Appendices

Appendix A. Tables compare NSTM and DA-NTM: topPurity, topNmi, topDiversity, AMI, ARS

20NG dataset

metric	NSTM	DA-NTM	Euclidean between word counts
topPurity	0.450±0.011		0.334±0.042
topNmi	0.403±0.004		0.417±0.020
topicDiversity	0.556±0.012		0.875±0.007
AMI	0.313±0.003		0.410±0.021
ARS	0.144±0.008		0.232±0.023

TMN dataset

metric	NSTM	DA-NTM	Euclidean between word counts
topPurity	0.600±0.011		0.679±0.028
topNmi	0.348±0.006		0.423±0.018
topicDiversity	0.921±0.006		0.923±0.005
AMI	0.282±0.007		0.421±0.018
ARS	0.218±0.018		0.422±0.010

Webs dataset

metric	NSTM	DA-NTM	Euclidean between word counts
topPurity	0.619±0.004		0.635±0.065
topNmi	0.364±0.005		0.461±0.038
topicDiversity	0.921±0.005		0.899±0.003
AMI	0.279±0.006		0.456±0.039
ARS	0.149±0.009		0.370±0.063

AGNews dataset

metric	NSTM	DA-NTM	Euclidean between word counts
topPurity	0.692±0.041		0.771±0.022
topNmi	0.323±0.019		0.431±0.021
topicDiversity	0.884±0.004		0.916±0.006
AMI	0.253±0.016		0.430±0.021
ARS	0.221±0.047		0.455±0.028

Dbpedia dataset

metric	NSTM	DA-NTM	Euclidean between word counts
topPurity	0.508±0.034		0.447±0.060
topNmi	0.457±0.014		0.556±0.039
topicDiversity	0.857±0.002		0.878±0.006
AMI	0.434±0.019		0.555±0.039
ARS	0.222±0.022		0.369±0.046

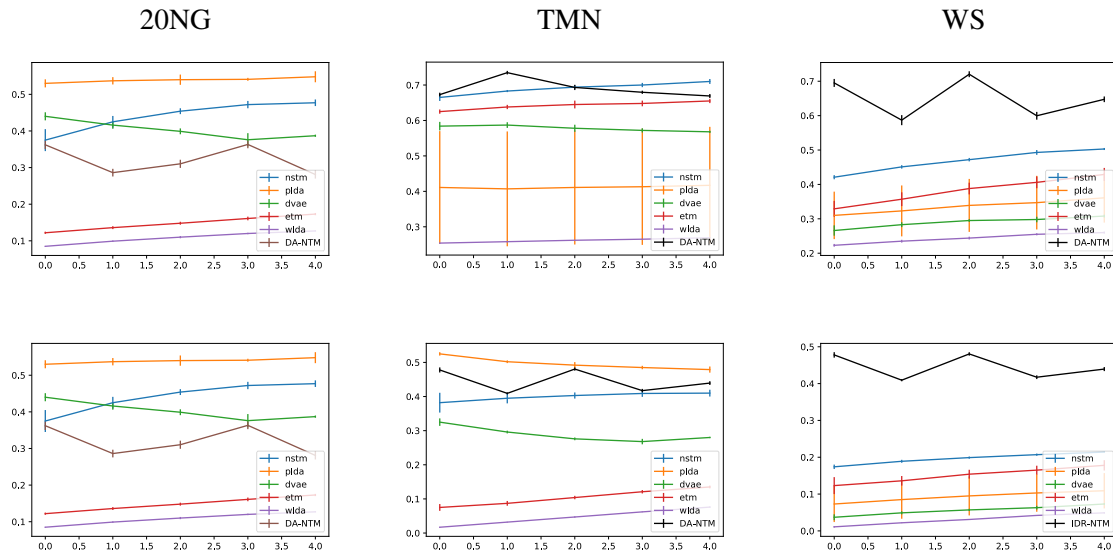# Appendix B. km-Purity and km-NMI graphs

Figure B1: The first row shows the km-Purity scores and the second row shows the corresponding km-NMI scores. In each subfigure, the horizontal axis indicates the number of KMeans clusters.

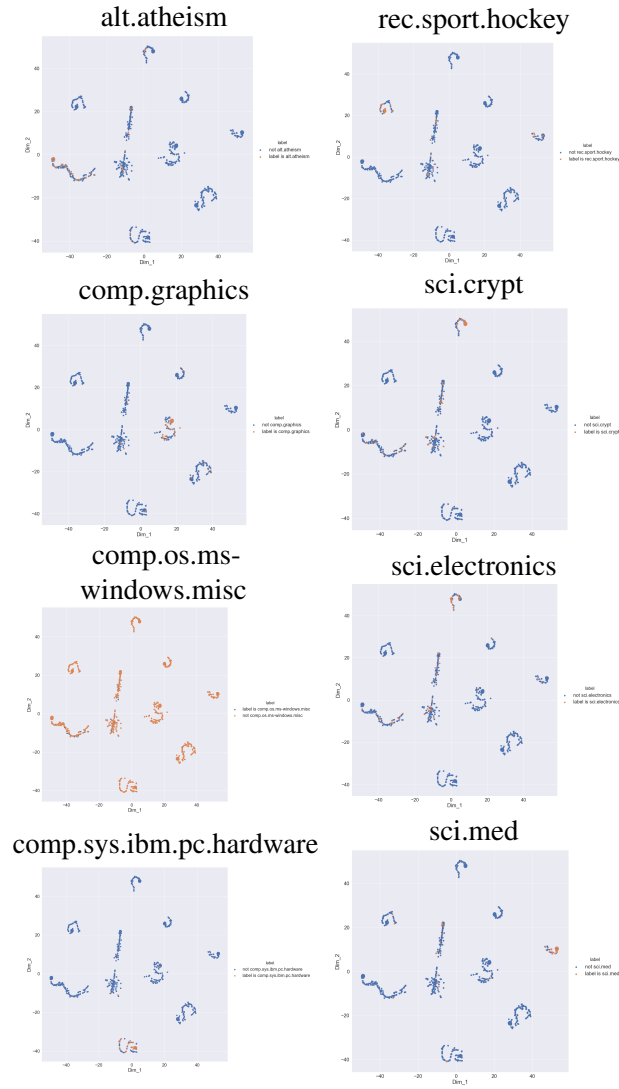**Appendix C. 2D-tSNE dimension reduction for DA-NTM topic distributions:20News binary label**

Figure C1: 8 labels from 20News dataset binary label 2DtSNE plot with DA-NTM

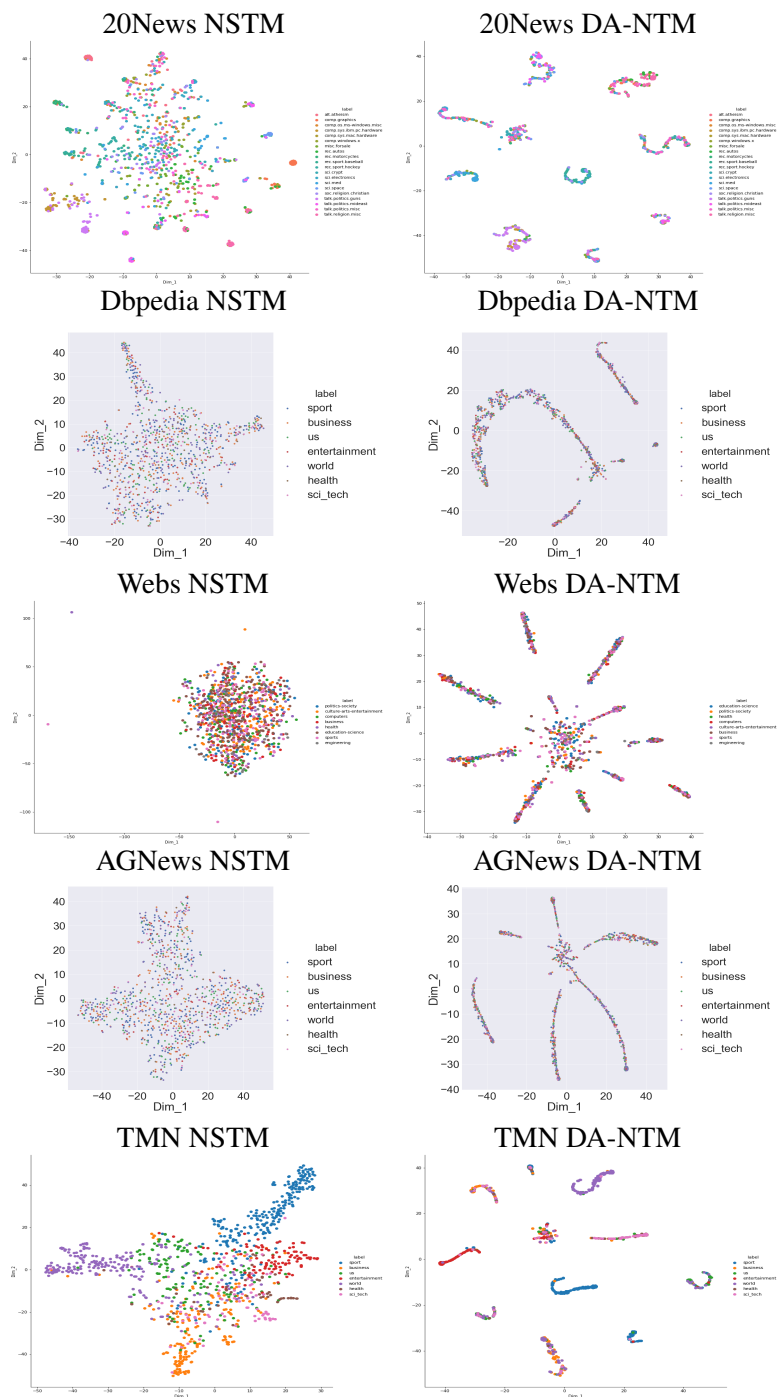**Appendix D. 2D-tSNE dimension reduction for all labels of 5 datasets:compare NSTM and DA-NTM**

Figure D1: 2DtSNE plot NSTM v.s. DA-NTM, all labels