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World's Best Specialized Hospitals 2022 – Methodology

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1 Introduction

Hospitals have a crucial role in modern health care systems since they perform a wide variety of medical services in different medical fields, ensuring adequate medical care for the general population in the surrounding area. General hospitals are best suited to deliver care for patients with the most common diagnoses and illnesses; however, the more specialized hospitals become, the more they can treat cases that are more difficult, complex or rare. These hospitals are often at the forefront of scientific development in their medical fields and excel in certain surgeries or procedures which lead other hospitals or doctors to transfer their patients to these facilities to get the best treatment. Specialized Hospitals can be leading general hospitals which excel in certain areas or smaller hospitals which focus on a few or even just one area of expertise. On a health care system level, almost all developed countries trend towards more centralization of medical expertise in the hospital sector, ensuring more specialization and deeper know-how in areas of expertise.

For patients, the decision to choose the right hospital for their specific condition is often determined mainly by the hospital's reputation and expertise in the medical field they require, while the overall reputation of the hospital is only of secondary importance. However, many of the existing web-based portals, websites and news articles only compare on a hospital level, with data also only being reported on a hospital level (if at all). Most available resources also only focus on one specific country. To date, there is no methodologically sound international ranking of specialized hospitals by medical fields.

The World's Best Specialized Hospitals 2022 ranking is a project which aims to close this gap by **ranking the best hospitals in ten medical fields across the world.**

The medical fields included are:

- Cardiology
- Cardiac Surgery
- Oncology
- Endocrinology
- Neurology
- Neurosurgery
- Orthopedics
- Gastroenterology
- Pulmonology
- Pediatrics

The ranking features the top 250 hospitals for Cardiology and Oncology, the top 150 for Cardiac Surgery and Pediatrics and the top 125 in the other six medical fields. While global top hospitals are represented in multiple medical fields, it is of note that leading specialized hospitals that are highly renowned in one or two specific medical fields or treatments, also made it into the list relevant to their specialization.

Hospitals which are not accessible to the public and/or are very small were excluded from the ranking since they were very unlikely to receive enough recommendations to make the final list.

Since most internationally available hospital KPIs only report on an aggregated hospital level (e.g. infection rates) and the few available KPIs on a specialty level are mostly not comparable across countries (e.g. staffing ratios) the ranking is based solely on a peer recommendations for specific areas of expertise from a global survey of medical professionals.

2 Study Design

The following sections provide an overview of the study design and the underlying methodology used to determine the ranking. First, the general approach is outlined in chapter 2.1, followed by a description of the role of the Global Expert Board in chapter 2.2 and the approach that was used to create the lists in the ten medical fields in chapter 2.3

2.1 Methodology

The study design of the 2022 World's Best Specialized Hospital project is based on a global survey among tens of thousands of medical professionals (doctors, health care professionals and hospital managers).

The recommendation score is based on two sub-scores, for primary recommendations and secondary recommendations. In cooperation with Newsweek, Statista invited over 40,000 medical experts (medical doctors, healthcare professionals, hospital managers and directors) in over 20 countries to an online survey. Additionally, experts from all over the world were able to participate in the survey "World's Best Specialized Hospitals 2022" on newsweek.com. The data was collected by Newsweek and Statista during an initial survey period from June to August 2021.

As mentioned above, participants were asked to recommend hospitals based on their expertise in one primary medical field (e.g. Cardiology for Cardiologists) and were able

to choose an optional secondary area of expertise in which they are also knowledgeable (e.g. due to frequent cooperation with other medical fields). These secondary recommendations were given a lower weight than primary recommendations (see 2.3 for scoring details). The questionnaire did not suggest a list of recommended hospitals, therefore respondents were free to suggest any hospital they deemed recommendable (aided by an autocomplete function for convenience). Self-recommendations were not allowed. Statista performed plausibility checks on all data to prevent self-nomination.

To determine the leadership position in a medical field, participants were asked to assign a ranking position for each hospital which they named (Top 1, Top 2, Top 3, Top 4, Top 5, Top 10, Top 20, Top 30, Top 40, Top 50, Top 100, Top 150, Top 200, Not in the Top 200).

Subsequently, recommendations were weighted by a) the type of respondent by profession, with primary recommendations from doctors in the relevant medical field receiving the highest weight (e.g. Cardiologists for Cardiology) and b) the assigned ranking position from each hospital.

Next, a preliminary **reputation score** (0-100%) was calculated for every hospital in every medical field based on the weighted recommendations in each medical field. The hospital with the highest number of weighted recommendations received a recommendation score of 100% while the next best hospitals received a score relative to the weighted number votes they received, e.g. when hospital A received the most votes with 100, hospital B with 80 votes receives a score of $\frac{80}{100}=80\%$.

The preliminary reputation score was used to generate the preliminary lists for the ten medical fields. Hospitals that specialize in more than one medical field received specific recommendation scores for each medical field based on the respective recommendations. Therefore, one hospital can be represented in more than one list if it receives enough recommendations in each medical field (up to being represented in all ten lists). On average, general hospitals were represented with about 2.8 departments, but at the same time there were also over 200 specialized clinics which made it into one of the ten rankings with their specialization.

The preliminary lists were presented to the global expert board, which serves in an advisory role (see below), for validation.

2.2 Validation by the Expert Board

The following section outlines the function of the global board of medical experts which was founded by Statista to support the World's Best Specialized Hospital Project.

The idea behind the board of experts was to create an independent body that was tasked with the continuous development of the quality and scope of the project. The board of experts is therefore tasked with providing quality assurance by validating the preliminary hospital lists outlined in chapter 2.1 (which includes providing feedback on discrepancies in the rankings) as well as providing input on possible improvements and expansions of the current methodology. The members of the board of experts were carefully chosen based on their national and international expertise and decade-long experience in their respective medical fields as well as their scientific output. Current members of the board of experts are:

Global Board of Experts

The Global Board of Experts consists of seven members from various countries, as indicated by the colored markers on the world map:

- USA (Green):** Prof. Dr. David Bates (Harvard Medical School) and Dr. Gary Kaplan (Virginia Mason Health System).
- Switzerland (Blue):** Prof. Dr. med. Christoph Meier (University Hospital Basel).
- Germany (Orange):** Dr. med. Jens Deerberg-Wittram (RoMed Kliniken).
- France (Red):** Prof. Dr. Gregory Katz (University of Paris Medical School).
- Israel (Dark Blue):** Dr. Eyal Zimlichman, MD (Sheba Medical Center).

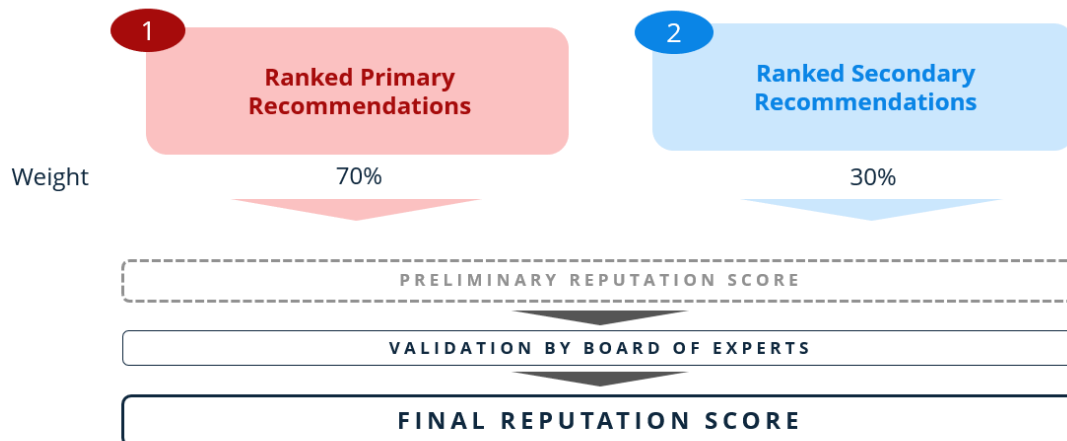
Based on the expert's feedback, a quantitative score for expert opinion was calculated and the recommendation score was adjusted by this score to reflect the validation of the individual rankings.

The expert board also gathers for an annual conference where they discuss the status quo as well as new ideas and future improvements to the methodology in person.

2.3 Scoring Model

The scoring model is based on the recommendation score and the ranking score, and uses different weights for the individual components as shown in this overview:

Scoring Model



As shown above, primary recommendations from experts in each medical field account for 70% of each hospital's preliminary reputation score. Secondary recommendations from medical professionals with knowledge in more than one medical field received a weight of 30% towards the preliminary reputation score.

The **final reputation score** of each hospital in a given medical field is based on the preliminary reputation score, adjusted by the expert score (see chapter 2.2). Based on the final reputation score, hospitals are ranked top to bottom in list. The results of this ranking are displayed in the lists published by Newsweek.

3 Disclaimer

The rankings are comprised exclusively of hospitals that are eligible, based on the scope described in this document. A mention in the ranking is a positive recognition based on peer recommendations. The ranking was created through an elaborate process, however, the information provided in this ranking should be considered in conjunction with other available information about hospitals or, if possible, accompanied by a visit to a facility. The quality of hospitals that are not included in the rankings is not disputed.