

FREQUENTLY ASKED QUESTIONS | COMPARING MAP YEARS

Why can the number of competencies and the composition be different in 2009 compared to 2008?

From a methodology perspective, there are several possible reasons for this. First of all, it should be taken into account that each year the entire competency creation process is repeated from the beginning. Thus, it is very unlikely (if not impossible) that a competency in 2008 will be the same in 2009.

	2008 Map	2009 Map
Articles included in the model	6,517,938	6,831,819
Paradigms	99,391	102,054

The competency creation process is comprised of two steps:

- 1. Calculation of the map year article cluster model based on co-citation analysis**
 - Each year Elsevier recalculates the (generic) article cluster model based on the co-citation methodology for the latest year's publications using a 5-years publication window (e.g. 2005-2009 for the 2009 map). Article clusters are formed on the basis of citation patterns in highly-specific research areas authors are clustering themselves around.
 - Because the 5-years publication window shifts for each year's model, the citation patterns will have changed with the addition of 2009 articles and the removal of 2004 articles.
 - As a result the number and composition of article clusters change accordingly, as well as the relative market share for the institution in those article clusters.
 - Therefore, it could be the case that the number of article clusters in which the institution's relative market share threshold for being eligible for the second step (below) can be higher or lower.
- 2. Calculation of competencies based on 2009 article cluster model**
 - For an article cluster that has met the threshold, and therefore eligible for step 2 in the competency creation process, another requirement to end up in a competency is that the article clusters is linked to at least one other article cluster in which the university has a large relative article share. This 'bridge' is based on co-sharing of one or more of the same papers from the university (i.e., a competency must always consist of two or more article clusters which are connected by means of shared articles from the institution).
 - Thus, it could be the case that a 2008 competency disappears because there are either:
 - Not enough article clusters in the relevant research area in which the institution has a large relative market share
 - Not enough bridging articles from the institution holding these article clusters together
 - Needless to say, this situation could also happen the other way around where competencies appear due to an increase of eligible article clusters in the second step and the presence of more bridging articles holding these article clusters together.

Why can an author appear in the 2008 map but not in the 2009 map?

From a methodology point of view, there are several possible reasons. The most likely include:

- **The author is no longer represented in article clusters eligible to become a competency (i.e., in which the institution has a large relative market share)**
 - As the first step in the competency creation process indicates, each year Elsevier recalculates the (generic) article cluster model based on the co-citation methodology for the latest year's

publications using a 5-years publication window (e.g. 2005-2009 for the 2009 map). It could be the case that in the 2009 map the author's articles have ended up in article clusters in which the university does no longer meet the relative market share threshold to end up in a competency.

- This can be caused by one of the following two reasons:
 - The citation patterns may have changed over time as 2009 articles have been added and 2004 articles have been removed, which means that the composition of article clusters change accordingly
 - In the author's research area, other universities may have become more productive than the author's university
- **The author is represented in article clusters eligible to become a competency, but there are not enough eligible article clusters to form a competency by the institution's bridging articles**
 - Even if the article cluster has met the threshold and is eligible for the second step in the competency creation process (creation of competencies based on article cluster model), another requirement to end up in a competency is that the article cluster is linked to at least one other article cluster in which the university has a large relative article share.
 - This 'bridge' is based on co-sharing of one or more of the same papers from the university (i.e., a competency must always consist of two or more article clusters which are connected by means of shared articles from the institution). Apparently, that occurred in 2008, but that may not be the case in 2009.

Can 2009 competencies be compared with 2008 competencies?

- It is not a valid or meaningful comparison to analyze any changes in the number of competencies between map years.
- As the entire competency creation process is repeated from the beginning, it is very unlikely (if not impossible) that a competency in 2008 will be exactly the same in 2009. This also means that, for example, DC10 in 2008 cannot be compared with DC10 in 2009, as it may very well be that articles from DC10 in 2008 have ended up in different article clusters and therefore different competencies in 2009.
- To understand more about how competencies - and particularly article clusters - change over time, refer to the analysis that was prepared for Dr. Thomas Parks (Vice President of Research, University of Utah) by Kevin W. Boyack and Richard Klavans titled *Evolution of Distinctive Competencies*.