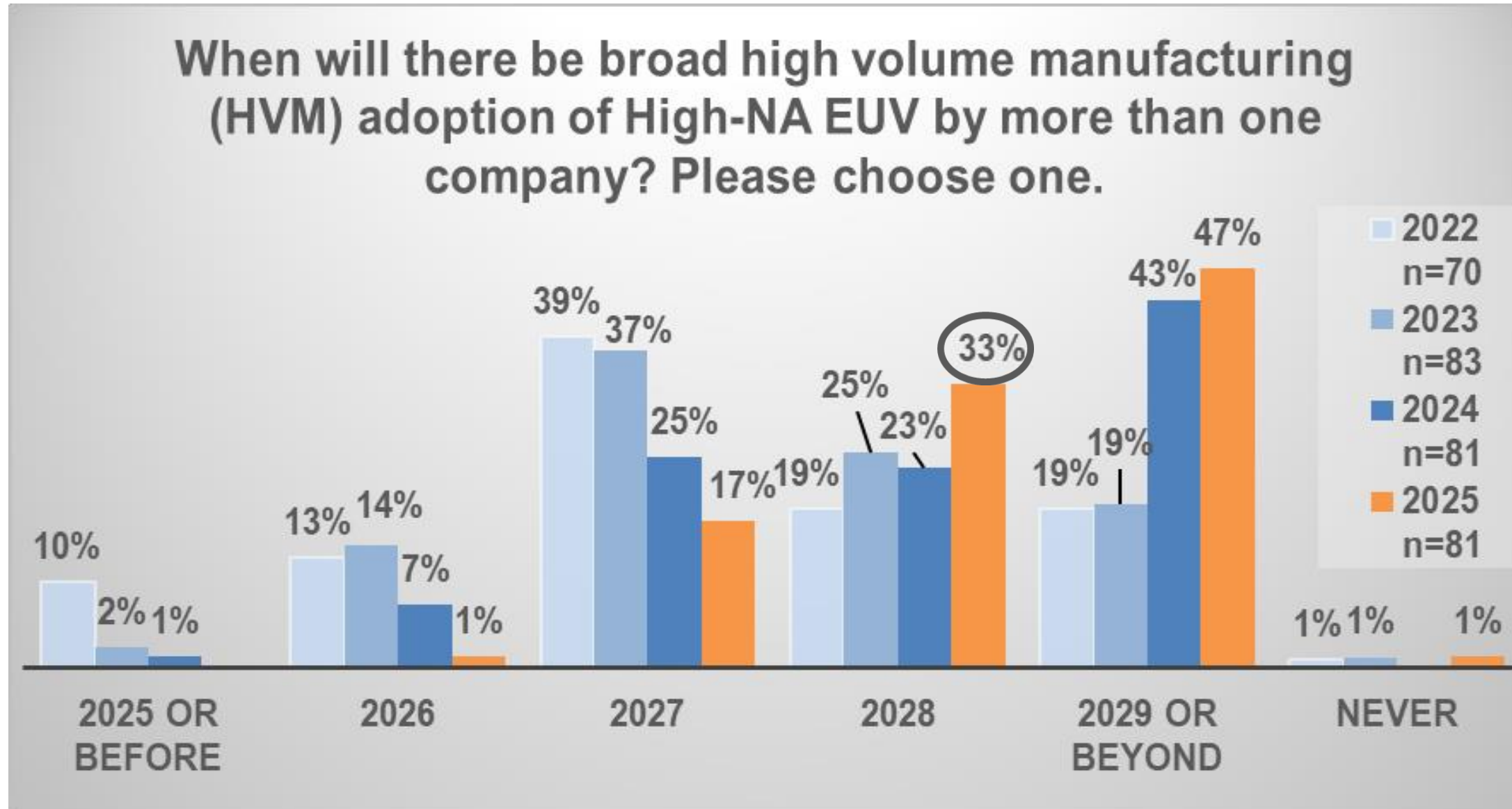
Opinion on High-NA EUV First HVM Usage Shifts Right

54% of Luminaries say 2028, 2029 or beyond vs 32% last year; no one says never



More Say High-NA EUV Broad Usage in 2028 vs Last Year

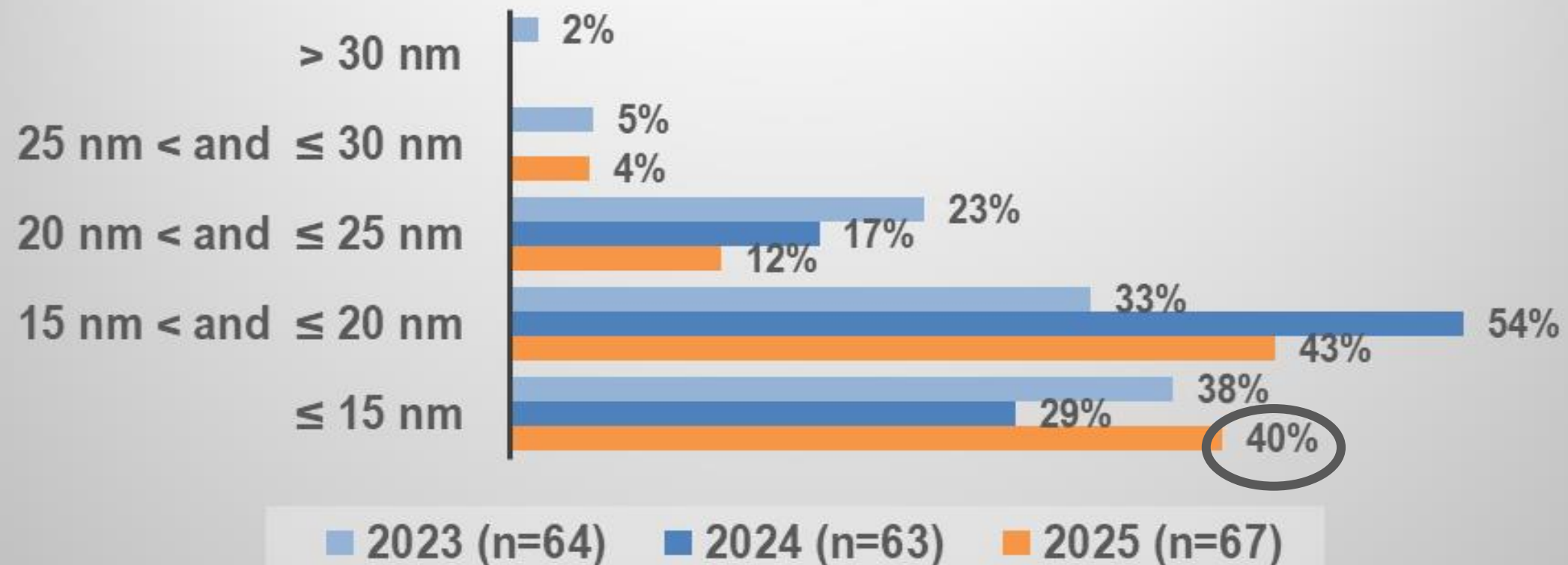
33% say 2028 vs 23% last year



40% Say SRAF Required Min Mask Dim for High-NA EUV $\leq 15\text{nm}$ Vs 29% last year



SRAFs in the 4X dimension for High-NA EUV masks will need to be smaller. What will be the required minimum dimension (on mask) that mask shops need to manufacture for HVM production using High-NA EUV?

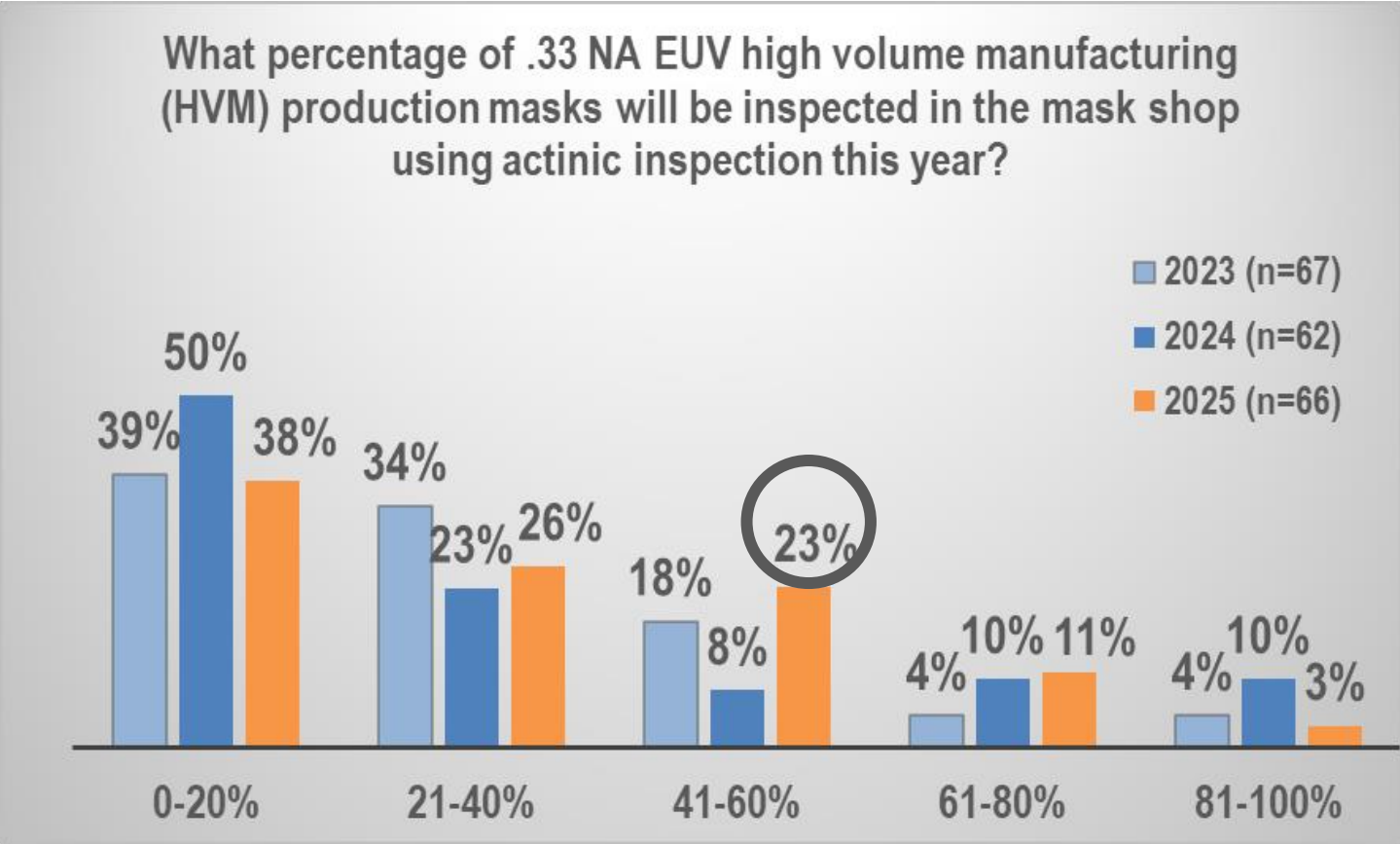


Predictions Increased for Actinic Mask Inspection Today

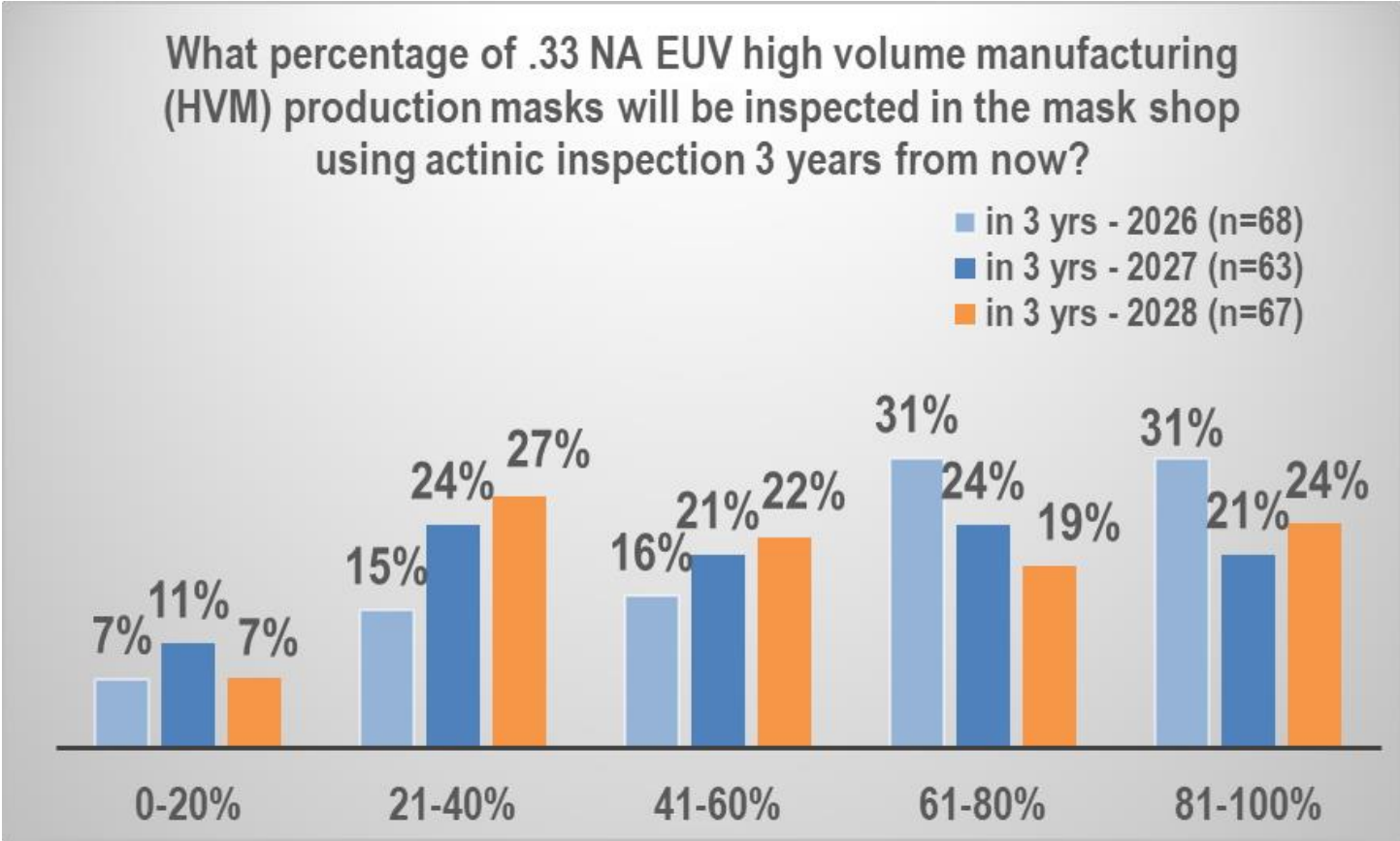
23% say 41-60% of HVM masks today vs 8% last year; no clear trend in 3 years



Predictions for today

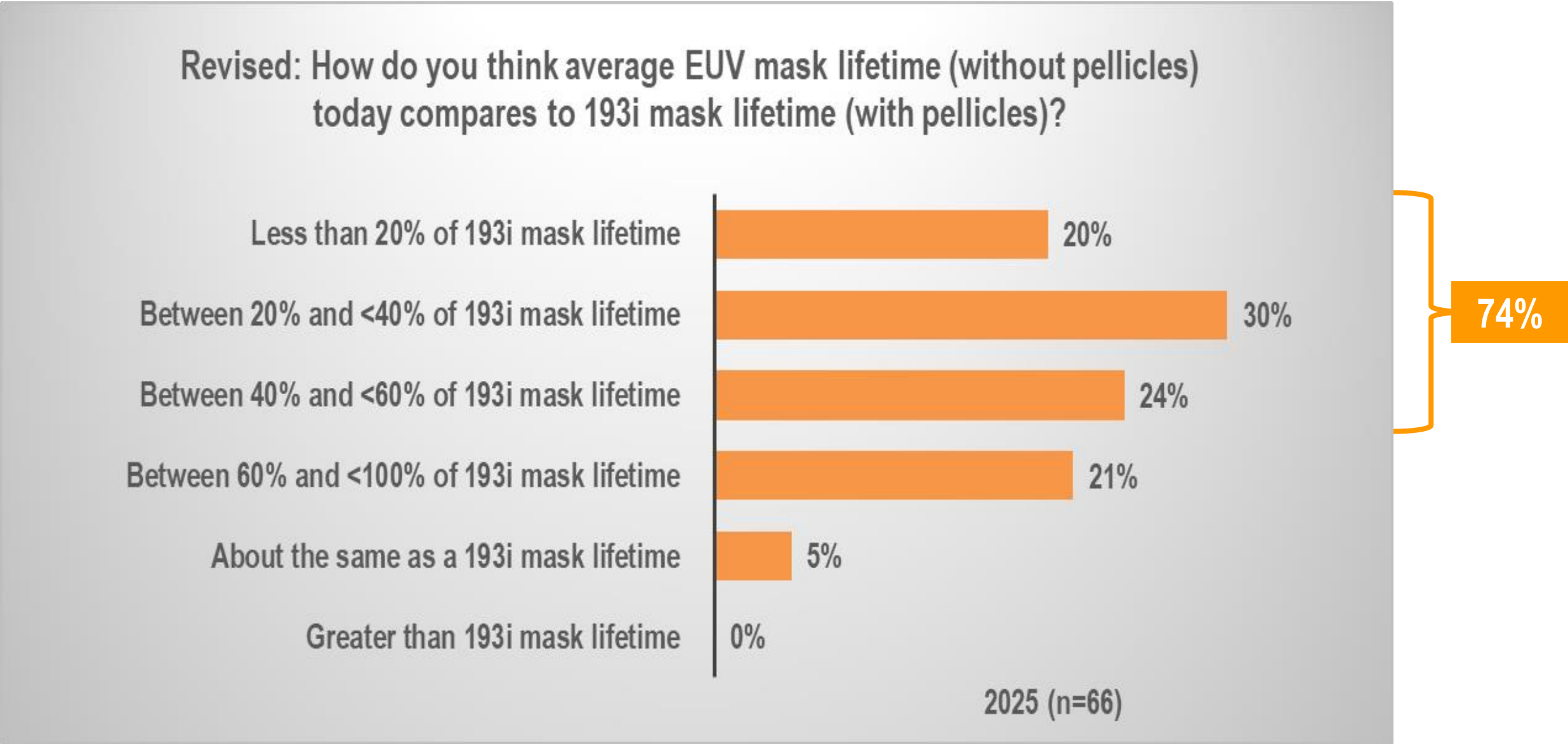


Predictions for 3 Years from now



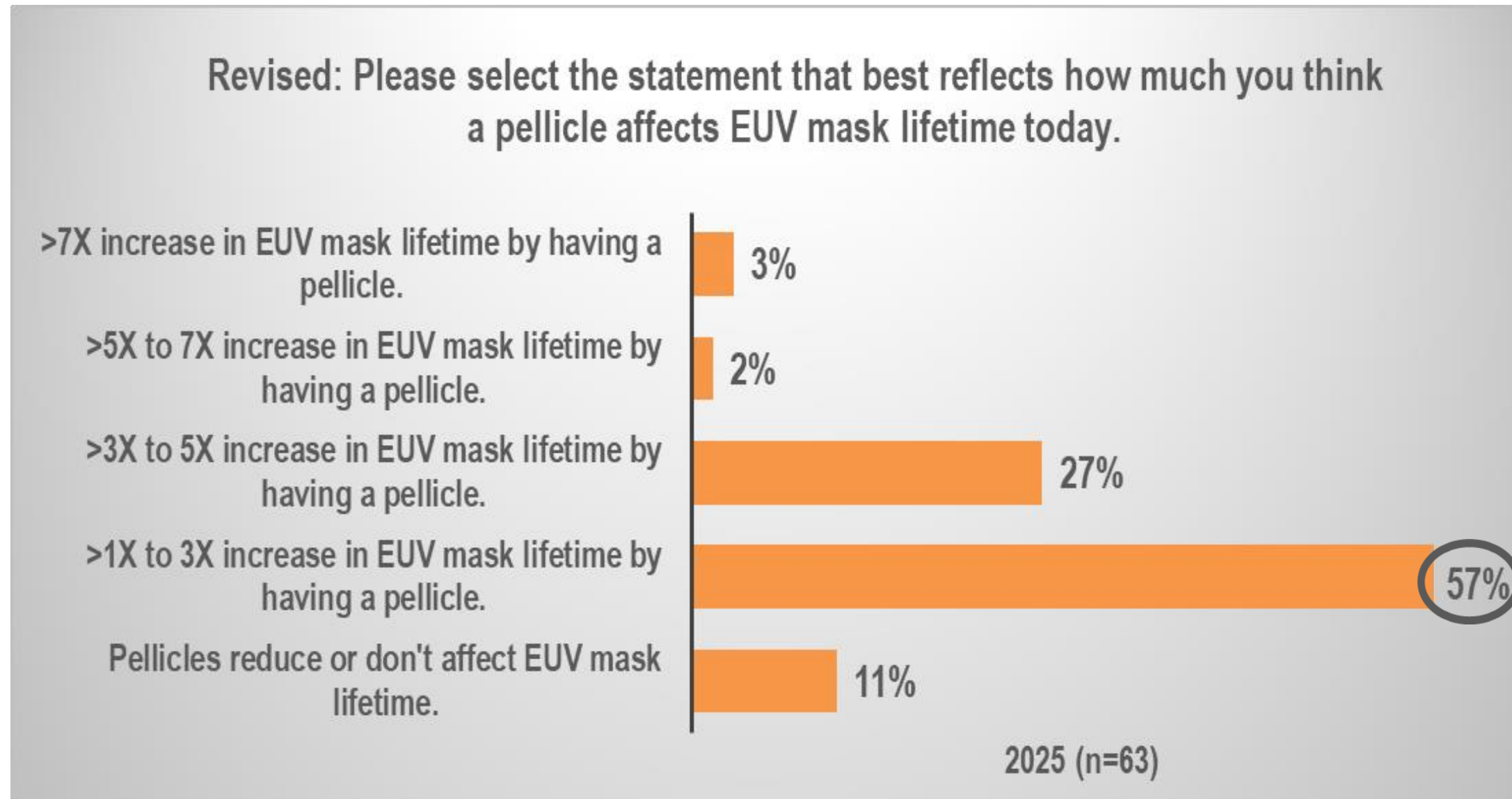
74% Say EUV Masks w/o Pellicles <60% Lifetime of 193i

Revised question compares EUV mask lifetime w/o pellicles to 193i masks with pellicles



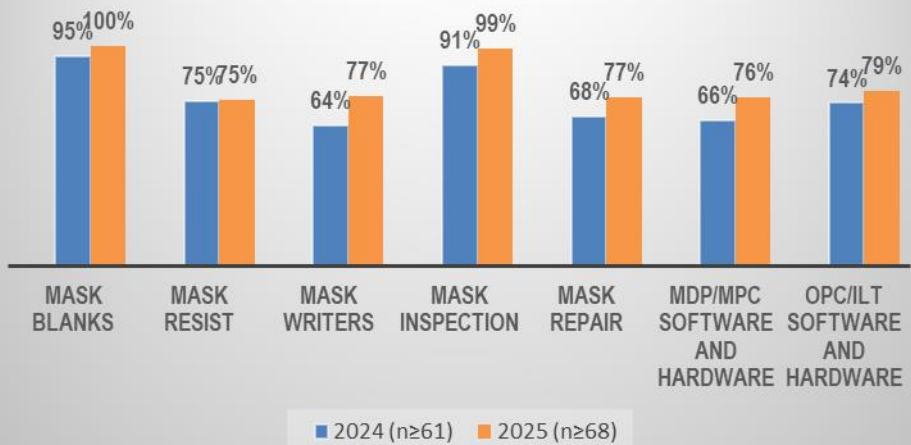
57% Say Pellicles Increase EUV Mask Lifetime up to 3X

Revised question, more answers in 2025 (n=63) vs 2024 (n=43)

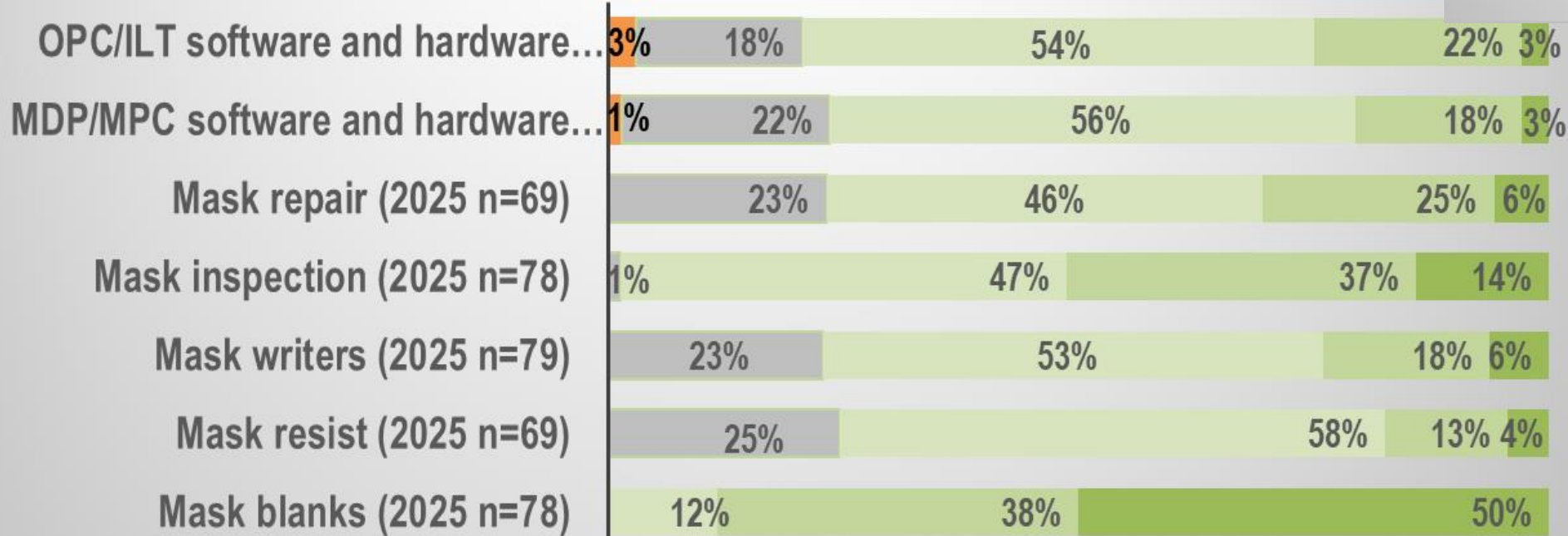


Opinion Remains that “EUV > 193i Mask Costs”

EUV > 193i Mask Costs



How much more expensive is EUV versus 193i leading-edge mask equipment, materials and software? Please answer for each type by row.

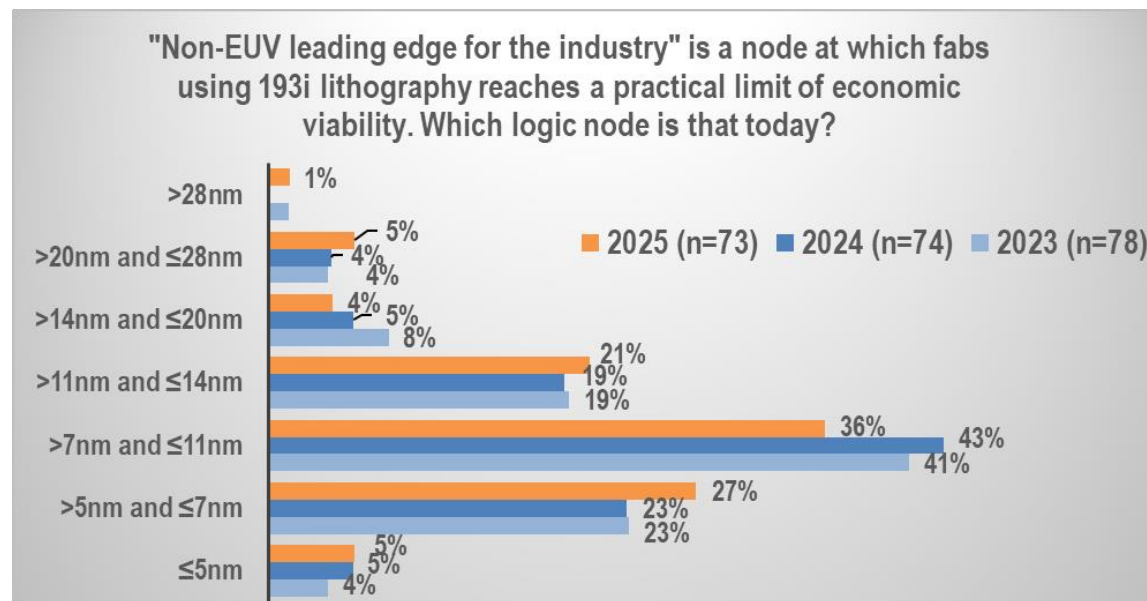


Cheaper About the same More expensive (up to 2X) Very expensive (up to 5X) Significantly more expensive (>5X)

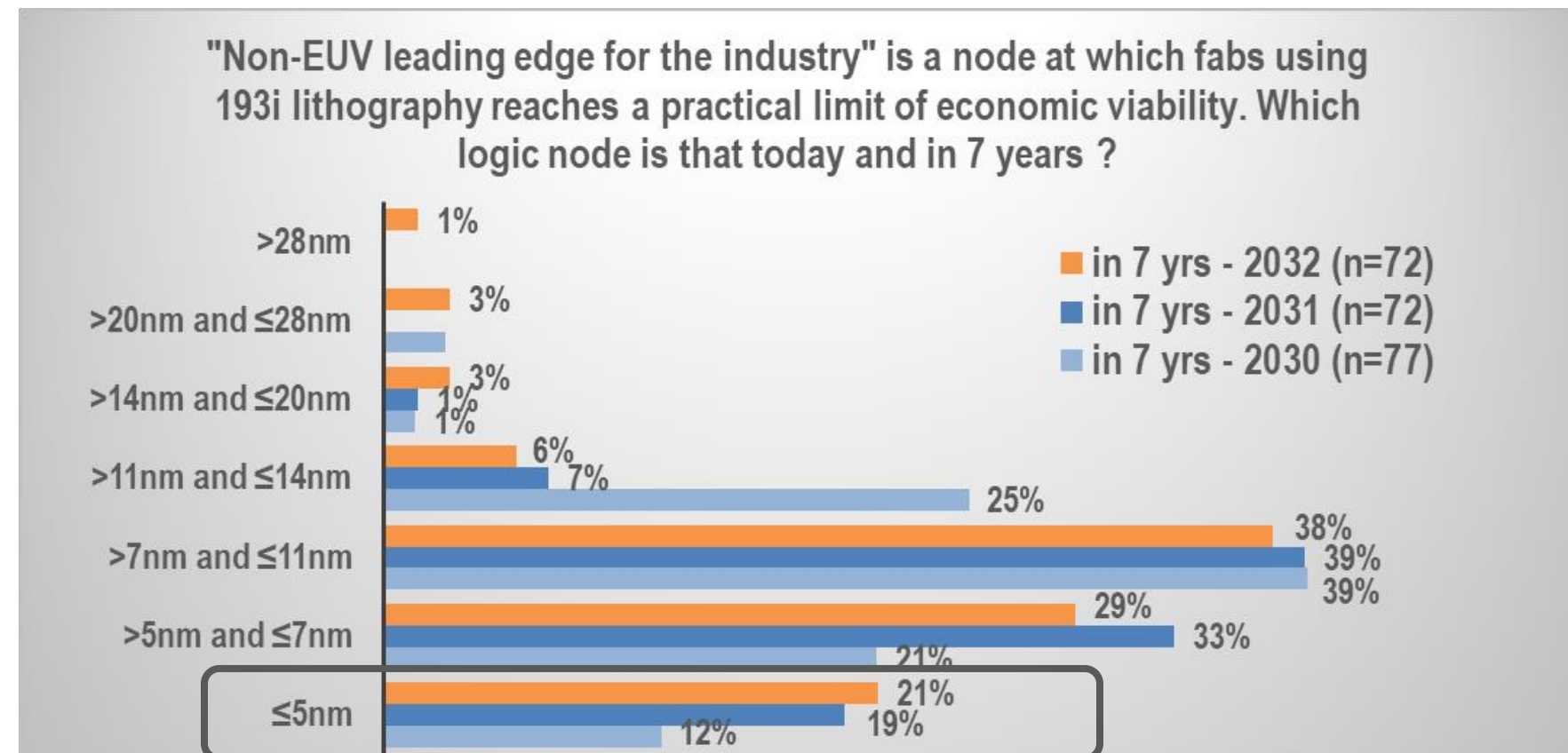
21% Say Fabs w/o EUV Can Reach $\leq 5\text{nm}$ in 7 Years (2032)

Vs. 12% who said that for 2030 two years ago

Predictions for today

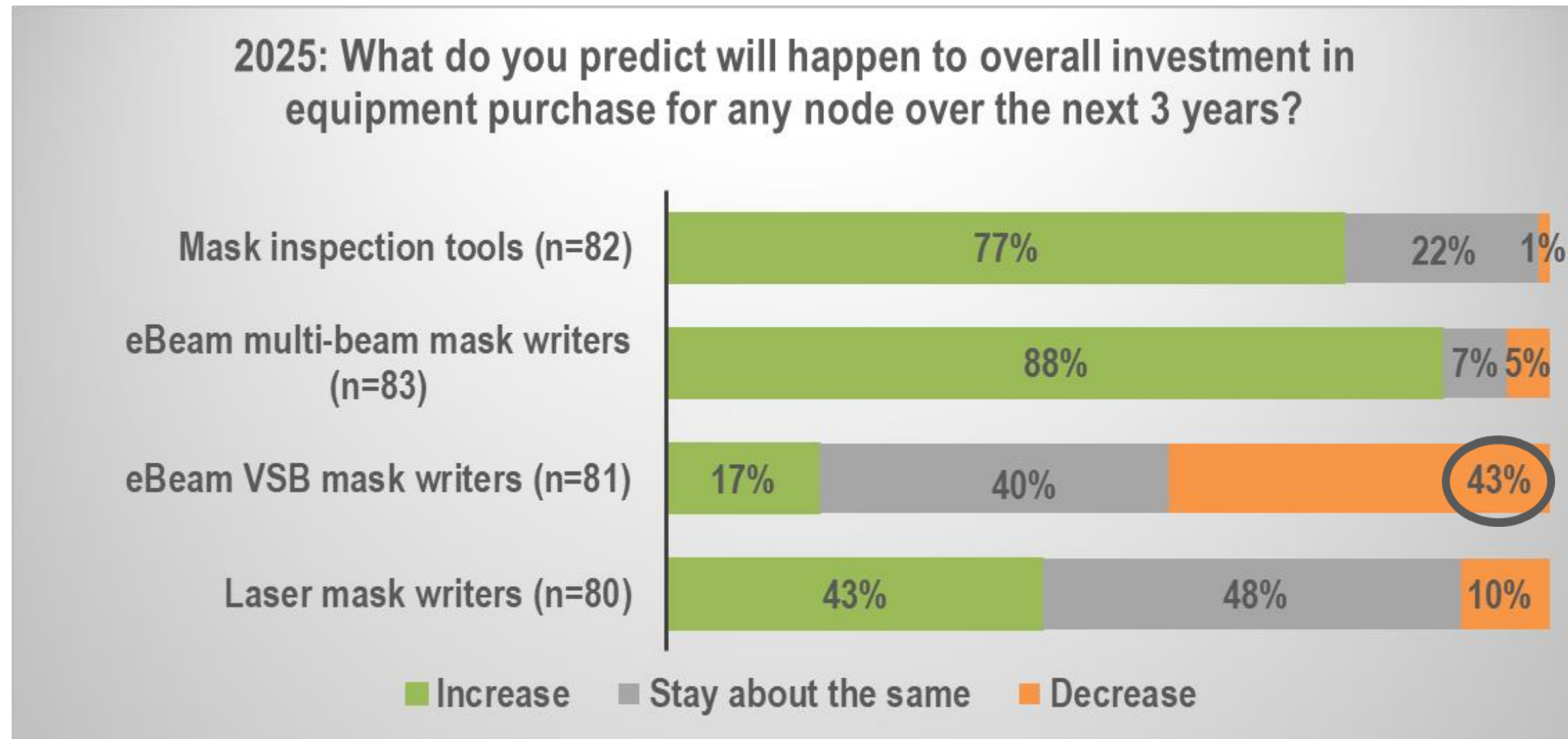


Predictions for 7 Years from now



Luminaries Say Mask Equipment Investment to Continue

Except 43% say eBeam VSB mask writers to decrease vs 33% last year



New: Mask Writing is Top Priority for Investment in 2026

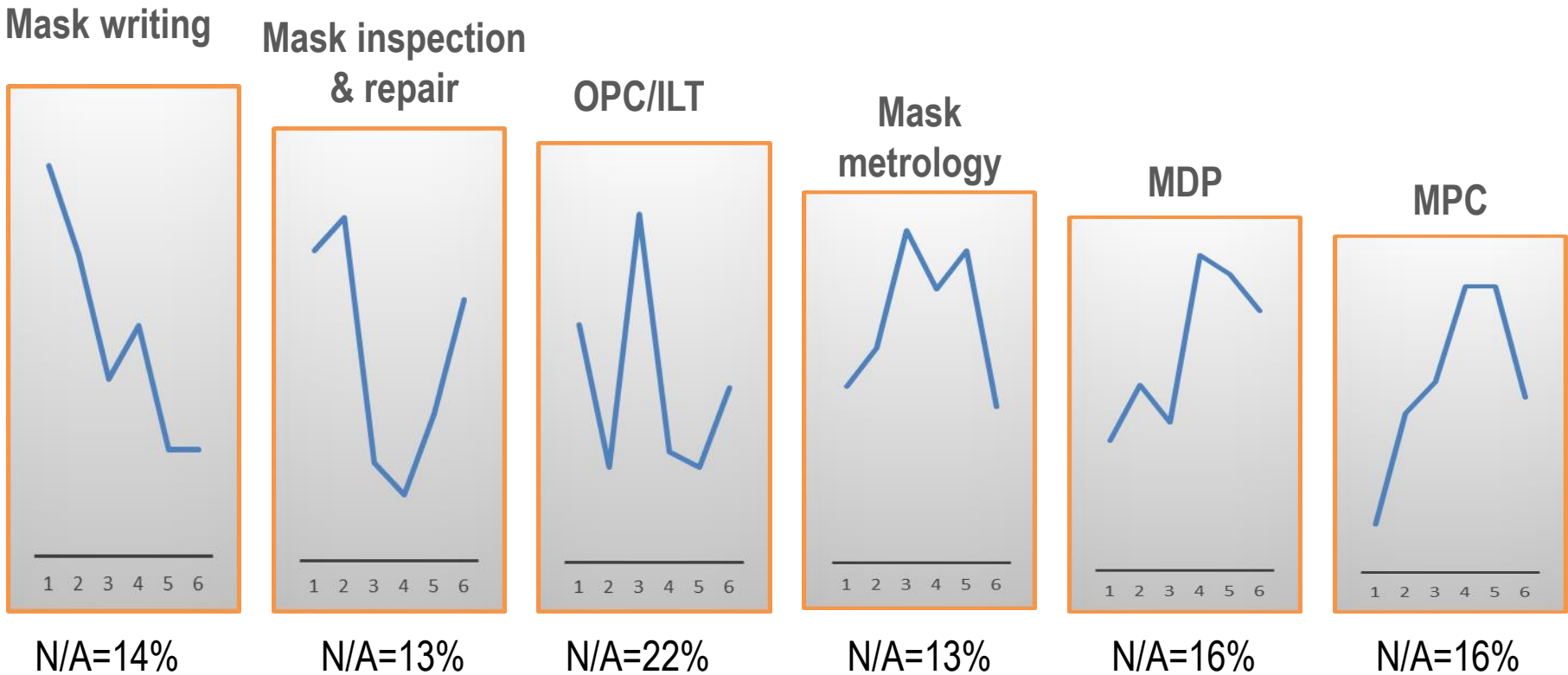
Inspection & repair, OPC/ILT close behind with varying opinions



New: For investment in time and money, how would you rank the following areas in terms of priority for the leading-edge next year (2026)? Rank 1 = highest priority and N/A if you don't have an opinion.

Ranking:

- 1 – Mask writing
- 2 – Mask inspection & repair
- 3 – OPC/ILT
- 4 – Mask metrology
- 5 – MDP
- 6 – MPC



Note: 1-6 on X-axis indicate # of respondents that ranked that question as that ordinal number with 1 = highest; height of chart = weighted avg

Mask Inspection Has Addressed Curvilinear Concerns

Mask inspection drops from #1 in 2021 to #4 in 2025

Please rank your biggest concerns in producing masks with curvilinear* shapes. n≥74

#1: Mask shop software infrastructure



N/A=10%

#2: ILT software



N/A=10%

#3: Mask Metrology



N/A=13%

#4: Mask Inspection



N/A=13%

#5: Access to Multi-beam Mask Writers



N/A=14%

#6: Mask Repair



N/A=13%

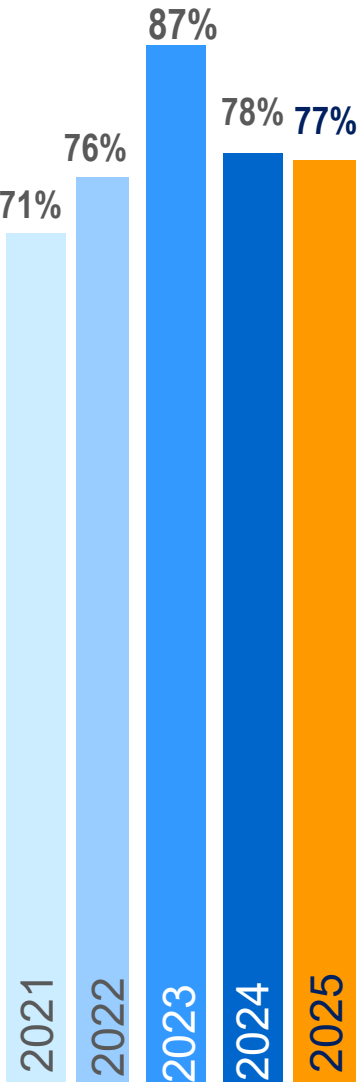
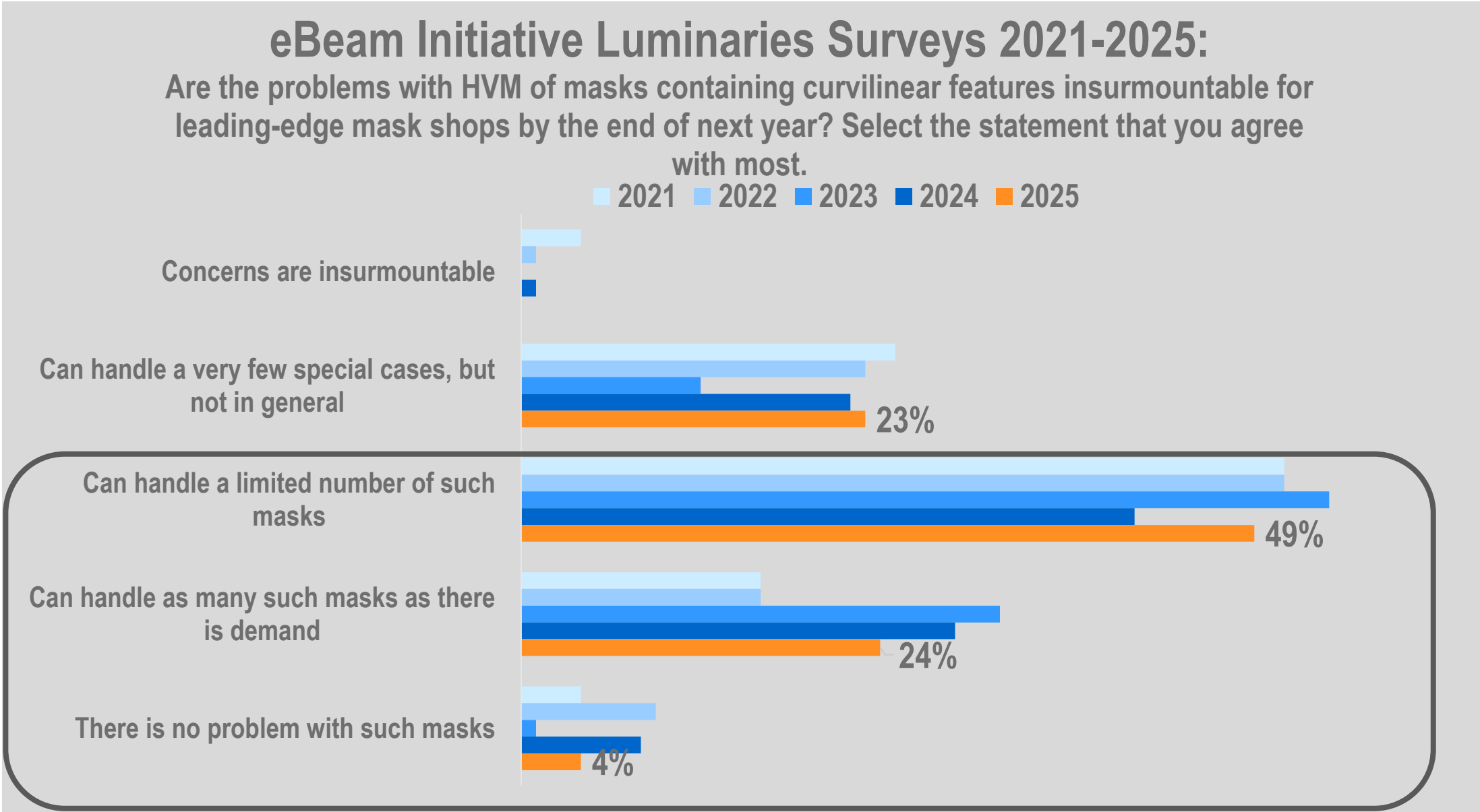
Note: 1-6 on X-axis indicate # of respondents that ranked that question as that ordinal number with 1 = highest; height of chart = weighted avg

* The survey question included "Curvilinear shapes can be piecewise linear polygons of some resolution, Bezier, B-spline or other curved-edge descriptions, but excludes shapes that only contain Manhattan or 45-degree straight edges."

Confidence Remains High for Curvilinear

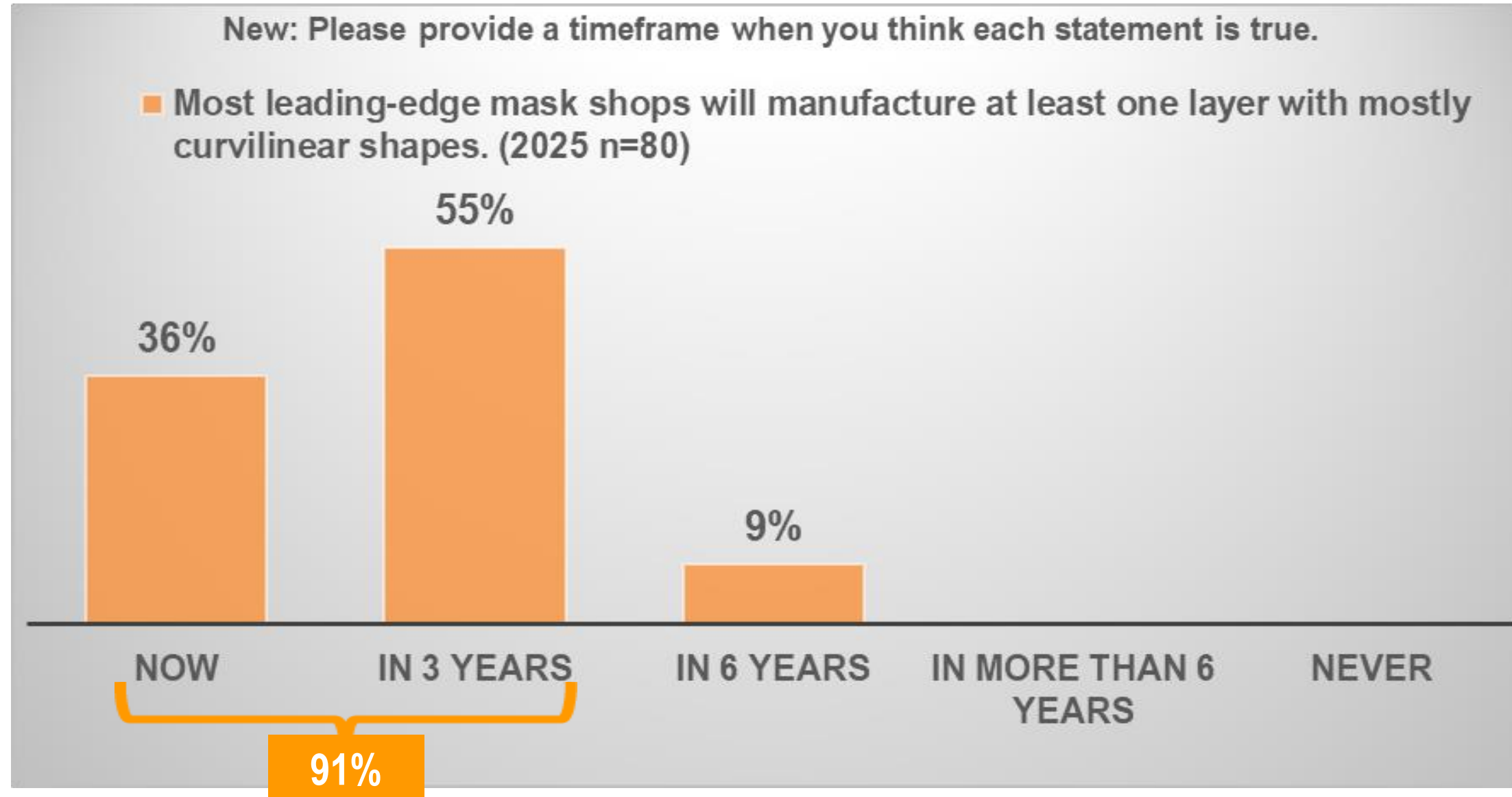


“At least a limited number of curvilinear masks”:

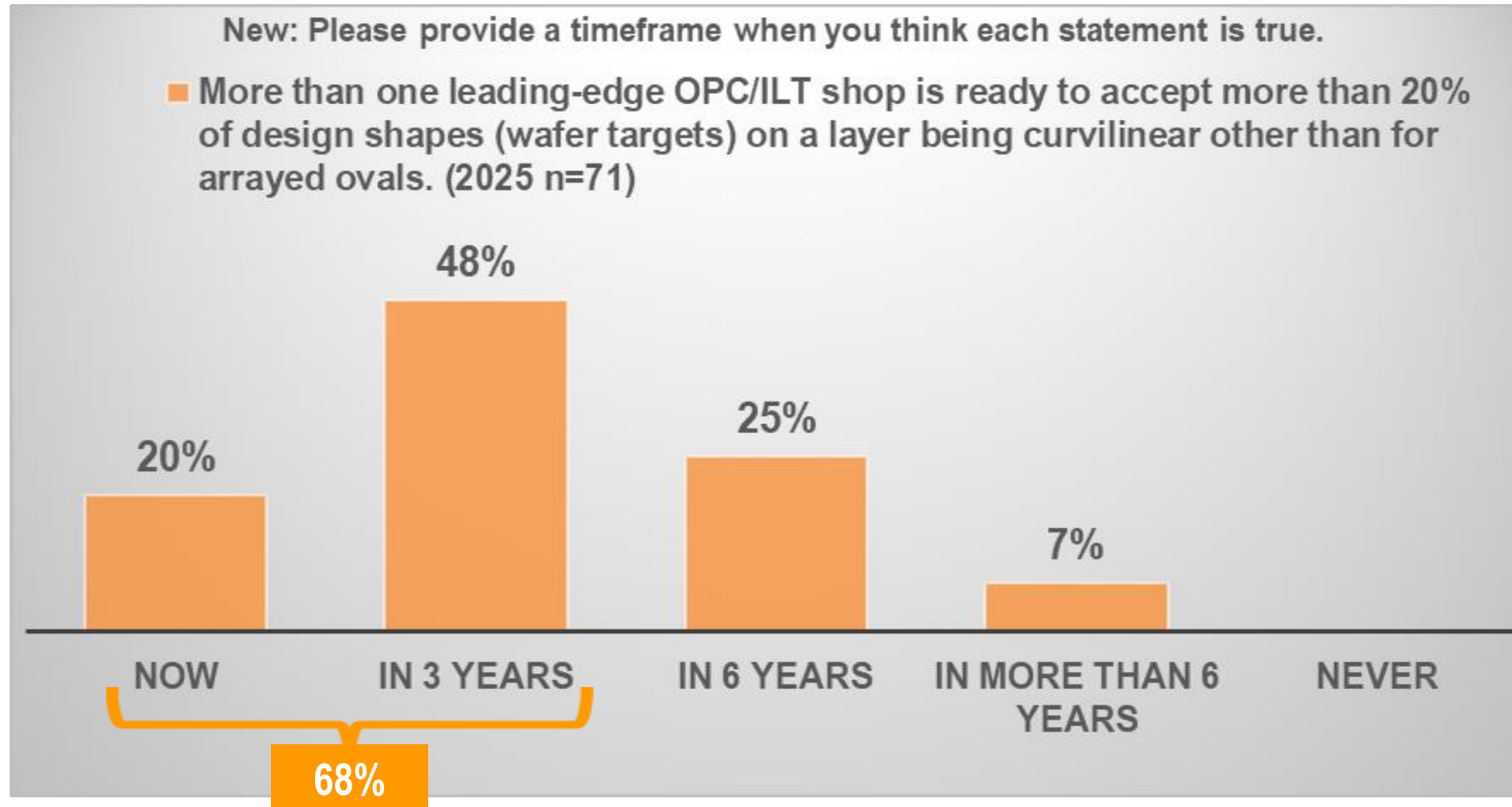


New: Curvilinear Mask Manufacturing Capability Confirmed

91% say in 3 years most LE shops will manufacture a mostly curvilinear layer



New: 68% Think Curvilinear Wafer Targets in Reach in 3 Years



Luminaries Predict 2025 Mask Market Growth & Investment

14th Annual Luminaries Survey - July 2025



- 64% of Luminaries say **2025 mask revenues will increase over 2024** revenues (\$5.561B reported by SEMI).
 - **Mask writing is the top priority for investment in 2026**, followed closely by mask inspection & repair and OPC/ILT.
 - **40% of Luminaries believe SRAFs required minimum mask dimensions for High-NA EUV are $\leq 15\text{nm}$** , an increase from 29% last year.
 - **Confidence remains high in supplying curvilinear masks** for the leading-edge.
-

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

Luminaries survey results available on www.ebeam.org

