

Physicians in Israel: Trends in Characteristics and Training

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Introduction

In a report on preparedness for contending with the coronavirus, the OECD made mention of Israel's relatively good situation with regards to the supply of the healthcare workforce (OECD, 2020). In this sense, Israel is in a privileged position among countries, alongside Norway, Switzerland, Germany, Austria, Sweden, and Denmark. Naturally, the OECD views the healthcare workforce as a central factor in the struggle against the virus which has been testing health systems everywhere. According to the OECD data, in 2017, Israel had 3.3 physicians per 1,000 people. This statistic exceeds the pessimistic forecast of the State Comptroller (2009), who, a decade ago, predicted that the number would drop to 2.8 — in other words, below the “red line” of 2.9 physicians per 1,000 residents that the Horev Commission determined in 2010.

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However, these numbers, which consider all those licensed to practice medicine, do not present a complete picture.¹ They do not address the number of physicians in the various branches of medicine — such as internal medicine, emergency medicine, intensive care, infectious diseases, family medicine, and geriatrics — which is important particularly in view of the shortage of specialists and the restricted number of positions in the public health system. Indeed, the Israeli medical system, particularly the public health system, has, over the past two decades, been operating under continuing limitations due to shortages in budgets, infrastructures, and government funded positions (Chernichovsky, 2019).

Nevertheless, in general, the Israeli health system still enjoys, at least potentially, a relatively healthy supply of physicians. This stems from periods during which the health system thrived, including the massive, one-time immigration from the former Soviet Union when the supply of medical personnel that arrived was proportionately larger than the increase in population.

The supply of the healthcare workforce has been discussed in several research studies over the years. Shemesh et al. (2012) presented the supply of physicians and their main employment characteristics in 2008. The Israel Medical Association (IMA) indicated the notable shortage of physicians in specific medical fields (IMA, 2016). Chernichovsky and Regev (2014) highlighted the reduction in the supply of physicians with the aging and subsequent retirement of the physician population, together with the increasing integration of women in the profession, who, on average, work fewer hours than their male counterparts. Nirel, Shirom, and Ismail (2003) focused on medical specialists. They found that the majority of specialists worked in more than one setting, and a large share of them reported that they were considerably overworked — with long work hours, a large patient load, and difficulties in allocating their time. Van Dyck et al. (2011) found that there is a growing trend of physicians leaving the profession. They claim that physicians' satisfaction with their work conditions and wages is significantly lower for those remaining in the medical profession than for those who have left the medical profession for other jobs. Belinsky, Ben Naim, and Hecht find that 29 percent of the average salary of physicians with at least ten years'

1 It should be noted that not all licensed persons provide medical services in practice — some of them are not in Israel and some do not practice their profession — although, of course, this is the case in all countries.

experience who are employed in government hospitals comes from private medicine. However, it was found that between 2007 and 2017, the salaries of physicians with at least ten years' experience in government hospitals increased by 90 percent, an increase ten times greater than the increase in the average wages of salaried employees in the country during the same period (Belinsky, Ben Naim & Hecht, 2018; Ben Naim & Belinsky, 2019).

The current paper, the first in a series now underway, is based on a unique database that covers the past 20 years (see Appendix). It can be read in conjunction with and as an update to previous studies, with a focus on analyzing long-term trends in the basic variables affecting the supply of physicians and specialists in Israel over the past two decades. These variables are the licenses to practice medicine and specialist licenses — by physician's country of origin and location of medical school — and the demographic characteristics of physicians. The aim is to assist in shaping policy that preserves Israel's relatively good standing with regard to the supply of physicians and to improve upon it.

Framework for discussion

The total labor supply of physicians in all specialties at any given time is determined by two variables: a) the number licensed to practice medicine, and b) their participation in the labor force in the defined period. Participation can vary between zero hours during the defined period (a week, for example), implying non-participation, and a number of hours that might even exceed what is accepted as a full-time position. The annual labor supply is calculated by multiplying the number of those licensed to practice medicine or a medical specialization in a given year by the average number of work hours in that year. Alternatively, the supply may be calculated by multiplying the average number of practicing physicians per year by the average number of work hours of a physician who works more than zero hours per year.

In general, the labor force inventory in professions such as medicine is a long-term variable. Since the training of a medical specialist is likely to last some 15 years or more, the number of physicians is subject to relatively slow change. In addition to the long-term processes, factors that are likely to change the supply of physicians include migration and changes in licensing and employment terms (mainly with regard to retirement age and continued post-retirement work).

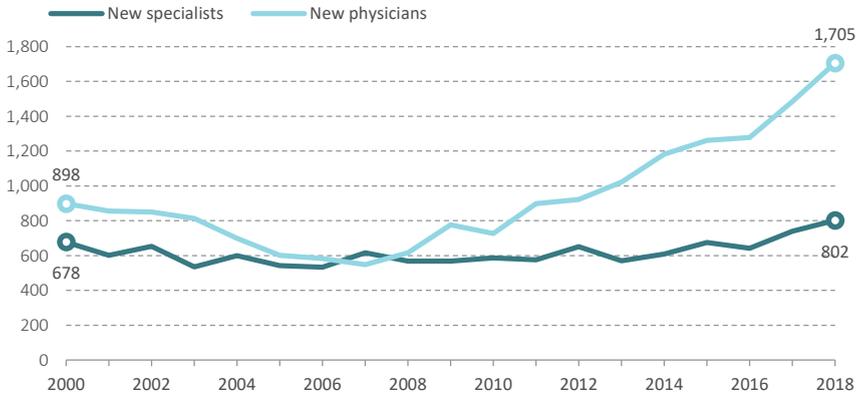
In contrast, participation in the labor force is a short-term variable. The decision whether to participate in the labor force may change rapidly and even suddenly in accordance with institutional and personal circumstances. This paper focuses on long-term variables, including migration and retirement age, which require long-term policies.

The number of general practitioners and specialists in the labor force

Entry of general practitioners and specialists

Between 2000 and 2007, the number of new physicians in Israel followed a downward trend (Figure 1). In 2007, which was the lowest point, only 548 new physicians were licensed. From that year, the trend reversed, and the number of licenses increased steadily. In 2018, 1,705 new physicians were licensed — 3.1 times the number licensed in 2007.

In contrast, the number of new medical specialists was relatively stable during most of the period, varying, between 2000 and 2016, between 500 and 700 new specialists per year. In recent years, there has been a notable trend of growth in the number of new specialists, which stood at 802 in 2018. Two factors support the continuing growth in the number of specialists in the next few years. The first is the increase in the number of new licenses conferred in recent years, which contributes to an increase in the potential for training new specialists in the coming years. The other factor is the increase that has occurred in the number of medical residents, as indicated by Ministry of Health data. Given the time that elapses between receipt of a physician's license and receipt of a specialist's license, based on the growth in the number of licenses, it can be expected that there will be an increase in the number of specialists in the future — provided that there are funded positions for specialization.

Figure 1. New physicians and specialists in Israel

Source: Tur-Sinai et al., Taub Center | Data: CBS; Ministry of Health

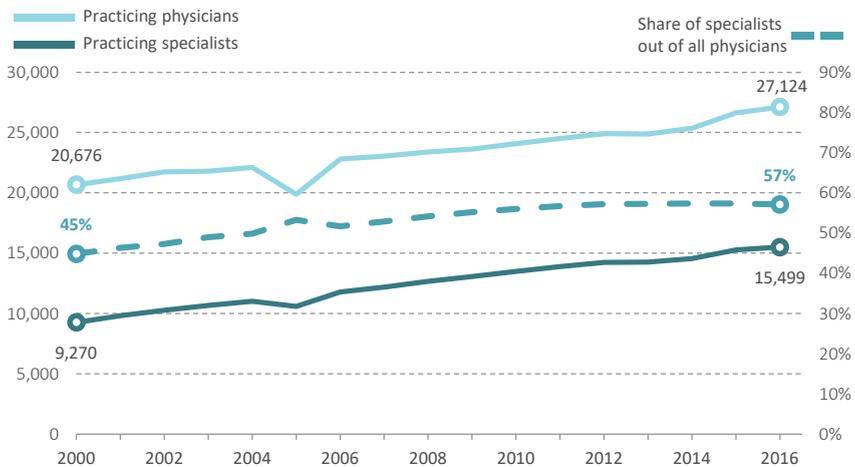
The overall number of practicing physicians and specialists

In order to calculate the number of practicing physicians in Israel at a particular time, the data from the Ministry of Health, containing all those licensed to practice medicine in Israel, were merged with data from the tax authority containing information on the income of physicians (without identifying the individual physicians). Merging the files made it possible to identify the group of those licensed to practice medicine who had income in Israel between 2000 and 2016. It is important to note that, owing to the lack of data about the field of activity of those physicians, the group of practicing physicians includes all those holding licenses who had any income in a particular year, even if they did not treat patients. In other words, the data includes not only physicians who treat patients, but also those whose main activity is research, university lecturing, the bio-technological industry, or managerial positions, and even those who do not practice medicine at all.

Figure 2 shows that, in the past two decades, there has been a considerable increase in the share of specialists among the active physicians. From 2000 to 2016, the overall number of practicing physicians grew from 20,676 to 27,124 (an increase of 31 percent). In contrast, the number of practicing specialists in Israel increased from 9,270 to 15,499 (an increase of 67 percent). This is an

average annual increase of 381 physicians and of 389 specialists. Since 2004, more than half of the practicing physicians in Israel are specialists, and, in recent years, the share of specialists has been some 57 percent of all physicians. Non-specialist physicians include general practitioners (those with licenses who have not completed their specialization, and many of whom are employed as physicians in positions that do not require a specific specialization) and medical residents who are still in the process of specialization.²

Figure 2. Practicing physicians and specialists in Israel



Note: The CBS data for 2005 that are the basis for this figure are incomplete, and so the data for that year are outliers relative to other years.

Source: Tur-Sinai et al., Taub Center | Data: CBS; Ministry of Health

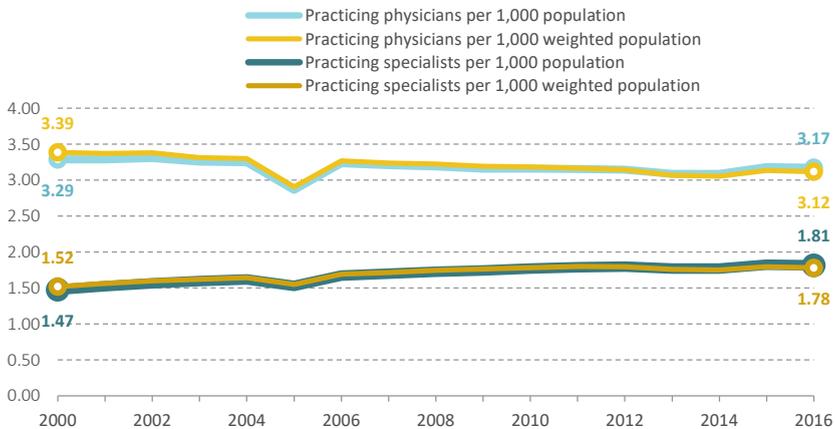
2 There is no correlation between the entry of new physicians and specialists into the system and the number of all those practicing the profession. This is almost certainly due to the various databases from which each item of information is drawn and from the scarcity of accurate information about patterns of retirement. Hence, it is preferable to focus on trends that are reflected in the data.

Physicians and specialists in the population

Physicians per 1,000 population

The growth and aging of the population in Israel contribute to the increase in medical needs and the need for medical services. These changes are estimated using the capitation formula which also serves in the division of the health basket budget that is divided among the health funds according to the number of their insured members and their age (and gender) distribution. Figure 3, in addition to the ratio of physicians to the population, shows the ratio between the number of physicians and the size of the population weighted according to the capitation formula. Between 2000 and 2016, there was a decrease of 8 percent in the number of practicing physicians per 1,000 weighted population. In contrast, during the same period, there was an increase of some 15 percent in the number of practicing specialists per 1,000 weighted population. In other words, the quantitative decrease in the number of physicians per person by an estimate of needs was accompanied by a qualitative increase as demonstrated by the rise in the number of specialists relative to the weighted population size as per the capitation formula.

Figure 3. Practicing physicians and specialists per 1,000 population and per 1,000 weighted population in Israel



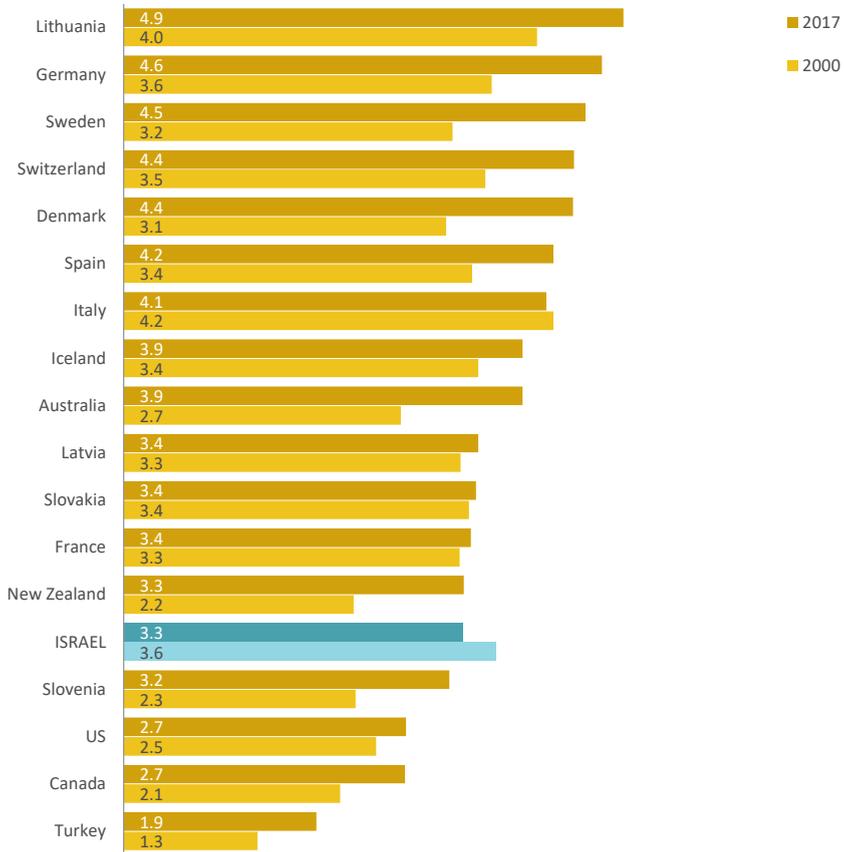
Note: The CBS data for 2005 that are the basis for this figure are incomplete, and so the data for that year are outliers relative to other years. The calculation for weighted population according to the capitation formula is based on data from the Financial & Strategic Planning Administration, Ministry of Health, "National Health Insurance Law — Dataset 2019."

Source: Tur-Sinai et al., Taub Center | Data: CBS; Ministry of Health

Physicians per 1,000 population: An international comparison³

In the wake of the rapid growth of the population in Israel between 2000 and 2017, there was a decrease in the number of physicians per capita (Figure 4). This decrease took place despite the increase of 26 percent in the number of physicians in those years (Figure 5). This was an outlier relative to other OECD countries, in which, except for Italy, there was a notable increase in the number of physicians per capita — largely because of the changes in population size which decreased in most of the countries. It is important to emphasize that this does not reflect on the level of current physician supply ratio, but rather on the downward trend that took place in those years whose serious nature is exacerbated by the aging of the Israeli population. The number of physicians per capita in Israel in 2000 was one of the highest in the Western world. Despite the downward trend, even at the end of this period, the number of physicians per capita is not considered low relative to other developed countries, as mentioned at the beginning of this paper. Moreover, the data do not reflect a reversal in the trend of recent years, as mentioned above.

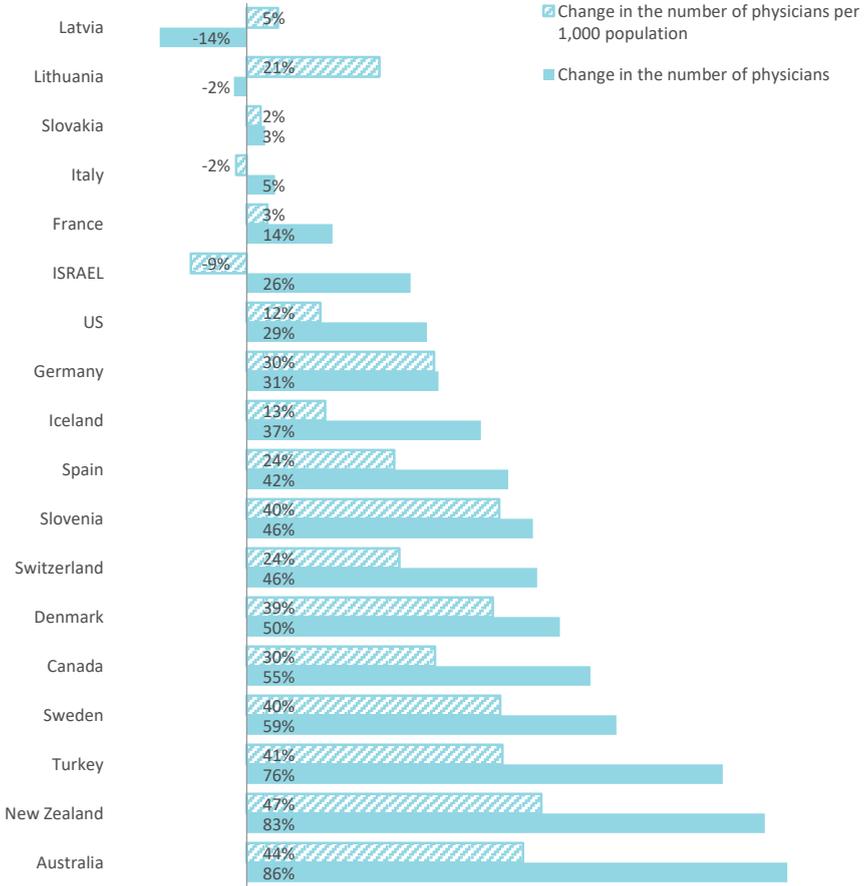
3 The discussion is based on comparative data from the OECD on the number of physicians (license holders in the countries for which comparative data were available) up to age 67 per 1,000 population, and includes those physicians living outside of Israel. The data include physicians who are not actively practicing medicine. Conversely, the data do not include active physicians who chose to continue working after age 67. The discussion does not take into account data about the aging of the population.

Figure 4. Number of physicians per 1,000 population in OECD countries

Note: OECD countries with available data.

Source: Tur-Sinai et al., Taub Center | Data: OECD

Figure 5. Percentage change in the number of physicians and physicians per 1,000 population in OECD countries, 2000–2017



Source: Tur-Sinai et al., Taub Center | Data: OECD

Practicing physicians in Israel: Demographic characteristics

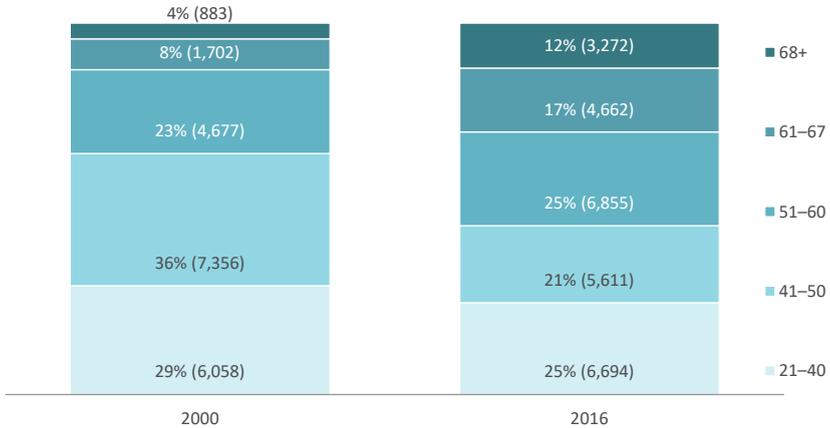
Age

The average age of practicing physicians in Israel has risen significantly since 2000. The number of physicians in the two older age groups (61–67 and 68+) grew between 2000 and 2016 (Figure 6). The number of physicians in the 61–67 age group increased from 1,702 to 4,662 (an increase of 174 percent) and the number of physicians who continue to practice after official male retirement age (67) grew even more significantly, from 883 to 3,272 (an increase of 271 percent). Over the same period, the share of active physicians over retirement age out of the total active physicians in Israel grew from 4 percent to 12 percent. With the increase in the number of physicians in the older age groups, there was a decrease in the number of practicing physicians ages 41–50. It is possible that this situation is linked to the age distribution of those physicians who came from the former Soviet Union. At the same time, in recent years, there has been an increase in the number of young physicians (up to age 40) after many years of decline which reached a low-point in 2009. The increase in the number of young physicians apparently stems from the trend in the growth of license holders in the last decade. Despite the increase in the number of young physicians in recent years, their share dropped from 29 percent to 25 percent of all active physicians.

The trend in the rise in actual retirement age of physicians is in keeping with studies that examined employment characteristics of the working-age population in Israel. These studies identify a trend of a rising share of older adults remaining in the labor force after the official retirement age, particularly among those with higher education (Kimhi & Shraberman, 2013; Weinreb, 2020). In practice, this is not a case of “binary retirement,” that is to say, retirement of a physician at a specific point in time, but rather a gradual process of reducing the number of work hours until full retirement.

Figure 6. Practicing physicians in Israel

By age group



Note: In parentheses, the number of practicing physicians out of the age group.

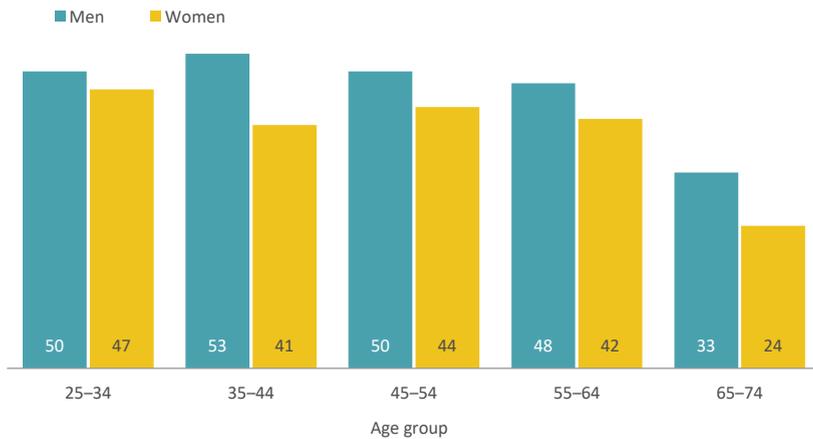
Source: Tur-Sinai et al., Taub Center | Data: CBS

The change in the distribution of physician ages affects the average number of hours worked, which change continually over the work life (Figure 7). Between ages 25 and 64 the number of weekly work hours of male physicians ranges from 48 to 53, and of female physicians, from 41 to 47. Older female and male physicians constitute a considerable share of the inventory of physicians in Israel, but their number of work hours is relatively low: male physicians ages 65 to 74 work an average of 33 weekly hours, and female physicians of the same age work an average of 24 weekly hours. In comparison to the 55 to 64 age group, this is 31 percent and 43 percent less, respectively.

Since older physicians tend to work fewer hours on average than young physicians, a growth in the number of older physicians out of all the active physicians is liable to cause an increase in the average number of hours of work of medical residents. Since many young physicians are still at the stage of specialization, they are obliged to work long, and strenuous hours in hospital wards. Residents are thus an important tier in the array of medical service provision to the public, and they provide a considerable share of services, especially to populations who are not able to make use of private medicine.

In contrast, in recent years, the trend of growth in the number of licensed physicians each year and the number of young physicians has become apparent. This growth is likely to contribute to a rise in the average number of work hours of physicians. One way or another, current trends point to a potential decrease in the effective labor supply of specialists, at least in the public system.

Figure 7. Average number of weekly work hours per physician, 2014–2017



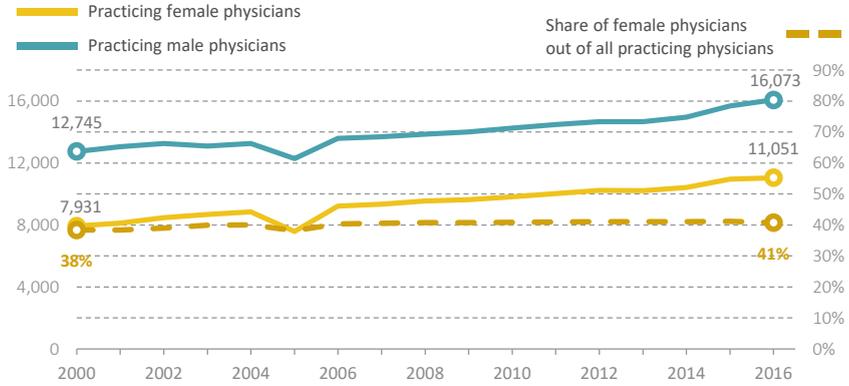
Source: Tur-Sinai et al., Taub Center | Data: CBS, Labor Force Survey 2014–2017

Gender

In recent decades, there have been no significant changes in the gender distribution of physicians in Israel. The share of women among active physicians stood at 38 percent in 2000, increased to 41 percent in 2007, and since then has not changed significantly (Figure 8). This is not much different than the share of women among all new medical license holders which has ranged, in the past decade, between 42 percent and 45 percent.

However, with regard to the physicians who are expected to retire in the coming years — those ages 60 and over — the share of women is relatively low. As a result, it is possible that there will be a certain increase in the share of women among all active physicians (Figure 9). This expected increase is likely to reduce, to a certain extent, the average number of work hours per physician, due to the disparity between the average work hours of male and female physicians (Figure 7).

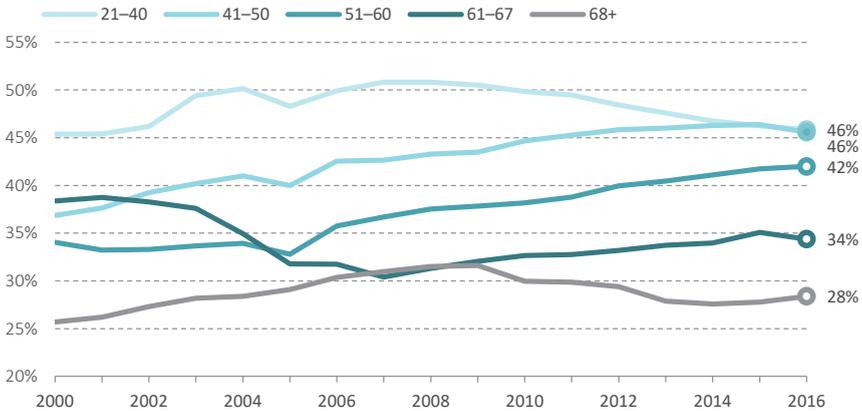
Figure 8. Gender distribution of practicing physicians in Israel



Note: A practicing physician holds a medical license and has had income in Israel in the given year (either employed or self-employed). The CBS data for 2005 that are the basis for this figure are incomplete, and so the data for that year are outliers relative to other years.

Figure 9. Share of female physicians out of all practicing physicians

By age group

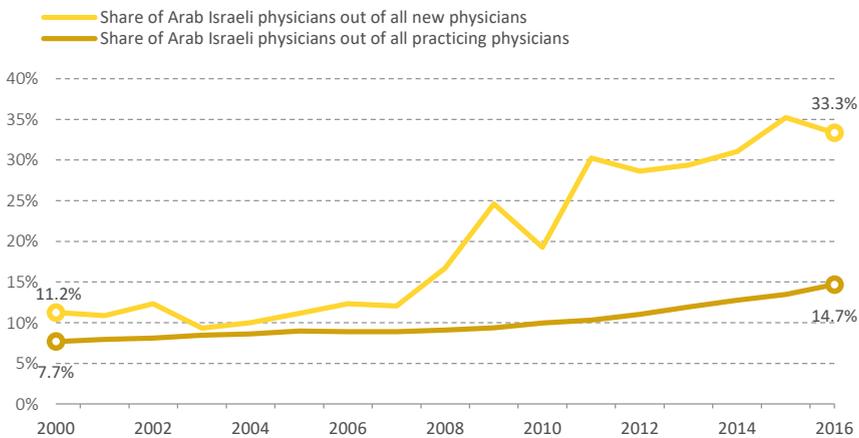


Source for Figure 8 and 9: Tur-Sinai et al., Taub Center | Data for Figure 8 and 9: CBS; Ministry of Health

Arab Israeli sector

Between 2000 and 2006, the share of new physicians from the Arab Israeli sector out of all new physicians grew, and, in recent years, their share reached over 30 percent, as opposed to 11 percent in 2000 (Figure 10). In parallel, the share of Arab Israeli physicians among active physicians has increased and, in 2016, reached some 15 percent, in contrast to 8 percent at the beginning of the period. The implications are that the share of active Arab Israeli physicians out of the total number of physicians is nearing the share of Arab Israelis in the population — some 21 percent.

Figure 10. Share of new physicians and practicing physicians in the Arab Israeli sector



Source: Tur-Sinai et al., Taub Center | Data: CBS; Ministry of Health

Country of origin and location of medical school

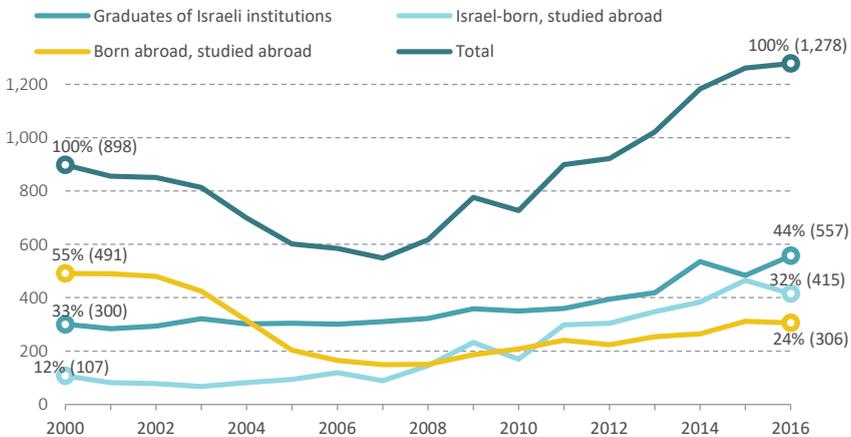
Country of origin

New physicians in Israel can be divided into three groups. Physicians who studied in Israel (independent of their country of origin), physicians who were born in Israel and studied abroad, and new immigrant physicians who were both born and studied abroad. Between 2000 and 2006, the number of new licenses conferred dropped from 898 to 548, a decrease of 39 percent (Figure 11). Immigrant physicians prompted this decrease. In 2007, the trend

reversed, and since then and up to the end of the period studied, there has been an increase of 133 percent in the number of licenses conferred. This increase was driven by physicians who studied abroad (given the growth in their numbers in those years), and particularly the increase in the number of native-born Israelis who studied abroad, including a growing number of Arab Israeli physicians. The number of native-born Israelis who completed their medical studies abroad grew from 89 in 2007 to 415 in 2016 (an increase of 366 percent). The number of graduates of medical schools in Israel also grew, but at a more moderate rate, from 310 to 557 (an increase of 80 percent).

The mix of newly licensed physicians has changed dramatically during the period surveyed. The share of new immigrants who studied abroad dropped significantly from 55 percent to 24 percent, and the share of Israeli graduates increased significantly from 33 percent to 44 percent. Most notably, the share of native-born Israelis who studied abroad increased from 12 percent to 32 percent. These data are in keeping with the growth in the number of physicians from the Arab Israeli sector, which represents a considerable share of those studying abroad.

Figure 11. The number of newly licensed physicians by country of birth and location of medical school



Source: Tur-Sinai et al., Taub Center | Data: CBS

Medical studies in Israel

The number of students studying medicine in Israel has been on an upward trend. In 1990, the number of medical students was 1,098, of whom 483 were women (44.0 percent). Three decades later, the overall number of medical students was 2,016 (an increase of 83.6 percent), of whom 1,185 were women (58.8 percent).

The number of Arab Israeli students studying medicine in Israel and their share among all medical students has also been growing over the years. In 1990, the number of Arab Israeli medical students was 60 (5.5 percent of all medical students in Israel), and three decades later their number was 300 (14.9 percent) — an increase of 400 percent.

Medical studies abroad

The share of medical graduates from Israeli universities has dropped steadily since 2000: from 74 percent at the beginning of the period to 51 percent at its end (Figure 12). The share of graduates from Hungarian and Russian universities is also on a downward trend, in contrast to an increase in the share of graduates from universities in Romania, Italy, and, especially, Jordan. In general, the country with the second-largest number of Israeli medical school graduates is Hungary, where a tenth of all Israeli licensed physicians were trained in the period studied. It is also interesting to note the significant growth in the number of medical students in Jordan, which reached 7 percent of all new physicians in recent years, an increase that parallels the growth in the number of new physicians from the Arab Israeli sector.

The share of male physicians who studied abroad is higher than the share of female physicians (Figure 13). In other words, we are witnessing a change in the mix with more women graduates of Israeli universities and male graduates from universities abroad. This is significant in terms of the gender mix of specialists, as will be discussed.

Figure 12. Distribution of new physicians by country of medical school, Israel-born only

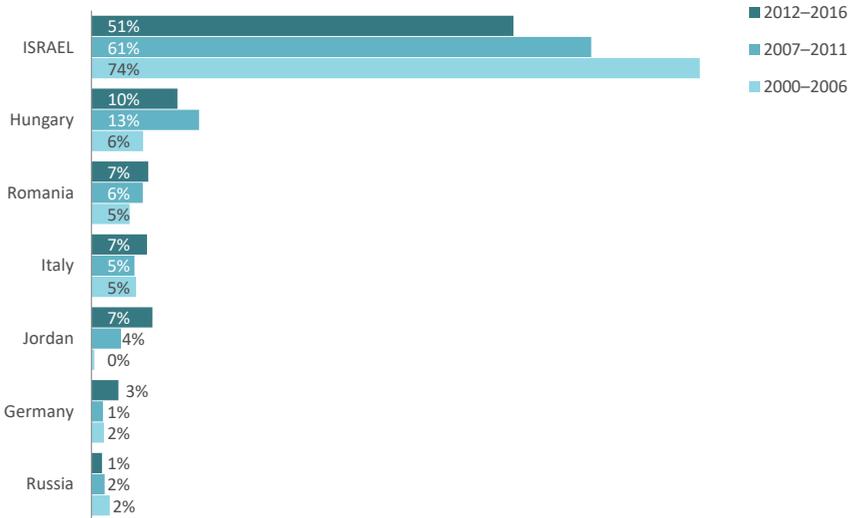
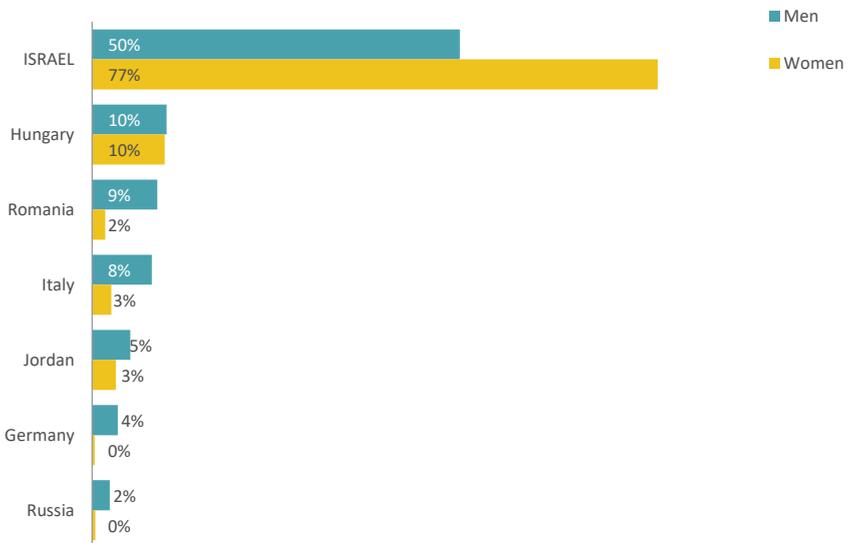


Figure 13. Distribution of new physicians by country of medical school and gender, Israel-born only



Source for Figure 12 and 13: Tur-Sinai et al., Taub Center | Data for Figure 12 and 13: CBS

Medical residencies

In recent years there has been a debate about the shortage of medical residents in certain essential fields. A decisive factor for acceptance to residency in a specific field is based on the basic level of knowledge that interns demonstrate during their internship. This knowledge is based on the quality of their medical studies, and, therefore, the share of physicians completing their residencies can be viewed as an indicator of the quality of medical studies and their level of professional knowledge. In order to estimate the share of residencies among physicians, the share of specialists out of all physicians was examined a decade after the completion of medical studies. This extended period of time was intended to suffice for most medical residents to have completed the process of specialization, even if, for any reason, there were delays (for example, maternity leave, particularly long residencies, and so on).⁴

As shown in Figure 14, there is a general increase in the share of new specialists entering the system; there is no significant difference between men and women among the new specialists, but there is a difference of 9 percentage points in favor of Jewish specialists relative to Arab Israeli specialists.

The data in Figure 15 show that the share of those who completed residencies and graduated from Israeli medical schools was large relative to those who graduated from overseas universities. Among physicians who graduated from Israeli universities and received their license between 1996 and 2007, the share of those who completed residencies was 79 percent, whereas, among the graduates of overseas faculties of medicine, the share was much lower, at just 43 percent. Among the graduates of overseas faculties, there is a gap between the percentage of Jews who completed residencies — 77 percent — and their percentage among students — 43 percent.

4 Two comments should be made concerning the data on which the following figures are based. First, the data do not identify physicians who studied medicine in the academic program of the Israel Defense Forces who, upon completion of their studies, were obligated to complete their regular army service and reserve service lasting several years before they could begin their residencies. For this group of eighty individuals per year, their residency is likely to have been delayed beyond the 10 years after the receipt of their license. Second, the data include licensed physicians who completed their residency in Israel only, and do not include information about physicians who received an Israeli license, did their residency overseas and remained there to work.

Hence, among the Jewish Israeli students who studied abroad, the share of specialists is similar to the share of specialists among Israeli students who studied in Israel.

Figure 14. Share of physicians completing residency within 10 years of receipt of their license

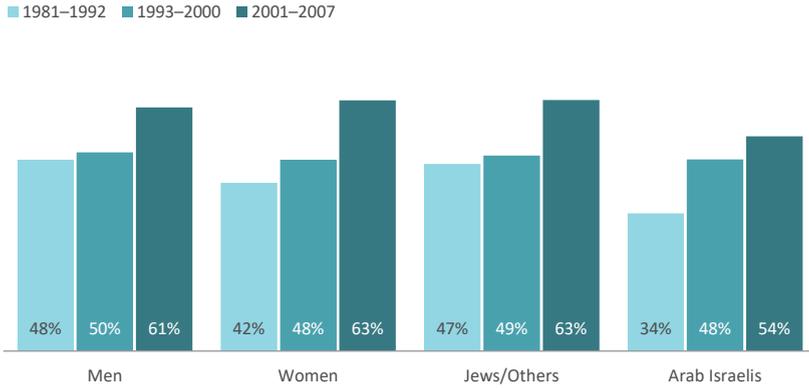
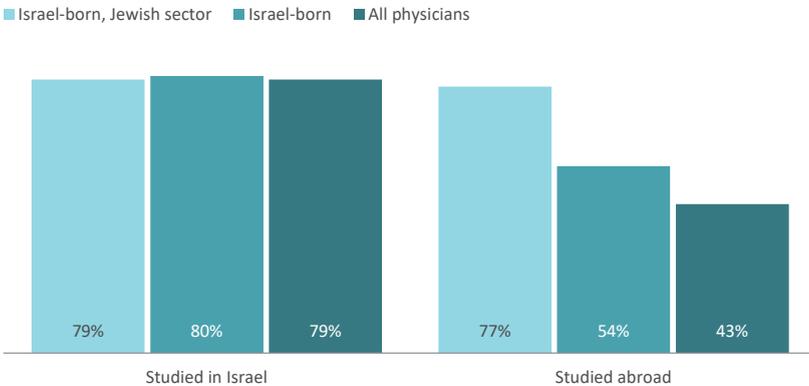


Figure 15. Share of physicians completing residency within 10 years of receipt of their license, 1996-2007



Source for Figure 14 and 15: Tur-Sinai et al., Taub Center | Data for Figure 14 and 15: CBS

Table 1 presents the number of new specialists in Israel by field of specialization in three groupings of five years: 2003–2007, 2008–2012, and 2013–2017. Likewise, the table presents the rate of change between the first grouping (2003–2007) and the third (2013–2017), with the goal of identifying the processes of change by specialization.⁵ It should be noted that the table does not reflect the percentage change in the number of specialists or specialists per population. To show this one would also have to consider the number already practicing in the healthcare system and the number that retired in the same time period.

The largest increase took place among those completing specialization in the field of child and adolescent psychiatry — an increase of 96 percent. It should be noted that the number of those completing any psychiatry residency dropped by 18 percent in the same period, indicating that there was a drop in the number of those completing other sub-specialties in the field. Other fields that showed a relatively large increase were occupational medicine (44 percent), plastic surgery (40 percent), and ophthalmology (37 percent).

The fields in which there was a very significant reduction in the number of new residents in this period were public health — a decline of 31 percent — and geriatrics — a drop of 29 percent. There was also a decrease in the number of new specialists in physical medicine and rehabilitation (-4 percent), urological surgery (-7 percent), and, as noted, general psychiatry (-18 percent). Hence, there has been a drop in the rate of growth in residencies for which there is a great need, especially public health and geriatrics.

5 The data in the first line of the table is the total number of new specialists during the entire period. This number differs slightly from the data in Figure 1, which includes small fields of specialization that are not featured in Table 1.

Table 1. Physicians completing residencies and rates of change between 2003–2007 and 2013–2017

	Period 1 2003–2007	Period 2 2008–2012	Period 3 2013–2017	Rate of change: Period 1 to 3
Total	2,827	2,951	3,239	1.15
Psychiatry, child/adolescent	25	20	49	1.96
Occupational medicine	18	14	26	1.44
Plastic surgery	30	33	42	1.40
Ophthalmology	102	103	140	1.37
Diagnostic radiology	100	115	123	1.23
Obstetrics/gynecology	200	196	244	1.22
Pediatrics	393	422	478	1.22
Ear, nose, and throat	53	54	64	1.21
Family medicine	327	402	382	1.17
Neurology	60	62	68	1.13
Internal medicine	623	589	704	1.13
Pathological anatomy	25	27	28	1.12
Skin/sexual diseases	49	46	54	1.10
Orthopedic surgery	149	151	161	1.08
Anaesthesiology	132	139	139	1.05
General surgery	106	134	110	1.04
Physical medicine/rehabilitation	23	24	22	0.96
Urological surgery	43	44	40	0.93
Psychiatry	172	168	141	0.82
Geriatrics	51	52	36	0.71
Public health	26	12	18	0.69

Source: Tur-Sinai et al., Taub Center | Data: CBS

Conclusions

Between 2000 and 2007, the number of new physicians receiving a license in Israel followed a downward trend. In 2007, this trend was reversed, and since then the number of new physicians in Israel has increased steadily. The number of new specialists was stable in the years 2000 to 2017, and then also began to rise. In addition, the share of female physicians out of all physicians remained fairly stable during this period, and, since 2007, it has remained steady at 41 percent.

There has been a slight drop in the number of physicians per 1,000 population due to the continued growth in Israel's population, and particularly when we taking into account the aging of the population (weighted using the capitation formula). Nonetheless, this decrease is smaller than the pessimistic forecasts of just a decade ago. Israel is still in a respectable place in the world in terms of the potential supply of physicians — 3.2 physicians per 1,000 population, some 10 percent above the “red line” determined by the Horev Committee (2010). The public health system can exploit this supply by allocating suitable positions, particularly in view of the aging of the physician population in Israel and an increase in the number of physicians who work part-time, especially those nearing retirement age and thereafter.

The growth in the number of new physicians arises mainly from those who received their licenses after studying abroad. There is also an increase in the number of those who received their licenses after studying medicine in Israel, but these are not the main engine for growth, despite the recommendations of various committees formed to study this matter (Pazi Committee 2002, Bennun Committee 2007, Halevi Committee 2007).

The growth in the number of new physicians compensates for the decrease in the number of new immigrant physicians (who were born and studied abroad) and for the retirement of active physicians. Another source for the increase in the number of practicing physicians is the continued work of physicians past retirement age. Since they work fewer hours than they did before retiring, it is possible that the overall labor supply of physicians will be reduced. The net impact on the supply (work hours) of specialists needs further study.

The change in the composition of those receiving licenses, including practicing physicians, naturally raises questions about the quality of treatment. We are witnessing an increase in the number of specialists in the past few years. On the other hand, there is a “loss of specialization” due to the retirement of specialists at a time when young physicians entering the profession are not yet

qualified as specialists. Within ten years after the end of their studies, some 80 percent of the physicians who studied in Israel, completed their residency, no matter their country of origin or sector. In contrast, among physicians who studied abroad, only 43 percent had completed their residency in this time period. Of those 43 percent, the highest share was among native-born Israelis who studied abroad; even higher than this was the share of native-born Israelis in the Jewish sector, whose share of residency graduates was similar to the share of residency graduates of Israeli medical schools.

Child and adolescent psychiatry is the field that accounts for the greatest increase in the number of those completing their residency between 2003 and 2017. Additional fields that enjoyed a relatively significant increase are occupational medicine (44 percent), plastic surgery (40 percent), and ophthalmology (37 percent). The fields that had a very significant reduction in the number of physicians completing their residency in those years included public health and geriatrics — areas in which the need for specialists is growing.

In 2018, the State Comptroller noted discrepancies in the level of training and the expertise of physicians who studied abroad and those who studied in Israel. In his report he stated that he had found fundamental disparities in the percentages of success in the licensing examinations for physicians who had studied abroad and those who had studied in Israel: 97 percent of the students who had studied medicine in Israel passed the licensing examinations for physicians between 2014 and 2017, in contrast to only 50 percent of those who had studied abroad (State Comptroller, 2018). This great difference seems to indicate significant gaps in knowledge between the two groups. It is important to qualify this conclusion with regard to licensing examinations, though. These examinations test the level of knowledge of students on the Israeli curriculum, with all its special emphases, and it is very possible this gives Israeli medical students an advantage over students who studied different curricula abroad. It is also important to note that one of the main reasons that Israeli students decide to study abroad is that they were not able to meet the conditions for acceptance to faculties of medicine in Israel. Therefore, it is reasonable to assume that there was a gap in the academic achievements of the two groups before they began their medical studies, at least as reflected in their matriculation results and psychometric examinations.

In 2019, the Ministry of Health tightened medical licensing criteria and reduced the list of medical faculties overseas with recognized study programs whose graduates are entitled to take the Israeli licensing examination.

Nevertheless, even if we assume that the gaps in the share of residencies between graduates of medical schools abroad and in Israel are linked at least in some measure to the country in which they studied, it cannot be assumed that there are professional gaps that cannot be bridged with the appropriate investment as was previously proven with new immigrant physicians from the former Soviet Union. It is possible that differences in the command of the Hebrew language, that is common to those born abroad and the Arab Israeli sector, make it more difficult for them to complete their residency, which includes multiple-choice questions, where language disparities become a factor. It is possible, too, that there are gaps in Israel between the various sectors in terms of the importance attributed to physician specialization. Likewise, it is possible that there are gaps between groups in the resources available that affect an individual's ability to complete a long and demanding residency successfully (such as economic support in the challenging periods of the residency, assistance with child care, and more). It is also possible that gaps in the share of residencies sometimes stems from a certain discrimination against physicians who studied abroad, with preference given to physicians who studied in Israel. This preference may stem from various factors. The first is that it is possible that, due to the perception that physicians who studied abroad are not as good as their colleagues who studied in Israel, hospitals prefer to accept those who studied in Israel, particularly when it comes to desirable residencies and the most in-demand hospitals. This perception, whether correct or not, is likely to bring about a reduction in the range of possibilities open to physicians who studied abroad. The second is that hospitals have agreements with faculties of medicine in Israel, and it is possible that these agreements, either directly or indirectly, influence the preference for physicians who studied in those faculties over those who studied abroad. The third reason may be that contacts and personal acquaintance between the department directors in the Israeli health system help physicians who studied in Israel to be accepted more easily for a residency.

One way or another, it is important for the State of Israel to realize the potential of the physicians it has by expanding available positions for physicians and medical residents, so as to improve the quantity and quality of the labor supply being offered to the system.

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Appendix

The research data are based on a combination of a number of administrative information sources, as follows:

1. **Registry of Physicians in the State of Israel.** The source for this registry is data from the Ministry of Health, which contains information about every person licensed to practice medicine in Israel in the years 2000–2018 — year of receipt of license, country of completion of medical school, medical residencies, and year residency began. This was the basis for the creation of the research database, for it makes it possible to identify those with a license to practice medicine in Israel, to characterize them, and to examine their patterns of behavior in the labor force over the years.
2. **File on individual income.** This file was obtained from the Tax Authority. The file gives detailed information about income from salaried work and independent work, the number of jobs per year and details about months of employment in which an individual worked or did not work in each job each year. This file contains relevant information on each licensed medical professional and his/her spouse, starting with the date on which the license to practice medicine was received up to 2018.
3. **Population Registry.** This file was obtained from the Population and Immigration Authority. The file contains demographic information about each person licensed to practice medicine and his/her spouse up to 2018. Details include year of birth, gender, country of birth, date of immigration, religion, population group, personal status, and year of death (in order to identify deceased during the course of the study).
4. **Emigrants.** This file was obtained from the Population and Immigration Authority in order to locate emigrants from Israel during the course of the research. The file contains information on each holder of a medical license and his/her spouse since the receipt of the license to practice medicine up to 2018, whether they left or returned to Israel, and in what year.
5. **Conferring of degrees.** In order to establish the highest level of education of each person licensed to practice medicine and his/her spouse, this information was obtained from the Central Bureau of Statistics with regard to academic studies over the years and entitlement to a degree. This information was required as some of the graduates continue to study after completion of medical school, and it is important to assess the contribution of additional education on employment patterns in the medical field.

The information derived from these five sources about those licensed to practice medicine who received a license between 2000 and 2018, was merged into a long-term follow-up file that facilitates tracking integration into the labor force in general and into the healthcare labor force in particular from the date of completion of studies and the receipt of the license from 2000 to the end of 2018. As outlined above, the advantages of this database, which was built in conjunction with the Central Bureau of Statistics specifically for this research study, are two-fold. The first is that because it contains management data (not sampling data based on surveys), it contains information about all physicians who received a license to practice medicine in Israel. The second is that the merging of the two main data files — the file on those holding licenses and the file from the Tax Authority — makes it possible to locate the active physicians in each year, defined in the present document as physicians licensed to practice medicine in Israel who had income in Israel in that year. This group does not include physicians who retired, lived abroad, or, for other reasons, did not have income in Israel in that year.