

**NCE-SVD**

**VAE-CF**

**BPR**

**PureSVD**

**PLRec**

**WRMF**

**NCE-PLRec**

**IFVAE**

**AutoRec**

**CML**

**CDAE**

0

500

1000

1500

2000

2500

Popularity Distribution of The Top-15 Recommended Items

