

Peaks and troughs tool

This tool can be used to:

- Perform 'peaks & troughs' analysis.
- Apply a generalised additive model (GAM) to linguistic data.
- Visualise results as a graph with a non-parametric regression curve and 95% and 99% CIs.

Instructions:

1) Copy-paste data in the text-box in the following format directly from a spreadsheet.

	A	B	C
1	ID	Time	Variable
2	1	1941	0.91
3	2	1942	0.9
4	3	1943	0.92
5	4	1944	0.92
6	5	1945	0.9
7	6	1946	0.91
8	7	1947	0.96
9	8	1948	0.99
10	9	1949	0.98
11	10	1950	0.97

ID column

Time
period

Linguistic variable -
anything that can be
measured over time.

2) Select parameters

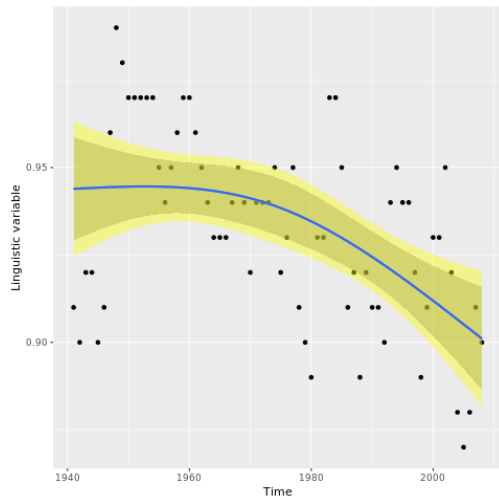
Log transformation (using natural logarithm) reduces the range of the values of the Linguistic variable. This transformation is available only if all values are greater than 0 (>0). This option is available for the replication of Gabrielatos et al. (2012) but it is not a default option.

The Data fit parameter has a major effect on the analysis. If too small, the model doesn't fit the data (shown as almost a straight line in Figure 1a). If too large, the model is 'overfitted' (Figure 1b).

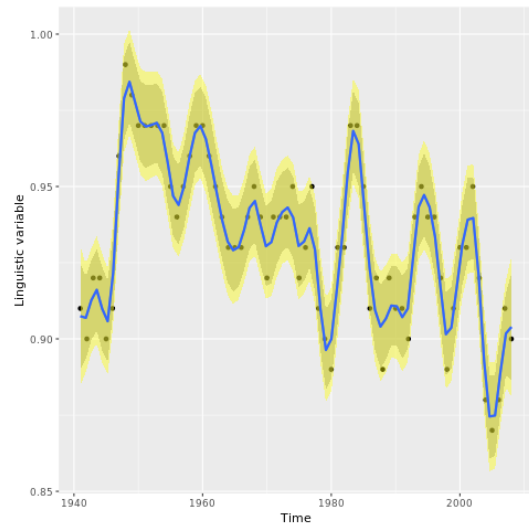
No transformation Log transformation

Data fit parameter:

a) Data fit parameter = 1 ('underfitted')



b) Data fit parameter = 60 ('overfitted')



c) Data fit parameter = 15 (right fit)

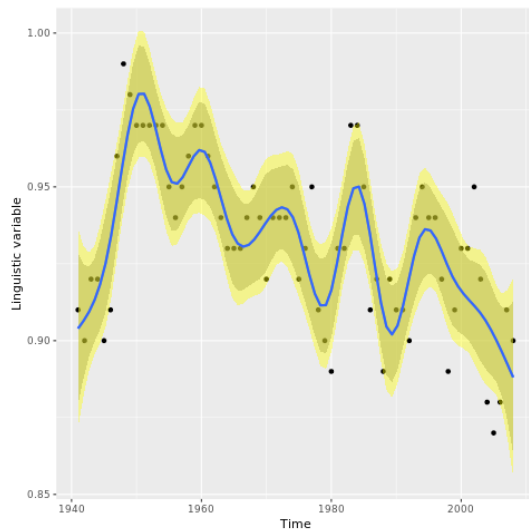


Figure 1. The effect of different values of the Data fit parameter

3) Click on 'Plot'

1. Paste tab delimited data including header row and id column. For help click [here](#).

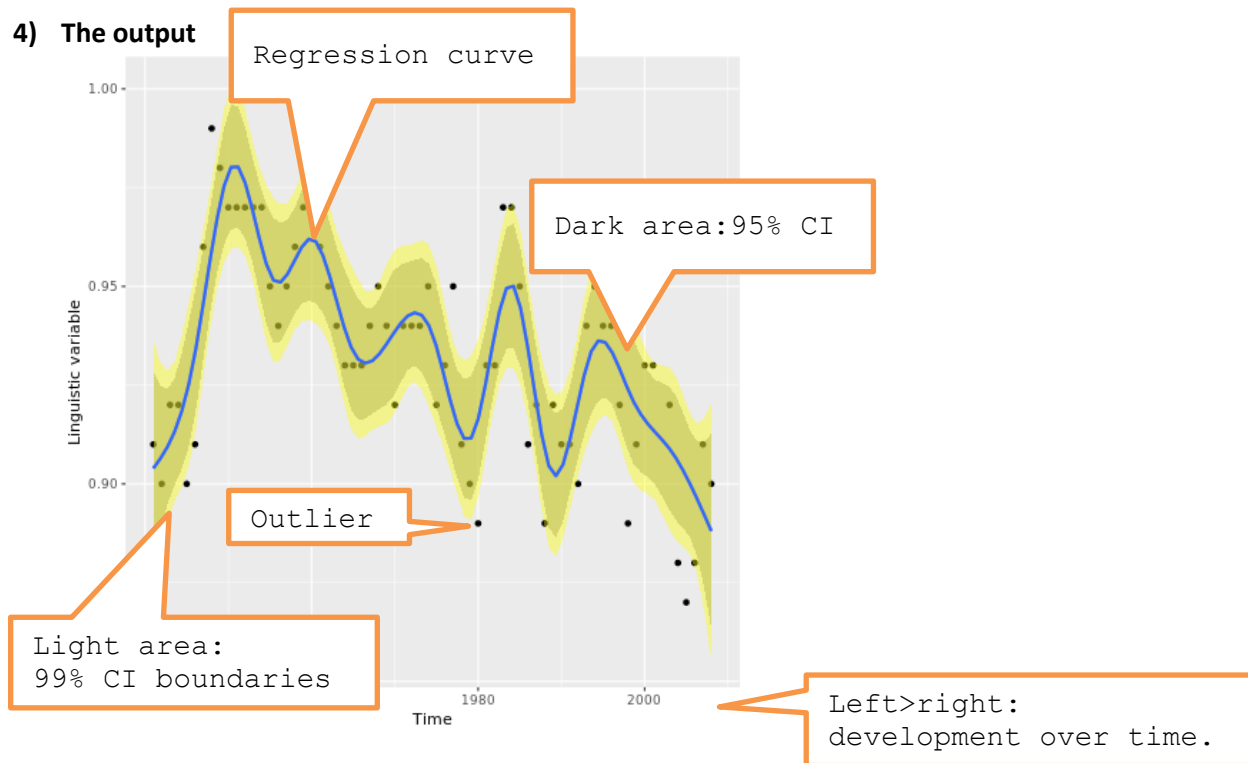
56	1996	0.94
57	1997	0.92
58	1998	0.89
59	1999	0.91
60	2000	0.93
61	2001	0.93
62	2002	0.95
63	2003	0.92
64	2004	0.88
65	2005	0.87
66	2006	0.88
67	2007	0.91
68	2008	0.9


2. Select parameters.

No transformation Log transformation

Data fit parameter:

4) The output



 R code that performs the analysis can be viewed and copied when going with the mouse pointer to [R code](#)

Reference:

Gabrielatos, C., McEnery, T., Diggle, P. J., & Baker, P. (2012). The peaks and troughs of corpus-based contextual analysis. *International journal of corpus linguistics*, 17(2), 151-175.