OXFORD

Data and text mining

Interactive Integrated Electronic Health Records

Shane Crinion *, Pilib Ó Broin

[1]School of Mathematics, Statistics & Applied Mathematics, National University of Ireland, Galway, H91 H3CY

*To whom correspondence should be addressed.

Associate Editor: XXXXXXX

Abstract

Motivation: The a
Availability: Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text
Contact: name@bio.com
Supplementary information: Supplementary data are available at *Bioinformatics* online.

1 Introduction

The widespread implementation of the electronic health record (EHR) has improved healthcare through reduced processing times and cost, improved quality of patient care and detailed clinical information through longitudinal storage Denny *et al.*, 2010 . . . . . . text follows.

$$\sum x + y = Z \qquad (1)$$

2 Approach

Equation (1) Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text .....

3 Methods

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

- for bulleted list, use itemize

- for bulleted list, use itemize
- for bulleted list, use itemize

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text.

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method

Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text.

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text.

3.1 This is subheading

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text. Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text

Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text.

3.1.1 This is subsubheading

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text textText Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text.

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text

Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text

Table 1. This is table caption

head1	head2	head3	head4
row1	row1	row1	row1
row2	row2	row2	row2
row3	row3	row3	row3
row4	row4	row4	row4

This is a footnote

FPO

Fig. 1. Caption, caption.

Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

3.2 Test1

Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

4 Discussion

Talk about what the framework is and how easy to use the I2EHR is. Figure 2 Talk about a second use of I2EHR. Talk about how it was implemented through the treatment of type 2 diabetes patients. Bofelli *et al.*, 2000 might want to know about text text text text The graphical data are a systemic way to analyse clinical observations and treatments and influence the focus for genomic research. This approach intends to give clinical researchers the insight required to improve diabetes treatment and help them to select the right genomic analysis that need to be performed to gain useful knowledge on the molecular background to the disease.

Synthea proved very useful for the acquisition of clinical data; Synthea improved efficiency by allowing instant usage and data manipulation to model the cohort effectively and eliminating waiting time. Efficiency is also improved by the elimination of issues associated with privacy including de-personalising the data and requesting new data privileges. Issue with Synthea is the discrepancies with demographic data that have been noted (ref). Synthea developers have addressed this and are continuously improving the likelyness to real data through their GitHub account (link).

Table 1 shows that Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text. Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text

Text. Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text.

5 Conclusion

(Table 1) Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text.

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text

1. this is item, use enumerate
2. this is item, use enumerate
3. this is item, use enumerate

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text

Text Text Text Text Text Text Text Text Text Text. Bofelli *et al.*, 2000 might want to know about text text text text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text.

Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text Text. Figure 2 shows that the above method Text Text Text Text

Acknowledgements

Funding

References

Bofelli,F., Name2, Name3 (2003) Article title, *Journal Name*, **199**, 133-154.

Denny, J.C., *et al.* (2010) PheWAS: demonstrating the feasibility of a phenome-wide scan to discover genedisease associations. *Bioinformatics*, **26**(9), 1205–1210.

Bag,M., Name2, Name3 (2001) Article title, *Journal Name*, **99**, 33-54.

Yoo,M.S. *et al.* (2003) Oxidative stress regulated genes in nigral dopaminergic neurnol cell: correlation with the known pathology in Parkinson's disease. *Brain Res. Mol. Brain Res.*, **110**(Suppl. 1), 76–84.

Lehmann,E.L. (1986) Chapter title. *Book Title*. Vol. 1, 2nd edn. Springer-Verlag, New York.

Crenshaw, B.,III, and Jones, W.B.,Jr (2003) The future of clinical cancer management: one tumor, one chip. *Bioinformatics*, doi:10.1093/bioinformatics/btn000.

Auhtor,A.B. *et al.* (2000) Chapter title. In Smith, A.C. (ed.), *Book Title*, 2nd edn. Publisher, Location, Vol. 1, pp. ???–???.

Bardet, G. (1920) Sur un syndrome d'obesite infantile avec polydactylie et retinite pigmentaire (contribution a l'etude des formes cliniques de l'obesite hypophysaire). PhD Thesis, name of institution, Paris, France.