

Thm. Let $d \geq 3$. Then

$$\#\{\text{irreps of } \text{SL}(d, \mathbb{Z}) \text{ of dim } \leq n\} \sim n^\alpha (\log n)^\beta$$

with $\alpha \in \mathbb{Q}$, $\beta \in \mathbb{N}_{\geq 0}$

Q. How many groups of order $\leq n$ are there?

Ans. $\sim n^{\frac{2}{27}} (\log_2 n)^2$ (Pyber)

(The lower bound comes from counting 2-groups, so it seems that "a random group is a 2-group")