



'Truncate, replicate, sample': a method for creating integer weights for spatial microsimulation

[Robin Lovelace](#), [Dimitris Ballas](#)

(Submitted on 21 Mar 2013)

Iterative proportional fitting (IPF) is a widely used method for spatial microsimulation. The technique results in non-integer weights for individual rows of data. This is problematic for certain applications and has led many researchers to favour combinatorial optimisation approaches such as simulated annealing. An alternative to this is 'integerisation' of IPF weights: the translation of the continuous weight variable into a discrete number of unique or 'cloned' individuals. We describe four existing methods of integerisation and present a new one. Our method --- 'truncate, replicate, sample' (TRS) --- recognises that IPF weights consist of both 'replication weights' and 'conventional weights', the effects of which need to be separated. The procedure consists of three steps: 1) separate replication and conventional weights by truncation; 2) replication of individuals with positive integer weights; and 3) probabilistic sampling. The results, which are reproducible using supplementary code and data published alongside this paper, show that TRS is fast, and more accurate than alternative approaches to integerisation.

Comments: 51 pages, 10 images (including supplementary information)

Subjects: **Methodology (stat.ME)**

Cite as: [arXiv:1303.5228](#) [stat.ME]

(or [arXiv:1303.5228v1](#) [stat.ME] for this version)

Submission history

From: Robin Lovelace [[view email](#)]

[v1] Thu, 21 Mar 2013 11:04:10 GMT (8559kb,D)

[Which authors of this paper are endorsers?](#)

Download:

- [PDF](#)
- [Other formats](#)

Current browse context:

stat.ME

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1303](#)

Change to browse by:

[stat](#)

References & Citations

- [NASA ADS](#)

Bookmark([what is this?](#))

