

Weights of criteria for evaluation of medical web pages



Theodor Adla, Pavel Kasal, Aleš Janda, Marie Hladíková, Jan Naidr, Jitka Feberová
Institute of Medical Informatics, Head Pavel Kasal, 2nd Medical School, Charles University, Prague, Czech Republic

AIMS

- Selection set of criteria for evaluation of health resources on the web
- Assure the correspondence with European standards
- Create algorithms for easy assessment of the criteria
- Maximize automation of the assessment process

STANDARDS

Many standards for evaluation of web pages were proposed. The problem is a selection of optimum criteria for a given purpose.



CRITERIA

- For evaluation of web pages of hospitals 20 criteria were chosen from international standards.
- The criteria can be divided into four groups in accordance with fields of use.

Criteria	Description	Automatic evaluation	
Presentation	Speed of loading	speed of loading of the homepage.	F
	Number of inner links	number of links from the homepage.	F
	Covering of the screen	overlapping of the content of the page out of the screen is a negative feature.	F
	Uniformity of appearance	evaluation whether the pages of the particular site have the same structure and appearance.	N
Navigation	Faults of graphics	character size and contrast of the text and background were evaluated.	N
	Number of steps	number of „clicks“ needed to reach defined information.	P
	Back links	presence of back links to the homepage.	F
	Site map	presence of site map	P
Functions	Marking of new	clear identification of new information.	P
	Highlighting of links	evaluation whether the links are clearly distinguishable from other text.	P
	Foreign language version	presence and extent of foreign language version of presented information	P
	Internal search engine	presence and reliability of internal search engine.	F
Credibility	Metadata	presence of metadata (metatags) in the HTML source code (author, keywords, description).	F
	Alternative captions	presence of alternative text at images. It represents accessibility.	F
	Availability	availability of the homepage during a long period of time.	F
	Authorship	clear authorship of presented information.	N
Date of publication	presence of date of publication	N	
Date of the last updating	presence of date of the last updating	P	
Dead links	low number of deadlinks.	F	
Faultless of HTML code	Purity of source code of pages	F	

Description of criteria and state of automatic evaluation. F - full, P - partially (checking recommended), N - not yet

IMPORTANCE OF THE CRITERIA

Estimation trial

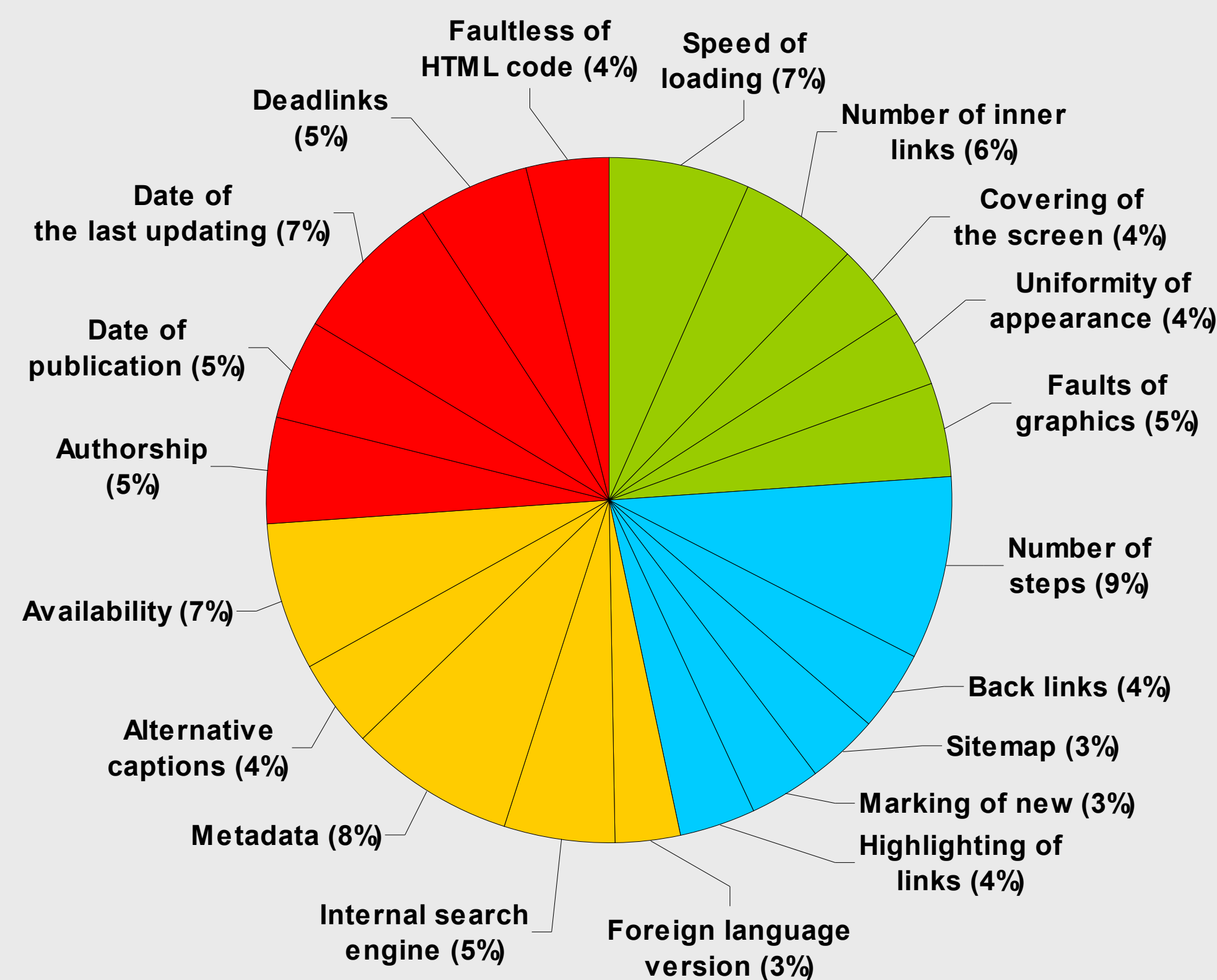
- 110 medical educated respondents took part
- The individually preferred criteria (10 out of 20) were selected.
- Weights of criteria were computed:

$$W(c) = PA(\text{criterion}) / \sum PA$$

W(c) – weight of criterion
PA – number of positive answers

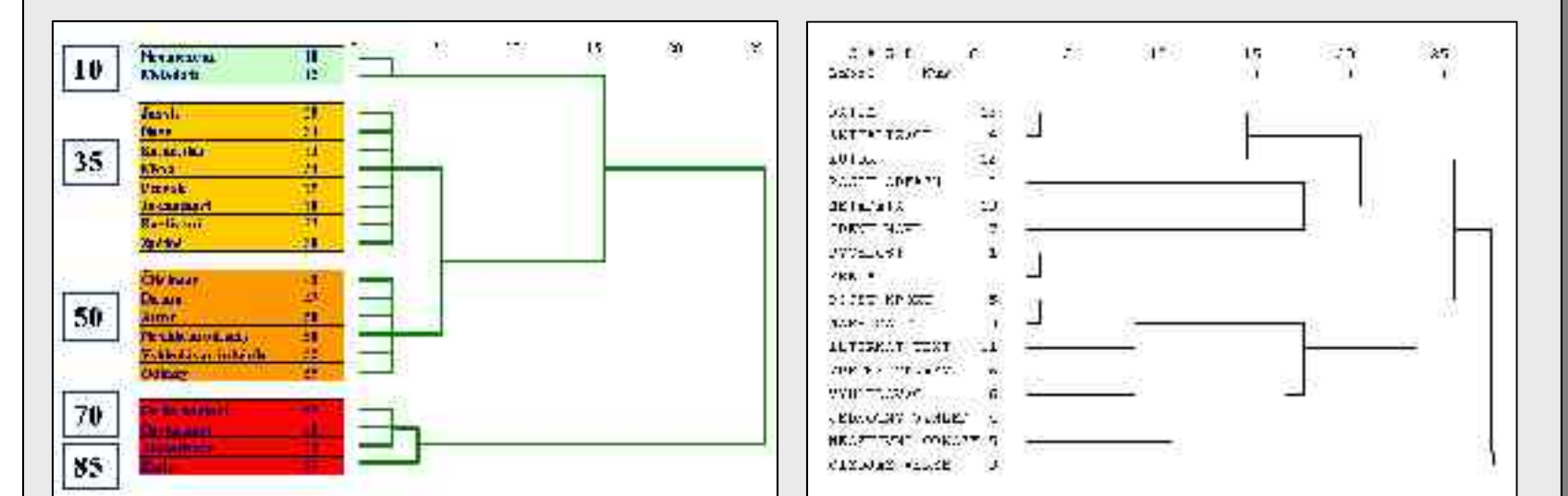
Example of questionnaire

WEIGHTS



RELATIONS AMONG THE CRITERIA

- 44 different web resources was used (medical schools, regional hospitals and, health care commercial companies).
- Cluster analysis of particular criteria was made. The relations between criteria were expressed as „multidimensional distance“.
- Estimation of relations enables the reasonable evaluation of the weights



Clusters of similar weights Clusters of similar values

RANKMED – Automated ranking system

Automated system for evaluation of health web resources was proposed

Software:
Automatically obtained values of the criteria from the web

Editor:
Control of values and correct ig of mistakes

Settings
of weights and limits

Presentation of the evaluation (university and large regional hospitals)

Main attributes:

- Continuous up-to-date results
- Non-necessity of experts
- Algorithms for automated processing

CONCLUSIONS

- Best web quality criteria of European standards were used
- The weights and relations of criteria were evaluated
- The algorithms for automated estimation of criteria were proposed
- All results were used for official ranking of regional hospital web pages for Ministry of health

REFERENCES

- [1] Qualitätskriterien für Elektronische Publikationen in der Medizin, Deutsche Gesellschaft für Medizinische Informatik, Biometrie und Epidemiologie (GMD), 1999 Jan 02 <URL: http://sun21.imbi.uni-freiburg.de/medinf/gmdsqc/e.htm> Accessed 2003 Sep 23
- [2] HON Code: Principles, Health On the Net Foundation, 2003 Apr 23 <URL: http://www.hon.ch/HONcode/Conduct.html> Accessed 2003 Sep 23
- [3] Commission of the European Communities, eEurope 2002: Quality Criteria for Health related Websites, Journal of Medical Internet Research 2002;4(3):e15 <URL: http://www.jmir.org/2002/3/e15/> Accessed 2003 Sep 23
- [4] HIDEEL metadata vocabulary, MedCERTAIN, 2001 Dec 03 <URL: http://www.medcertain.org/english/metadata/index.htm> Accessed 2003 Sep 23
- [5] Web Accessibility Initiative, W3C, 2003 Sep 23, Homepage <http://www.w3.org/WAI/> Accessed 2003 Sep 23