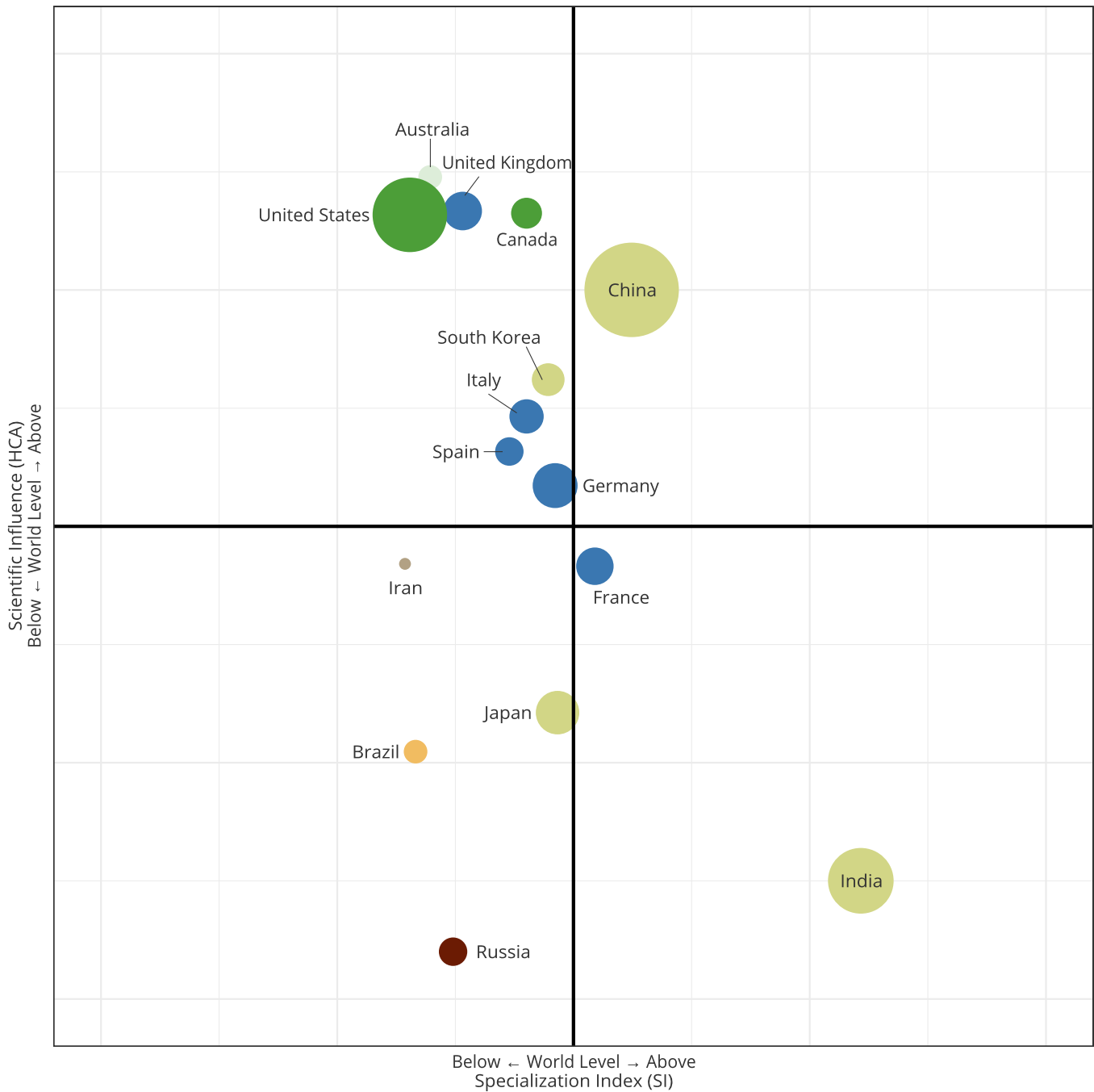


FIGURE 5A-11

S&E articles-based positional analysis in computer and information sciences for the 15 largest producing countries: 2016



**Note(s)**

Articles are classified by their year of publication and are assigned to a region, country, or economy on the basis of the institutional address(es) of the author(s) listed in the article. The specialization index (SI) is calculated as follows:  $SI = (Fe/Te)/(Fw/Tw)$  where  $Fe$  is the fractional paper count of a given region, country, or economy's output in a given field ( $F$ ),  $Te$  is the total ( $T$ ) output for the entity,  $Fw$  is the total output of the world in the same field, and  $Tw$  is the total output across all fields at the world level. The 15 largest publication-publishing countries of S&E in 2018 were selected (see Table 5a-1). Countries are colored according to their main region (see Table S5a-1 for a definition of the regions). The axes are log-normalized to facilitate the display of the data. Citation data are based on all citations made to articles in their publication year and all following years and are normalized by subfield and publication year to allow for comparisons across subfields and over time, resulting in the world-level standing at 1.0 for each subfield and year. A minimum 2-year citation window is needed for a relative citation (RC) score to be computed. This results in scores regarding highly cited articles not being computed after 2016 because the citation window for more recent years is not yet complete. The share of articles in the top 1% is

computed as follows:  $S_x = HCA_x/A_x$ , where  $S_x$  is the share of output from country  $x$  in the top 1% most-cited articles;  $HCA_x$  is the number of articles from country  $x$  that are among the top 1% of most-cited articles (using full counting, with the exception of papers at the limit of the top 1%, which are fractioned so the world average can stand at 1%); and  $A_x$  is the total number of articles from country  $x$  with an RC score, which excludes articles released after 2016 and unclassified publications. The raw data (not transformed) are available in Table S5a-7, Table S5a-22, and Table S5a-40.

**Source(s)**

National Center for Science and Engineering Statistics, National Science Foundation; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed June 2019.

*Science and Engineering Indicators*