Wolfram Fischer

Visualising DRG Patient Spectra by Spoke Plots

Zentrum für Informatik und wirtschaftliche Medizin, Wolfertswil (Switzerland)

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Introduction

How can the distribution of patient casemix be visualised? – DRG based data evaluation can show many details. But sometimes it is difficult to obtain an overview. Besides the big number of DRGs, a further complication is the very unequal distribution of patient frequencies across DRGs: some few DRGs are very highly frequented; many DRGs show small numbers.

Data

20 436 case records of eight Swiss children's hospitals or departments from the year 2005 classified by APDRGs were available for the example evaluation. These cases occupied 445 DRGs. The range of frequencies spanned from 1 to 1272 cases.

Methods

Instead of using a conventional bar chart, a bar chart with a circular base line is drawn. The labels of DRGs and MDCs are arranged around the circle in a hierachical way. – The figure was constructed using the open-source statistical programming language R.[1]

Results

Visualisation resulted in a compact and nice diagram. Only a third of the space of a conventional bar chart is occupied. The «comprehensibility» of the figure seems to be better because the eyes are catching the bundling of bars more easily.

Discussion

The longest spokes are crossing each other in the middle of the plot. The plot had to be arranged in a way that only a restricted number of bars are longer than the radius of the circle. Spoke plots are very well adapted to data showing many lower-to-medium frequencies and only some isolated higher frequencies.

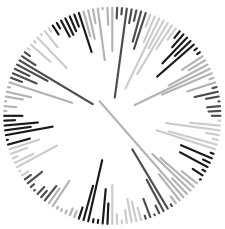
It seems that the circular arrangement of bars is easy to catch visually because we are strongly accustomed to clocks and watches in everday life.

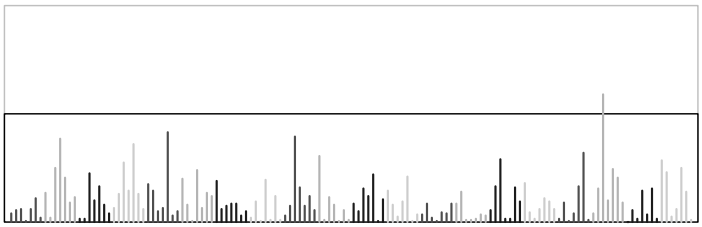
The multitude of DRGs caused the labels to be very tiny. Nevertheless the labels can yield useful information within the eye span. (If necessary, they can be enlarged by using a magnifying glass or the zoom function of the electronic document reader software.)

Conclusions

Spoke plots are able to visualise the number of patients assigned to about a half thousend DRGs in a very comprehensive and concise manner on less than a single page.

Table 1:
Space used by a spokeplot as compared to the space used by a barchart





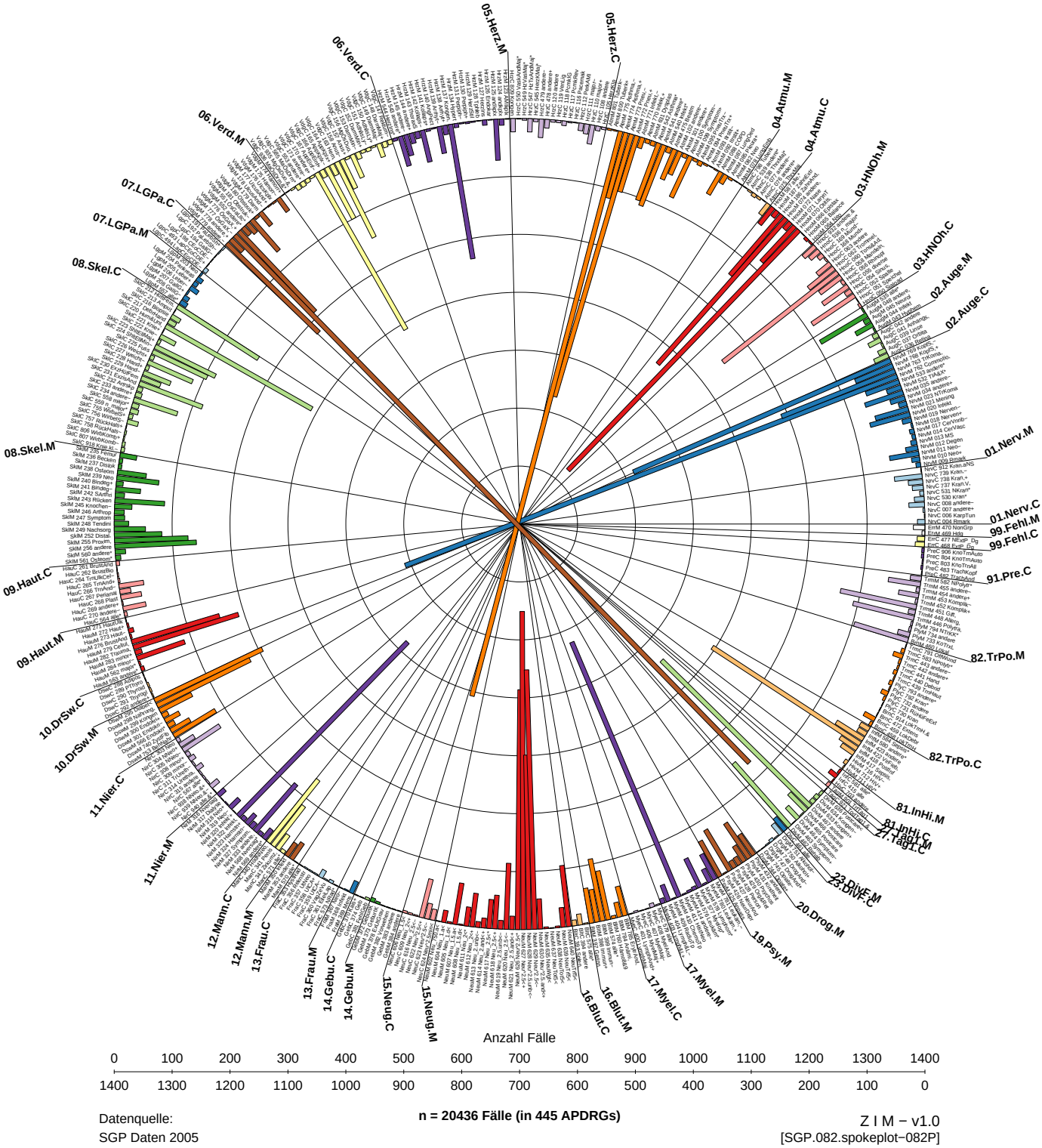
References

Dalgaard (2002) R
Dalgaard P. *Introductory Statistics with R*. New York (Springer) 2002: 267 pp.

Fischer (2008) Grafiken zur PCS-Beurteilung
Fischer W. *Statistische Grafiken zur Beurteilung von Patientenklassifikationssystemen*. dargestellt am Beispiel der pädiatrischen Sicht auf das APDRG-System. Wolfertswil (ZIM) 2008: 169 pp. Internet: http:// www.fischer-zim.ch / studien / Grafiken-PCS-Beurteilung-0804.htm.

[1] http:// www.r-project.org. Dalgaard [R, 2002].

Table 2: Number of cases in 445 APDRGs of 8 children hospitals or departements



Source: Fischer [Grafiken zur PCS-Beurteilung, 2008]: 61.