<https://www.econstor.eu/bitstream/10419/210691/1/10.21307_stattrans-2019-035.pdf>

Authors model indigenous language *extinction* using SIR. The S (susceptible) group is everyone in the community, the I (infectious) group is children who acquire the indigenous language, and the R (removed) group is people who either die or migrate away from the indigenous community. The authors assume heteronomous mixing, which is what we want to do too because immigrants and natives are different subcommunities. This paper has lots of useful info if we want to model language spread.

<https://www.nature.com/articles/424900a>

Also about language death. Not an SIR model, but models the death of Welsh, Scottish, and Gaelic as the speakers move entirely to English, so it might be useful to look at immigrant populations (similar to <https://www.researchgate.net/publication/249036435_The_Future_of_Bilingualism_An_Application_of_the_Baggs_and_Freedman_Model>)

What can we use from the Ikoba and Jolayemi paper?

1. Non-homogenous mixing. Immigrants and natives are definitely different subgroups. We may want to use immigrant communities instead of families though. We need to estimate the mean size of immigrant communities. We can use Gunadi.
2. Poissonian lifespans and probability of ‘infecting’ because why not.
3. Inter- and intra-community transmission (?)
4. Bilingualism, not competing languages

What should we change?

1. Use both birth rate and migration rate to track the growth of immigrant communities. Also need to know the population growth rate of the surrounding native population.
2. Instead of family size, use immigrant population size for US cities. We can use Gunadi.
3. Allow for different birth rates between immigrants and native population.
4. Consider SEIR model to incorporate an ‘incubation’ period for the language, although language spreads before fluency.
5. Should migrant children be considered speakers at birth?

Data needed: Migration rate, US birth rate, life expectancy, language transfer rate, mean language-speaking period, mean community/family sizes.

<https://www.cato.org/publications/immigration-research-policy-brief/immigrants-learn-english-immigrants-language> for data

https://clas.ucdenver.edu/marcelo-perraillon/sites/default/files/attached-files/lecture\_12\_inf\_model.pdf

<https://support.microsoft.com/en-us/office/expon-dist-function-4c12ae24-e563-4155-bf3e-8b78b6ae140e>