Linguistic divergence in American English along socio-political polarities

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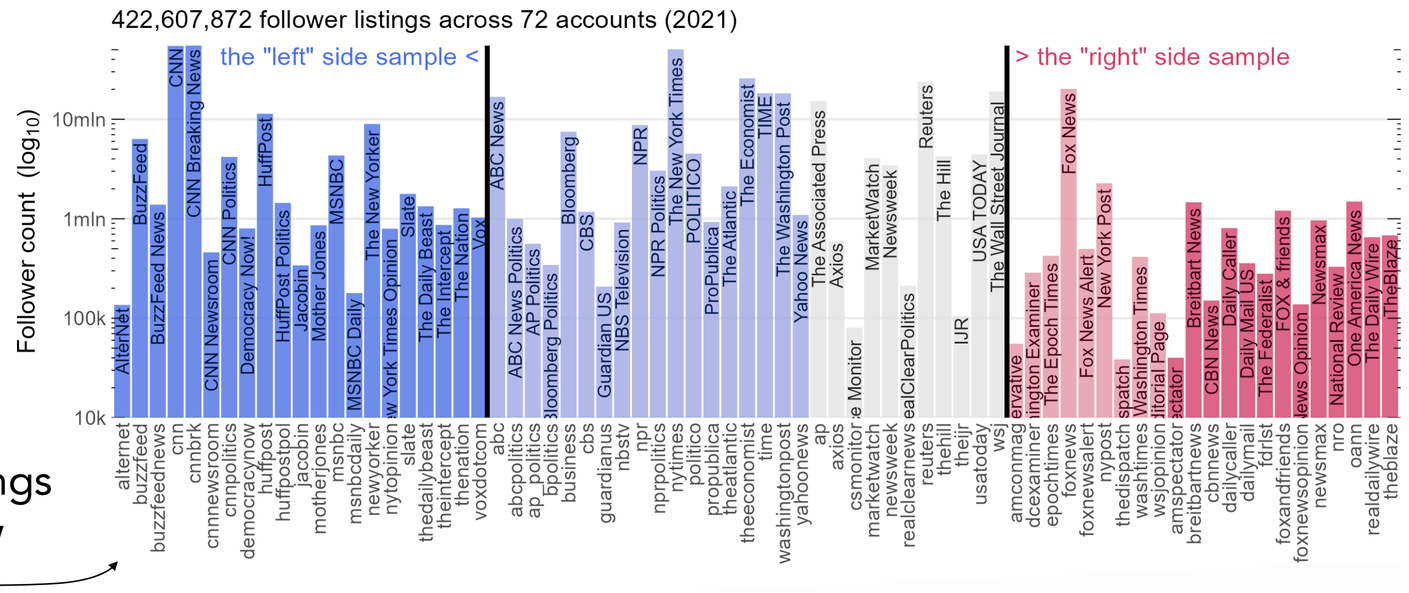
Questions:

- Explorative: Is soc-pol polarization reflected in language use? What are the biggest differences between left/right?
- Methodological: can we reliably model semantic divergence using comp. models e.g. word embeddings?

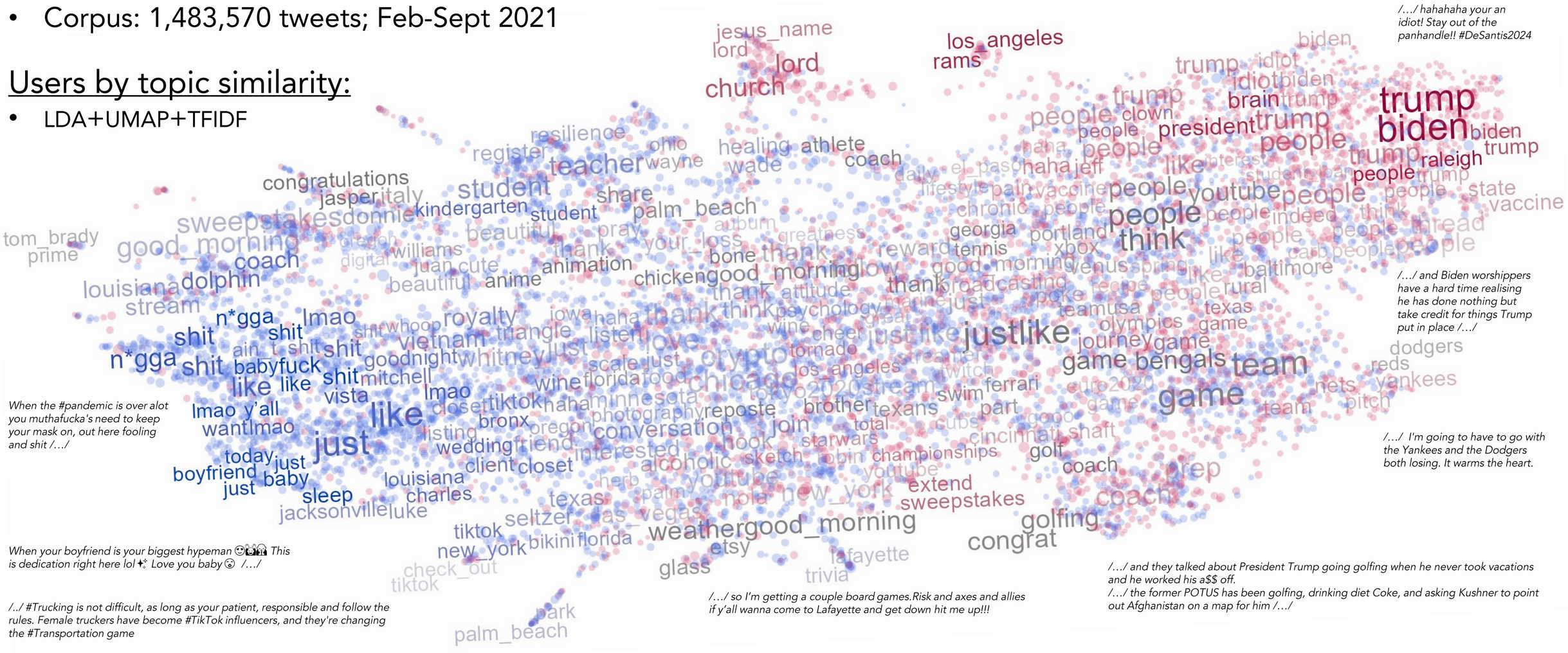
Data:

- 10,986 US Twitter users; from 422m follower listings
- "Left" (n=6202) and "right" (n=4784): only follow media on "their side" (based on Allsides 2021)
- Corpus: 1,483,570 tweets; Feb-Sept 2021

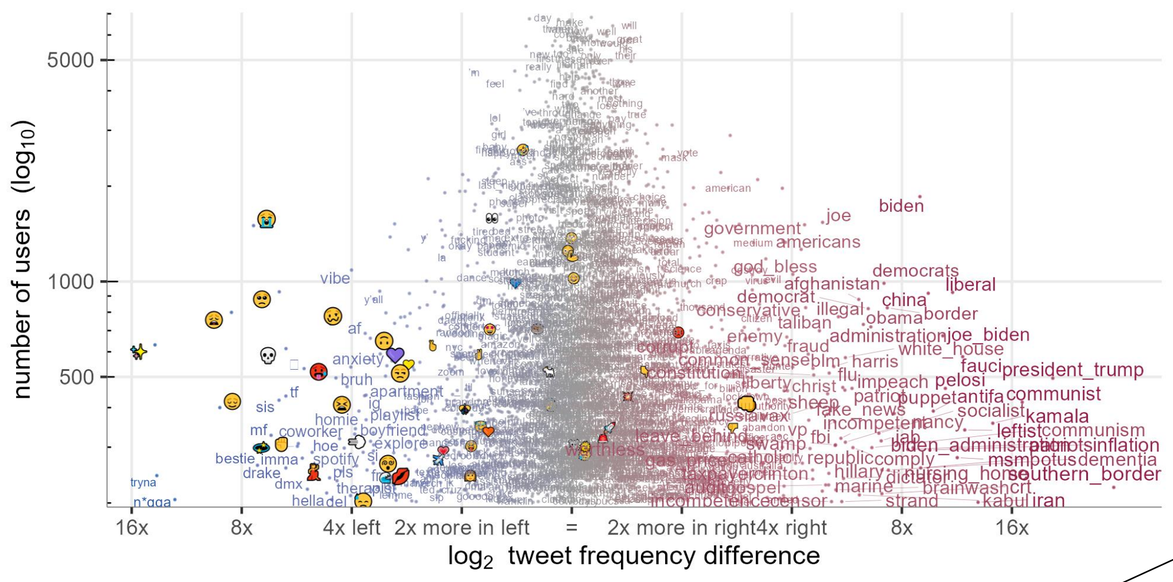


Users by topic similarity:

- LDA+UMAP+TFIDF

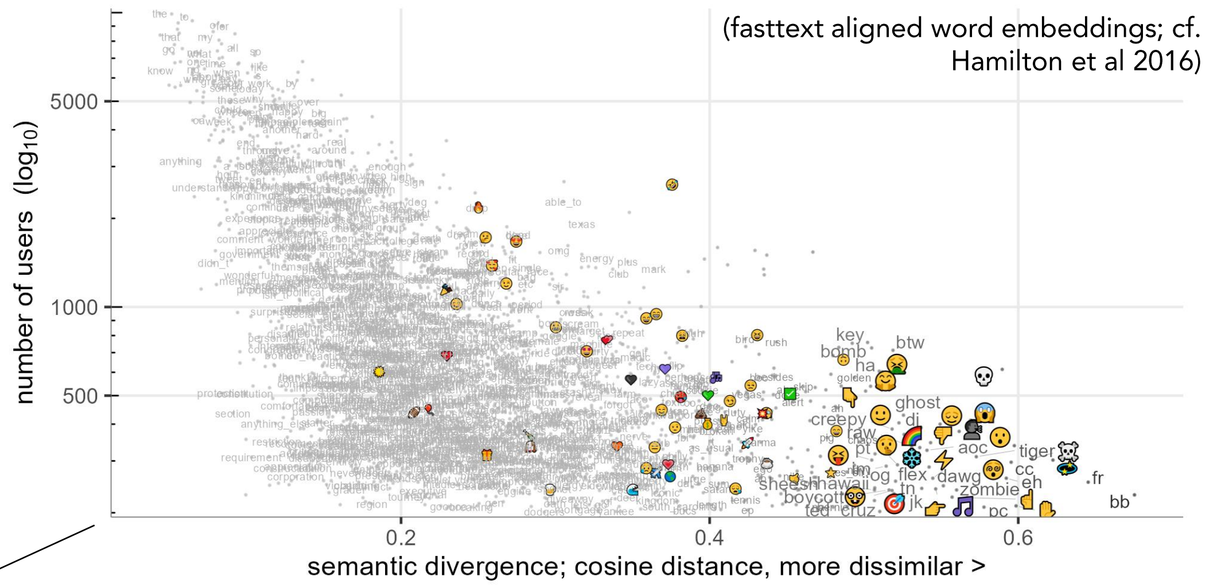


Divergence in word usage by frequency:



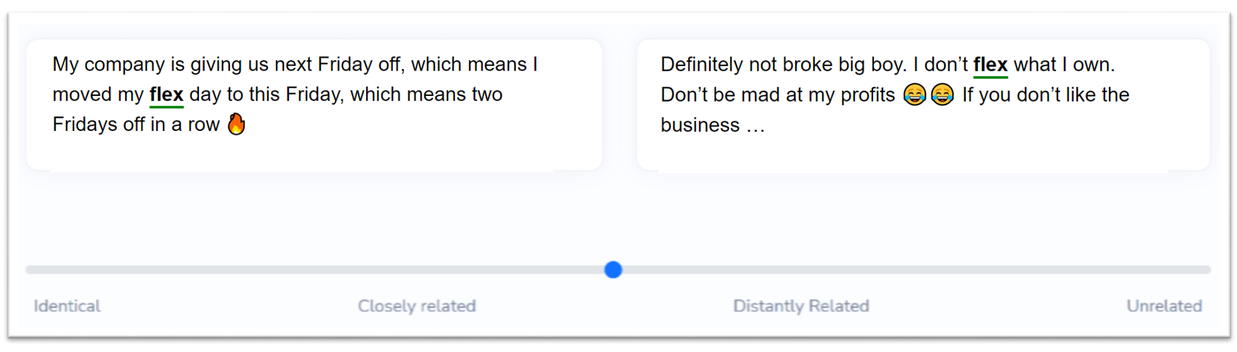
Divergence in word meanings:

(fasttext aligned word embeddings; cf. Hamilton et al 2016)



Work in progress:

- Could we test how well these computational models capture meaning and semantics shifts?
- The DUREL annotation task (Schlechtweg et al 2018) for measuring semantic change + Mechanical Turk



The short version

- We mined large corpus of tweets by users grouped by political polarities, according to what news media outlets they follow
- Preliminary results: differences in topics of conversation, certain words and phrases used in different senses
- Ongoing work: validate the corpus findings using an annotation experiment
- Future work: tease apart sources of divergence

References: Adamic, L. A., & Glance, N. (2005). **The political blogosphere and the 2004 U.S. election: Divided they blog.** • Albertson, B. L. (2015). **Dog-whistle politics: Multivocal communication and religious appeals.** • **Allsides Media Bias Ratings, version 4**. Available from: https://www.allsides.com • Bhat, P., & Klein, O. (2020). **Covert Hate Speech: White Nationalists and Dog Whistle Communication on Twitter.** • Brown, J. R., & Enos, R. D. (2021). **The measurement of partisan sorting for 180 million voters** • Chen, T. H. Y., Salloum, A., Gronow, A., Yla-Anttila, T., & Kivelä, M. (2021). **Polarization of climate politics results from partisan sorting**: Evidence from Finnish Twittersphere. • Demszky, D., Garg, N., Voigt, R., Zou, J., Gentzkow, M., Shapiro, J., & Jurafsky, D. (2019). **Analyzing polarization in social media:** Method and application to tweets on 21 mass shootings. • Gentzkow, M., Shapiro, J. M., & Taddy, M. (2019). **Measuring Group Differences in High-Dimensional Choices:** Method and Application to Congressional Speech. • Grieve, J., Nini, A., & Guo, D. (2018). **Mapping lexical innovation on American social media** • Halpern, D. J., & Rodriguez, P. L. (2018). **Partisan Representations: Partisan Differences in Semantic Representations and their Role in Attitude Judgments.** • Jurkowitz, M, A. Mitchell, E. Shearer, & M. Walker (2020). **US media polarization and the 2020 election: A nation divided**. Online report (www.pewresearch.org) • KhudaBukhsh, A. R., Sarkar, R., Kamlet, M. S., & Mitchell, T. M. (2020). **We don't speak the same language: Interpreting polarization through machine translation.** • Schlechtweg, Dominik, Sabine Schulte im Walde, and Stefanie Eckmann. 2018. '**Diachronic Usage Relatedness (DURel): A Framework for the Annotation of Lexical Semantic Change**'.

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