Baby Name Popularity

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Abstract

The U.S. Census publishes the number of babies born to each first name each year at the country and state level. These trends exhibit dramatic up- and down-swings unexplainable by a simple imitation model. We attempt to construct a model to explain the dynamics of these popularity swings as well as other stylized facts from the data.

1 The Data

Our data comes from the U.S. Census.[1] The dataset allows us to observe the number of births in the country each year by first name and gender with the exception of names for which there were fewer than five births.

The data requires little processing, but because our aim is to model changes in popularity rather than population growth, we normalize each data entry as a percentage of the total number of births that year. To provide a sense of what some typical trends look like, we plot the popularity of five random popular[2] names in Figure 1.

On the basis of inspecting many realizations of Figure 1, for which the depicted trends are representative, we can take away some stylized facts,

- The popularity of a name in many cases follows a exponential-like growth from obscurity, a peak, and then a decay back to obscurity.
- There appears to be a practical upper-bound to how high the peak is, but this upper bound need not be binding for many names
- As "Deborah" shows, the down-swing need not be as fast as the up-swing.

2 An Imitation Model

We will follow Hahn and Bentley (2003) closely.

[1] https://catalog.data.gov/dataset/baby-names-from-social-security-card-applications-national-level-data
[2] Defined as exceeding 0.5% of all births on any year.

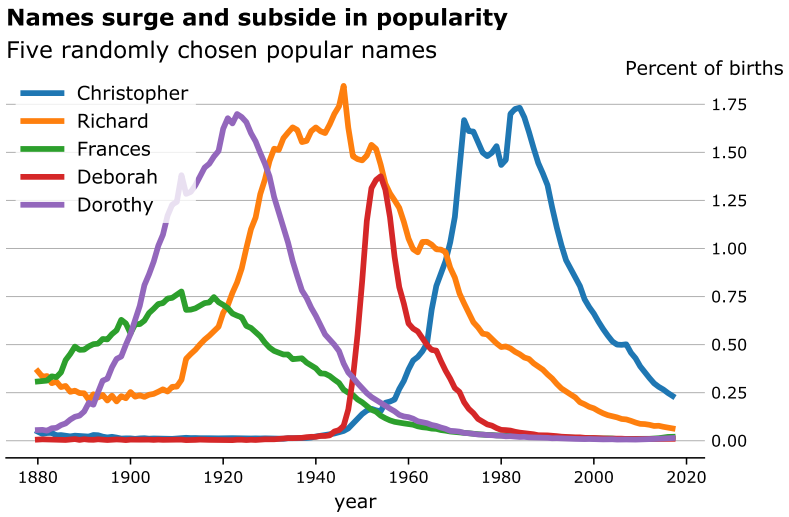

Figure 1: Popularity evolution of five random names

3 Segmenting the population

References

Hahn, M. W. and Bentley, R. A. (2003). Drift as a mechanism for cultural change: an example from baby names. *Proceedings of the Royal Society of London B: Biological Sciences*, 270(Suppl 1):S120–S123.