

METHODOLOGY REPORT: 2022 INTERNATIONAL HEALTH POLICY SURVEY OF PRIMARY CARE DOCTORS

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OVERVIEW

The Commonwealth Fund (Fund) is a private foundation dedicated to promoting a health care system that achieves better access, improved quality, and greater efficiency, with a focus on society's most vulnerable groups. As part of its mission, the Fund has been conducting the International Health Policy (IHP) Survey in 10 countries for more than two decades. In a triennial cycle, the IHP survey targets different populations, including physicians, older adults, and the general adult population. The population for the 2022 survey is physicians.

The Commonwealth Fund and other country partners contracted with SSRS to oversee all aspects of survey administration for the 2022 IHP survey conducted among physicians in Australia, Canada, France, New Zealand (NZ), the United Kingdom (UK), and the United States (US). SSRS fielded the survey in the US and Canada and collaborated with fieldwork partners to field the survey in other countries. Specifically, SSRS partnered with: Efficiency 3 (E3) to field the survey in France; The Royal New Zealand College of General Practitioners (RNZCGP); and TKW Research Group (TKW) to field the survey in Australia. SSRS also provided project oversight and data integration for Germany, the Netherlands, Sweden, and Switzerland. Germany contracted with IGES Institute to manage the data collection process and field the survey instrument in Germany. The Dutch Ministry of Health fielded the survey in the Netherlands. Sweden contracted with Statistics Sweden and Switzerland contracted with DemoSCOPE to do the same in Sweden and Switzerland, respectively.

The 2022 study was designed to explore and collect reliable health-related data for the following topics:

- Access to care
- Use of Telehealth
- Care Management for Patients with Chronic Conditions and Other Special Needs
- Care Coordination with Other Providers
- Care Coordination with Home Care and Social Service Providers
- Office Systems and Use of Information Technology
- Provider Experiences with Their Practice
- Personal and Practice Changes since COVID
- Perspectives on the Health Care System
- Practice Profile and Demographic Data

As in past iterations of the IHP Survey of Primary Care Doctors, different modes (and for several countries multiple modes) were used for data collection. These modes are tailored to best practices for reaching primary care doctors in each country and are generally consistent with modes used in 2019¹ and past iterations of the IHP Survey of Primary Care Doctors. Table 1 outlines the total number of completed interviews and modes used for each country for recruitment and completion. Fieldwork occurred between February 8 and September 22, 2022. The field times varied by country and are specified in Table 1.²

¹ France changed from a panel-based web design in 2019 to a hybrid methodology of phone and ABS as well as email outreach.

² Field time ranged from eight to 31 weeks.

TABLE 1: Modes of Recruitment/Completion Used, Completed Interviews, and Fieldwork Dates for each Country

	Modes of Recruitment/Completion	Final N	Field Start Date	Field End Date
Australia	Phone/email recruit to online	321	2/23/2022	8/24/2022
Canada	Postal mail recruit to online/mail	1459	2/16/2022	9/22/2022
France	Postal mail/phone/email recruit to online/phone (CATI)/mail	530	3/11/2022	7/22/2022
Germany	Postal mail/email recruit to online/mail	947	3/9/2022	5/6/2022
Netherlands	Postal mail	617	3/14/2022	7/12/2022
New Zealand	Email recruit to online	377	3/6/2022	6/26/2022
Sweden	Postal mail recruit to online	2092	3/9/2022	5/16/2022
Switzerland	Postal mail recruit to online	1114	3/10/2022	5/30/2022
UK	Phone recruit to phone (CATI)/online	1010	2/15/2022	5/30/2022
US	Postal mail recruit to online/mail	1059	2/8/2022	8/24/2022

The report is organized into five sections. The project Overview is provided in the first section. Sample Design and the Response Rate for each country are outlined in the second section. The third section provides information on Data Collection procedures for each country. The final sections describe Weighting procedures, and project Deliverables/Updates.

SAMPLE DESIGN AND RESPONSE RATES BY COUNTRY

The survey utilized random samples of primary care physicians in ten countries. Since primary care physicians in many countries treat adults and children (e.g., Australia, New Zealand, the Netherlands, and the UK), pediatricians were also included in countries where primary care physicians exclusively treat adults (US and Switzerland) to make the samples across the countries equivalent³.

Efforts were made to release sample in batches/waves to allow for oversampling, as needed, of specific geographies, and ‘work’ the sample throughout the field period in order to ensure that the final sample of completed interviews would be representative of both those who respond more quickly and those who require additional contacts (via phone, email, or mailings) to complete the survey.

Notably, across most countries in the IHP 2022 survey, lower than anticipated response was observed. SSRS worked across multiple fronts in several countries to gain insights into the source(s) of the lower participation rates and identify levers to improve response. As a part of the insights gained from these investigations, it is important to note the lack of availability and time that physicians are increasingly struggling with, themselves. Their work schedules are demanding, and the ongoing COVID-19 pandemic

³ Germany excluded pediatricians from the sample for IHP 2022.

has exacerbated this situation. Physicians in multiple countries noted they are overworked and stressed, potentially contributing to lower completion rates, compared to previous years.

The response rates for this study were calculated using AAPOR's RR3 and are provided below in Table 2.

TABLE 2: Response Rates by Country

	Response Rate
Australia	12.2%
Canada	22.7%
France	6.5%
Germany ⁴	--
Netherlands	39.7%
New Zealand	9.9%
Sweden	38.4%
Switzerland	29.1%
UK	22.3%
US	18.8%

Australia

The PCP sample in Australia was drawn from a national list of physicians provided by MDA (Medical Directory of Australia). The list contains over 25,000 Australian physicians and is updated on a monthly basis. Where possible, TKW leveraged contact information from their own physician database, matching any records from the database to the random sample drawn from the MDA. Physicians sampled corresponded to general practitioners. The sample was stratified by region. 3,502 records were selected.

TABLE 3: Final Dispositions – Australia

Total records	3,502
Ineligible ⁵	492
Valid sample	3,010
Completes	321
Response Rate	12.2%

Canada

The PCP sample in Canada was drawn from a national list of physicians provided by Professional Targeted Marketing (PTM). The list was derived from the Canadian Medical Directory master file. The list contains over 90,000 Canadian physicians and is updated on a monthly basis. PTM databases include office-based mailing addresses for all of the physicians and email addresses for approximately 64% of physicians.

⁴ Because of the sampling methodology in Germany, it is not possible to calculate a response rate. See the Germany Sample Design section on page 16 for more details.

⁵ This group was mainly composed of PCPs who screened out as not being involved in primary care. In Australia (similar to NZ), a screener was implemented asking PCPs whether they want to participate and if they are involved in direct patient care or not.

Physicians sampled were general practitioners and family practitioners. Sample was randomly selected among each of these groups and certain provinces were oversampled. 6,478 records were selected.

TABLE 4: Final Dispositions – Canada

	Total Canada	Quebec
Total records	6,478	1,587
Non-deliverables and ineligible ⁶	12	1
Valid sample	6,466	1,586
Completes	1,459	373
Response Rate	22.7%	23.6%

France

The sample for physicians in France was randomly selected from a comprehensive list of general practitioners provided by SSRS's partner, Sample Solutions⁷. This list was created by aggregating physician information across several publicly-available databases of physicians in France (e.g., the Health Directory⁸, 118,000 Telephone Directory⁹, etc.). The resulting sample frame, which encompasses 68,196 physicians, includes mailing address for all records and phone number, email address, or both for a subset. A total of 12,650 records were selected.

TABLE 5: Final Dispositions – France

Total records	12,650
Ineligibles	487
Valid sample	12,163
Completes	530
Survey Response Rate	6.5%

Germany

For Germany, the sample for the survey was drawn from the set of members of the Federal Association of General Practitioners in Germany (Deutscher Hausärzterverband, DHV). According to the Federal Association of General Practitioners in Germany, the set of their members compiled a total of 26,396 GPs as of January 18, 2022 (48% of the population).

The Federal Association asked the regional Associations to invite all their members personally by email. However, not all regional Associations followed this path. Five out of the 17 regional Associations invited all their members personally via email, nine regional Associations included a note on the survey in their

⁶ The "ineligible" category corresponded in most instances to a small group of respondents who directly contacted SSRS about not being in primary care, being retired or for whom information about being deceased was obtained.

⁷ <https://sample.solutions/>

⁸ <https://annuaire.sante.fr/> - The Health Directory is a public list of health professionals registered in the national RPPS and ADELI directories and their practice situations. These data come from the authorities responsible for their registration.

⁹ <https://www.118000.fr/> - The 118,000 is a public telephone directory (i.e., Yellow Pages) of professionals and businesses, including healthcare professionals.

newsletter, which was sent to all members, and three regional Associations did not reveal any details on their sample management. As such, we are unable to calculate a response rate for Germany.

The Netherlands

The Dutch PCP sample was randomly drawn from the database of the Netherlands Institute of Health Services Research (NIVEL). The database contains approximately 4,800 practices. Physicians sampled corresponded to primary care physicians. A selection of 1,600 practices was employed.

TABLE 6: Final Dispositions - The Netherlands

Total records	1,600
Non-deliverables	20
Valid sample	1,580
Completes	617
Response Rate	39.7%

New Zealand

In New Zealand, SSRS partnered with the Royal New Zealand College of General Practitioners (RNZCGP) to use their membership list for the sample for the IHP survey. RNZCGP is the professional body and postgraduate educational institute for general practitioners and rural hospital doctors in New Zealand. Invitations were sent to 3,926 GPs in the RNZCGP list.

TABLE 7: Final Dispositions - New Zealand

Total records	3,936
Ineligible ¹⁰	17
Valid sample	3,919
Completes	377
Response Rate	9.9%

Sweden

PCPs in Sweden were sampled from the Occupational Register (YREG) combined with the registry on Educational attainment (UREG). Both the YREG and UREG are updated every year, however the YREG updates are based on data from two years prior (e.g., 2022 updates based on 2020). YREG was the primary source for the sample frame, with a requirement that a physician was classified as gainfully employed in November 2020. These individuals were then checked with UREG. Only persons who have completed a medical education according to UREG, were included in the sampling frame. 6,000 records were selected.

¹⁰ This group was mainly composed of physicians who screened out as not being involved in primary care. In New Zealand, similar to Australia, a screener was implemented asking sampled physicians whether they want to participate and if they are involved in direct patient care or not.

TABLE 8: Final Dispositions – Sweden

Total records	6,000
Ineligibles	15
Valid sample	5,985
Completes	2,092
Response Rate	38.4%

Switzerland

The sample in Switzerland was provided by The Swiss Medical Association (FMH) member file. The sample was then randomly selected. The Italian Linguistic region was oversampled. Initially only one release was planned, however, due to a lower response rate than expected a smaller second release was needed. 4,000 records were selected from the list.

TABLE 9: Final Dispositions – Switzerland

Total records	4,000
Ineligibles ¹¹	59
Valid sample	3,941
Completes	1,114
Response Rate	29.1%

The United Kingdom

The UK sample of PCPs was drawn from an online source provided by Specialist Info and Adkins' proprietary panel. This list is updated daily and has details on 72,722 general practitioners. The London, Scotland, Wales and Northern Ireland regions were oversampled. A total of 4,606 records were selected from the sample list.

TABLE 10: Final Dispositions – UK

Total records	4,606
Ineligibles ¹²	20
Valid sample	4,586
Completes	1,010
Response Rate	22.4%

¹¹ Includes respondents who said they are not PCPs, bad addresses, PCPs who died, or cases where the postal address nor the phone number is working.

¹² Includes respondents who failed the screener (respondents in groups that were over quota, did not spend more than 50% of their time in direct patient care, not a general practitioner, or refused to provide a current job title), and non-working/invalid phone numbers.

The United States

SSRS procured the sample for PCPs in the United States from RediData, an official licensee of the American Medical Association (AMA) Masterfile. The AMA list is continually updated through various methods, including verification calls to 350,000 physicians annually and more than 100,000 physician self-inquiries each year. Additionally, the database leverages AMA activities such as membership and publishing and also allows licensed physicians to update their information online. Physicians sampled were internal medicine physicians, family medicine physicians, general practitioners, or pediatricians. The sample was randomly selected among each of these groups, with pediatricians being undersampled relative to their proportion in the PCP universe. RediData databases include mailing addresses of preference for all of the physicians (office-based or home-based) and email addresses for approximately 75% of physicians. 5,852 records were selected for this study via RediData.

TABLE 11: Final Dispositions – US

Total records	5,852
Ineligibles	53
Valid sample	5,799
Completes	1,059
Response Rate	18.8%

DATA COLLECTION

Questionnaire Development

In the fall and winter of 2021, the IHP 2022 questionnaire was developed and revised by The Commonwealth Fund and its international partners. SSRS reviewed the final questionnaire and provided feedback about question wording, order, clarity, logic/programming, and other issues related to questionnaire quality and design across modes. The survey consisted of paper, online and computer-assisted telephone interviews of random samples of primary care doctors in ten countries, using a common questionnaire that was translated and adjusted for country-specific wording as needed. A few countries included an additional set of questions specific to their country. SSRS worked with each country partner in designing questions that would better suit their data collection requirements by providing feedback on structure, wording, length and overall design.

SSRS created a master Web/CATI questionnaire for online and telephone administration and a preferred paper survey format.¹³ The Web/CATI questionnaire included programmer and interviewer instructions that were to be used in the various modes. The Web/CATI questionnaire contained all country-specific introductions, questions, and instructions for countries that offered the survey in web and telephone formats. A preferred paper template was developed based on best practices in paper survey design aimed

¹³ For most countries where data were collected online, the “www.internationaldoctorstudy” domain name was used. The top-level domains were differentiated as follows: Canada used (.ca), NZ: (.org.nz), the UK: (.uk), and the US: (.org or .com). For Australia, the www.internationaldoctorsurvey-au.org domain was selected. For France, the www.etudeinternationaledesmedecins.fr was selected.

at promoting respondent completion by making the survey more user friendly, easy to understand, and consistent in format. SSRS provided an English language paper questionnaire in the preferred format to all countries using a paper survey mode. Each of the countries adapted the paper survey format, as needed, based on their survey administration requirements.

Survey Procedures by Country

Australia

SSRS's fielding partner, TKW, fielded the survey in Australia. The survey was in field from February 23 – August 24, 2022. Prior to the field period, SSRS programmed the study into SSRS's Web Interviewing system for online data collection in Australia. For consistency purposes across countries, the web domain used in Australia was www.internationaldoctorstudy-au.org. Extensive checking of the programs was conducted to assure that skip patterns followed the design of the questionnaire. The SSRS team paid close attention to mobile optimization, as the use of mobile devices to complete online surveys continues to rise.

Pretest interviews were conducted in Australia in December 2021. Overall, the instrument worked quite well, and respondents seemed to be engaged in the interview. TKW conducted five cognitive pretest interviews in Australia. Fieldwork managers confirmed that all interviewed respondents were comfortable talking about their health experiences as a healthcare provider.

During the field period, physicians were contacted in a two-step process: The first step involved screening and inviting respondents (via the phone or email) to participate in the study. Once doctors agreed to participate, the second step consisted of sharing a confirmation letter with a link to the online survey via email. The screener was used to identify whether respondents were interested in participating or not, and to screen-out primary care doctors not involved in direct patient care. Reminders were attempted with physicians who had not responded¹⁴. To encourage participation an endorsement letter¹⁵ was shared with respondents and PCPs were offered an incentive of AUS\$70¹⁶.

Canada

SSRS fielded the survey in Canada. Similar to IHP 2019, oversamples were collected at a national level as well as in Quebec. For the 2022 study, censuses were conducted in Prince Edward Island (PEI), Yukon, and the Northwest Territories.

The survey was in field from February 16 – September 22, 2022. All respondents were recruited via postal mail and invited to participate in a paper-copy or online version of the survey. Prior to the field period, SSRS programmed the study into SSRS's Computer-assisted online interviewing system (webCATI) for data collection in Canada. For consistency purposes across countries, the web domain used in Canada was www.internationaldoctorstudy.ca. Additionally, a process was implemented where Canadian respondents who by mistake typed the ".com" or ".org" top-level domains (which were the US top-level domains) were

¹⁴ In an effort to boost response, SSRS and TKW tested a single page reminder letter sent to non-responders, asking them to take the survey online, however this did not result in a meaningful increase in completed interviews.

¹⁵ The Royal Australian College of General Practitioners provided endorsement for Australia.

¹⁶ Midway through fieldwork, the incentive was increased from AUS\$70 to AUS\$100 to encourage response.

automatically re-directed to the “.ca” version. Extensive checking of the programs was conducted to ensure that skip patterns followed the design of the questionnaire. The computer-assisted instruments were tested to ensure that all of the language inserts were working properly. The SSRS team paid close attention to mobile optimization, as the use of mobile devices to complete online surveys continues to rise. SSRS also designed a paper survey to be used in Canada following best practices to maximize usability and respondent completion.

Once the 2022 instrument was finalized in December 2021, SSRS identified questions that were (1) new (2) the same in 2019, and (3) modified from the 2019 instrument. A translation questionnaire was created that contained the 2022 English verbiage, the 2019 French translations, and instructions for the translator to ensure a previous year’s translation remained accurate, modify a previous instrument’s translation or translate from scratch. New and modified questions were translated into Canadian French as needed. The SSRS team then sent translations to the Quebec partners to ensure that the translations were accurate and user friendly. Modifications were made based on country partner feedback.

Five pretest interviews were completed in Canada between December 2 and December 15, 2021. Two were conducted using the web program in English, and three in English using the paper survey. Every effort was made to complete interviews among as representative of a population as possible. Respondents were asked to provide feedback on the instrument/program, invitation letter, reminder letter, and publication list. Upon completion of the pretest interviews, SSRS provided a memo of the pretest findings to the Fund and also provided feedback to the Canadian partners.

To encourage participation, primary care doctors were mailed an endorsement letter¹⁷, an incentive check of \$25 or \$100¹⁸ (included with the first paper questionnaire), and a list of publications based on previous International Health Policy surveys (See Table 3 below). Additionally, to maximize response rates and based on pretest feedback, similar to IHP 2019, SSRS implemented a strategy that allowed respondents in Canada to provide their email address so that highlights on the survey results can be shared when they are available. Respondents across all provinces had the option to complete the survey in English or Canadian French online.

Doctors in Canada received an advance invitation including the web link and up to five additional contacts/reminders during the field (i.e., two paper questionnaires, one reminder letter, and up to three email reminders). Detailed specifications for each contact/wave are outlined below. Doctors in Quebec were sent all postal mailings in English and Canadian French; emails were sent in Canadian French to doctors in Quebec. Email reminders were sent to the 63% of the sample for which email addresses could be appended by the sample provider (Professional Targeted Marketing (PTM)).

¹⁷ The Canadian Institute for Health Information (CIHI) collaborated with the Ministère de la Santé et des Services sociaux (MSSS) and provided endorsement in letters for all provinces outside of Quebec. MSSS also collaborated with the Federation des Medecins Omnipraticiens de Quebec to provide a separate, unique endorsement letter for doctors in Quebec.

¹⁸ Doctors in the Northwest Territories did not receive any incentive for the study, due to governmental regulation prohibiting incentives.

TABLE 12a: Canada Contact Schedule – Wave 1

Wave 1 Contact	Date	Type of Contact	Documents Included
1	2/16/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online List of The Commonwealth Fund's publications
2	2/22/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online Canada-wide endorsement letter 8-page paper questionnaire Postage-paid reply envelope \$100 check for doctors in the Yukon, \$25 check for those outside of the Yukon
3	3/21/22	Email	Email with passcode-embedded web link
4	5/4/22	Email	Email with passcode-embedded web link
5	5/10/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online 8-page paper questionnaire Postage-paid reply envelope
6	5/18/22	Postal	Personalized reminder letter, with color logo, URL and passcode to complete survey online Quebec-specific endorsement letter

TABLE 12b: Canada Contact Schedule – Wave 2

Wave 2 Contact	Date	Type of Contact	Documents Included
1	7/8/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online List of The Commonwealth Fund's publications Endorsement letter ¹⁹
2	7/21/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online 8-page paper questionnaire Postage-paid reply envelope \$100 check for doctors in the Yukon, \$25 check for those outside of the Yukon
3	7/28/22	Email	Email with passcode-embedded web link
4	7/29/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online 8-page paper questionnaire Postage-paid reply envelope
5	8/4/22	Postal	Personalized reminder letter, with color logo, URL and passcode to complete survey online

Table 13, below, shows the completes by mode by province.

¹⁹ Quebec sample received a Quebec-specific endorsement letter; all other provinces received a Canada-wide endorsement letter. All endorsement letters were sent in English and Canadian French.

TABLE 13: Canada Completes by Mode

	Quebec	Rest of Canada	Total Canada
Web	213	585	798
Paper	160	501	661
Total	373	1086	1459

SSRS maintained a master file of contacts initiated by Canadian respondents throughout the field period. This file included information about the reason behind the communication established with the respondent and the decisions made to proactively address the issue raised. In addition, hand-written comments in paper surveys were saved into an excel file.

Given the multi-modal nature of this survey, there were some duplicate cases (i.e., respondents who complete a paper and web survey or two or more paper surveys) that needed to be addressed. For duplicate cases, the following rules were followed to select the cases that were kept in the final data file.

- Cases with the highest completion response rate were kept regardless of the survey mode.
- If duplicate cases for a particular respondent had identical questionnaire completion rates and the mode of completion cases was different (i.e., mail and online), the online case was kept.
- The case with the earliest date of completion was selected for duplicate cases with identical completion response rates and mode of completion (e.g., two mail-based interviews from a single respondent).

France

SSRS's fielding partner, E3, fielded the survey in France. The survey was in field from March 11 – July 22, 2022.

Once the 2022 instrument was finalized in December 2021, SSRS identified questions that were (1) new (2) the same in 2019, and (3) modified from the 2019 instrument. A translation questionnaire was created that contained the 2022 English verbiage, the 2019 French translations, and instructions for the translator to ensure a previous year's translation remained accurate, modify a previous instrument's translation or translate from scratch. New and modified questions were translated into French as needed. The SSRS team then reviewed the translations to ensure that the translations were accurate and user friendly. Modifications were made based on country partner feedback.

Five pretest interviews were completed in France between February 2 and February 9, 2022. Three were conducted using the web program, and two using the CATI (phone) survey. Every effort was made to complete interviews among as representative of a population as possible. Respondents were asked to provide feedback on the instrument/program and the invitation letter. Upon completion of the pretest interviews, SSRS provided a memo of the pretest findings to the Fund and also provided feedback to the French partner, HAS.

Prior to the field period, SSRS programmed the study into SSRS's Web Interviewing system for online data collection in France. For consistency purposes across countries, the web domain used in France was www.etudeinternationaledesmedecins.fr. Extensive checking of the programs was conducted to assure that skip patterns followed the design of the questionnaire. The computer-assisted instruments were

tested to ensure that all of the country-specific language inserts were working properly. The SSRS team paid close attention to mobile optimization, as the use of mobile devices to complete online surveys continues to rise.

Fieldwork in France was broken up into three waves. Because of the uncertainty surrounding the performance of the sample created for this survey, only a portion of the sample expected to be used for the full study were included in the first wave (n=2,750). All sample without a phone number received an invitation letter in the mail, inviting them to take the survey online. Any sample with an email address additionally received reminders via email. As an experiment to test the efficacy of phone outreach vs. mail outreach, 50% of sample with a phone number received an invitation letter, while the other 50% of sample with a phone number did not receive a letter. Based on the results of this first wave, all sample in the remaining waves received an invitation letter in the mail in addition to email and phone reminders, where available.

In the second sample release, a new experiment aimed at increasing low response from the first wave was introduced in order to test the efficacy of paper surveys for physicians in France. An 8-page paper survey was included in the invitation mailing to 50% of the sample. This additional method of outreach proved to be successful, with a total of n=175 completed interviews coming via this method. Sample in this wave continued to receive reminder emails and phone calls, where available. Despite the success of the paper survey, the third wave did not include this offering in the contact protocol, as time constraints for fieldwork did not allow for the needed time for receiving and processing paper surveys.

TABLE 14: France Contact Details

Type of Contact	Details of Contact
Postal	Personalized letter, with color logo, URL and passcode to complete survey online 8-page paper questionnaire* Postage-paid reply envelope* <i>*(provided in the postal mailings in Wave 2)</i>
Phone	Call to doctor's office to invite and screen* for survey, with option to complete on the phone <i>*(screened respondents received an email with a passcode-embedded web link to complete survey online)</i>
Email	Email with passcode-embedded web link

Table 15 below shows the completes by mode.

TABLE 15: France Completes by Mode

	Total France
Web	355
Paper	175
Total	530

Germany

The Federal Ministry of Health (BMG) contracted with IGES Institute to conduct the survey in Germany. The survey was in field from March 9 – May 6, 2022.

Once the 2022 instrument was finalized in December 2021, SSRS identified questions that were (1) new (2) the same in 2019, and (3) modified from the 2019 instrument. A translation questionnaire was created that contained the 2022 English verbiage, the 2019 German translations, and instructions for the translator to ensure a previous year's translation remained accurate, modify a previous instrument's translation or translate from scratch. IGES and BMG finalized the translations.

Before starting the field, IGES pretested the German version of the instrument with seven primary care doctors using a cognitive validation format. The interviews were conducted early February 2022. Based on the pretest, a German-specific question was removed from the survey based on confusion for multiple physicians.

The sample was managed by each of the 17 regional Associations of General Practitioners in the 16 federal states of Germany (the state of Northrhine-Westfalia has two associations) in a decentralized manner. The Federal Association asked the regional Associations to invite all their members personally by email. However, not all regional Associations followed this path. Five out of the 17 regional Associations invited all their members personally via email, nine regional Associations included a note on the survey in their newsletter, which was sent to all members, and three regional Associations did not reveal any details on their sample management. Some regional Associations sent multiple reminders (typically a first reminder about four weeks after sending the invitation and a second reminder another week or two later).

The Netherlands

The Netherlands conducted the fieldwork via the Dutch Ministry of Health, part of the Radboud University Medical Center. The survey was in field from March 14 – July 12, 2022.

Once the 2022 instrument was finalized in December 2021, SSRS identified questions that were (1) new (2) the same in 2019, and (3) modified from the 2019 instrument. A translation questionnaire was created that contained the 2022 English verbiage, the 2019 Dutch translations, and instructions for the translator to ensure a previous year's translation remained accurate, modify a previous instrument's translation or translate from scratch. The Dutch Ministry of Health finalized the translations. SSRS provided formatted paper survey instrument in English for the Netherlands as a reference. The Dutch Ministry of Health adapted the formatted paper survey as needed for fielding and data processing needs for the Netherlands.

Before starting the field, the Dutch Ministry of Health pretested the Dutch version of the instrument with five primary care doctors using a cognitive validation format. The interviews were conducted on February 4, 2022. Based on the pretest, some contextual translation edits needed to be made in the Netherlands.

Primary care doctors were recruited via postal mail and invited to participate in a paper-copy version of the survey. Non-responders were sent up to three reminder letters, along with the paper questionnaire. No financial incentive was offered in the Netherlands.

TABLE 16: The Netherlands Contact Schedule

Contact	Wave 1	Wave 2	Netherlands
1	3/14/22	4/22/22	Cover letter 8-page paper questionnaire
2	4/5/22	5/5/22	Reminder letter 8-page paper questionnaire
3	4/26/22- 4/29/22	5/12/22	Reminder letter 8-page paper questionnaire

Data management was performed with Microsoft Access Database, which was linked to Teleform. IBM SPSS Statistics was used to write syntax and code data by two researchers. Two researchers were also responsible for reviewing, checking, and recoding all missing values across records that resulted from Teleform.

New Zealand

SSRS partnered with the Royal New Zealand College of General Practitioners to field the instrument in New Zealand. The survey was in field from March 6 – June 26, 2022. SSRS programmed the study into SSRS’s Web Interviewing system for online data collection in New Zealand. For consistency purposes across countries, the web domain used in New Zealand was www.internationaldoctorstudy.org.nz. Extensive checking of the programs was conducted to assure that skip patterns followed the design of the questionnaire.

Six pretest interviews were completed in New Zealand between December 13 and December 15, 2021. Respondents were asked to provide feedback on the instrument/program. Upon completion of the pretest interviews, SSRS provided a memo of the pretest findings to the Fund.

RNZCGP managed email outreach to its members, inviting them to take the survey. An invitation email was sent to the full sample, explaining the study and providing a personalized link to take the survey online. Up to two reminder emails were sent to physicians who had not yet completed the survey.

Sweden

Sweden contracted with Statistics Sweden (SCB) to manage the data collection process and field the instrument in Sweden. The survey was in field from March 9 – May 16, 2022.

Once the 2022 instrument was finalized in December 2021, SSRS identified questions that were (1) new (2) the same in 2019, and (3) modified from the 2019 instrument. A translation questionnaire was created that contained the 2022 English verbiage, the 2019 Swedish translations, and instructions for the translator to ensure a previous year’s translation remained accurate, modify a previous instrument’s translation or translate from scratch.

SCB programmed the survey for online data collection. Members of the SSRS team tested the Swedish version of the instrument. In general, SCB designed their web program in keeping with best practices for online surveys; the final program was similar but not identical to the US and Canadian web instruments. Pretest interviews were not conducted in Sweden.

PCPs were recruited via postal mail and invited to participate in an online version of the survey. Doctors in Sweden received a letter including the web link and up to three additional reminders during the field. No financial incentive was offered in Sweden.

TABLE 17: Sweden Contact Schedule

Contact	Contact Type	Date	Switzerland
1	Postal	3/9/22	Cover letter with web link, passcode, and QR code
2	Postal	3/23/22	Reminder letter #1 with web link, passcode, and QR code
3	Postal	4/6/22	Reminder letter #2 with web link, passcode, and QR code
4	Postal	4/22/22	Reminder letter #3 with web link, passcode, and QR code

Switzerland

Switzerland contracted with DemoSCOPE to field the survey in Switzerland. The survey was in field from March 10 – May 30, 2022.

Once the 2022 instrument was finalized in December 2021, SSRS identified questions that were (1) new (2) the same in 2019, and (3) modified from the 2019 instrument. A translation questionnaire was created that contained the 2022 English verbiage, the 2019 Swiss translations (German, French, and Italian), and instructions for the translator to ensure a previous year’s translation remained accurate, modify a previous instrument’s translation or translate from scratch.

DemoSCOPE programmed the survey for online data collection. DemoSCOPE provided the survey to SSRS to test to ensure that the programming was consistent with the web surveys in other countries. Prior to fieldwork, ten pretest interviews were conducted in Switzerland over the three linguistic regions. These interviews included just a selection of questions to test rather than the full survey. A few minor changes were made based on the pretest findings.

Primary care doctors were recruited via postal mail and invited to participate in an online version of the survey. About one month after the invitation letter was mailed, any non-responders were sent a reminder letter asking them to complete the survey. Due to a lower response rate than anticipated, a second sample release was needed, which followed the same contact protocol as the first release.

TABLE 18: Switzerland Contact Schedule

Contact	Contact Type	Wave 1	Wave 2	Switzerland
1	Postal	3/10/22	4/12/22	Cover letter with web link, passcode, and QR code
2	Postal	4/12/22	5/3/22	Reminder letter with web link, passcode, and QR code

The United Kingdom

SSRS’s fielding partner, Adkins Research Group (Adkins), fielded the survey in the UK. The survey was in field from February 15 – May 30, 2022.

Between December 16-December 17, 2021, Adkins conducted five pretest interviews in the UK. Overall, the instrument worked well, and respondents seemed to be engaged in the interview. Upon completion of the pretest interviews, SSRS provided a memo of the pretest findings to the Fund and also provided feedback to the UK partner.

Prior to the field period, SSRS programmed the study into SSRS’s Web Interviewing system for the UK data collection. For consistency purposes across countries, the web domain used in the UK was www.internationaldoctorstudy.uk. Extensive checking of the program was conducted to assure that skip patterns followed the design of the questionnaire. Data were checked throughout the field period to confirm that skip patterns were correctly followed. The program was created in a way that allowed for both a CATI-optimized interface that included interviewer instructions and voluntary responses and a web version that was optimized for self-administration (e.g., allowed respondents to skip questions), depending upon the mode of completion for the respondent.

For the UK, primary care doctors were recruited and screened via the phone and invited to participate in a phone or online version of the survey. In addition to identifying respondents who were willing to participate, the screener served to screen out PCPs who did not spend more than 50% of their time in direct patient care, who were not general practitioners, who refused to provide a current job title or who practiced in regions that were over quota. Respondents who qualified were invited to participate in the core instrument via the phone (at a time convenient for the respondent) or online. Respondents who preferred the online option were asked to provide their email address, which was then used to share the information about how to access the web link. To encourage participation, an endorsement letter was shared with respondents²⁰ and PCPs were offered an incentive of £30 upon completion of the survey. An additional £30 was offered to a sample size of 40 respondents in order to bolster additional completes in Scotland (N=10), Wales (N=10), and Northern Ireland (N =20). An average of five call attempts were made on active sample.

Table 19 below shows the completes by mode.

TABLE 19: UK Completes by Mode

	Total UK
Web	787
Phone	223
Total	1010

The United States

SSRS fielded the survey in the US. The survey was in field from February 8 – August 24, 2022. Prior to the field period, SSRS’s Web Interviewing system for data collection in Canada and the US. For consistency purposes across countries, the web domains used in the US were www.internationaldoctorstudy.org or www.internationaldoctorstudy.com; respondents were allowed to enter the .org or .com top-level domains but all the invitation materials displayed the .org version. Extensive checking of the programs was conducted to assure that skip patterns followed the design of the questionnaire. SSRS also designed a paper survey to be used in the US following best practices to maximize usability and respondent completion.

Once the instrument was finalized, a total of six cognitive pretest interviews, three web and three hard-copy, were conducted from December 6 to December 21, 2021. Respondents varied by age, gender, and region, in order to represent the population as much as possible. Interviewers conducted semi-structured

²⁰ The Health Foundation was provided endorsement for the UK.

cognitive interviews and solicited feedback on the instrument/program and prenotification letter²¹. SSRS provided a detailed memo of the pretest findings to the Fund. Based on the respondent feedback, minor changes were made to the instrument and web program. Changes to the questionnaire were made across countries. SSRS had the changes translated and provided updated translation materials to all country partners and vendors.

Primary care doctors were recruited via postal mail and invited to participate in a paper-copy or online version of the survey. Fielding was divided into three waves. To encourage participation, PCPs were mailed a pre-incentive²² prior to completing the survey and a list of publications based on previous International Health Policy surveys. Doctors in the US received an advance invitation including the web link and up to 11 additional contacts/reminders during the field (i.e., two or three paper questionnaires, one reminder letter at most, and up to five email reminders). The specifications for each contact/wave are outlined below. Email reminders were sent to the 76% of the sample for which email addresses could be appended by the sample provider (RediData).

To maximize response rates and similar to IHP 2019, SSRS implemented a strategy that allowed respondents in the US to provide their email address so that highlights on the survey results can be shared when they are available.

Two experiments were implemented across the three waves:

- 1) In Wave 1, 50% of the sample was offered a \$25 post-incentive in the prenotification mailing and received \$10 pre-incentive in the first paper copy mailing while the remaining 50% was sent offered a \$40 post-incentive and received a \$5 pre-incentive
- 2) In Waves 2 and 3, a third of the sample was offered a \$40 post-incentive in the prenotification mailing and another third was offered a \$70 post-incentive in the prenotification mailing. Both of these groups received a \$5 pre-incentive in the first paper copy mailing. The last third of the sample in Waves 2 and 3 received a \$20 pre-incentive in the first paper copy mailing, with no post-incentive offered.

After Wave 1 had been in field for a significant amount of time, we observed that the response rate was notably higher for the records that received the larger post-incentive and smaller pre-incentive (\$40 and \$5, respectively). These findings were integrated into the subsequent experimentation on incentive structure, in Waves 2 and 3 examining if a large post-incentive or modest pre-incentive would yield higher levels of response.

²¹ Typically, we ask participants to review multiple recruitment materials (e.g., both an email and an invitation letter) during these pretest interviews. Given the number of new questions included in the survey, and the limited time we have with each participant, we only reviewed one recruitment material with each participant, so we could maximize time focusing on the survey.

²² The amount and form of the pre-incentive changed across waves, based on experimentation conducted. In Wave 1, doctors received either \$10 or \$5 in cash. In Waves 2 and 3, doctors received either \$5 in cash or a \$20 check.

TABLE 20a: US Contact Schedule – Wave 1

Wave 1 Contact	Date	Type of Contact	Documents Included
1	2/8/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online, mentions \$25/\$40 post-incentive
			Personalized letter with URL to complete survey online, mentions post-incentive
2	2/16/22	Postal	List of The Commonwealth Fund’s publications
			8-page paper questionnaire
			Postage-paid reply envelope
			\$10/\$5 pre-incentive
3	2/24/22	Email	Email with passcode-embedded web link
4	3/7/22	Email	Email with passcode-embedded web link
			Personalized letter, with color logo, URL and passcode to complete survey online, mentions post-incentive
5	3/7/22	Postal	8-page paper questionnaire
			Postage-paid reply envelope
6	3/18/22	Email	Email with passcode-embedded web link
7	3/23/22	Email	Email with passcode-embedded web link
8	3/29/22	Email	Email with passcode-embedded web link
9	5/18/22	Postal	Personalized reminder letter, with color logo, URL and passcode to complete survey online

TABLE 20b: US Contact Schedule – Wave 2

Wave 2 Contact	Date	Type of Contact	Documents Included
1	6/7/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online, mentions \$40/\$70 post-incentive (if applicable)
			Personalized letter with URL to complete survey online, mentions \$40/\$70 post-incentive (if applicable)
2	6/15/22	Postal	List of The Commonwealth Fund’s publications
			8-page paper questionnaire
			Postage-paid reply envelope
			\$5/\$20 pre-incentive
3	6/28/22	Email	Email with passcode-embedded web link
			Personalized letter, with color logo, URL and passcode to complete survey online, mentions \$40/\$70 post-incentive (if applicable)
4	6/28/22	Postal	8-page paper questionnaire
			Postage-paid reply envelope
			Personalized letter, with color logo, URL and passcode to complete survey online, mentions \$40/\$70 post-incentive (if applicable)
5	7/15/22	Email	8-page paper questionnaire
			Postage-paid reply envelope
6	7/21/22	Email	Email with passcode-embedded web link
7	7/26/22	Email	Email with passcode-embedded web link
8	8/1/22	Email	Email with passcode-embedded web link

TABLE 20c: US Contact Schedule – Wave 3

Wave 3 Contact	Date	Type of Contact	Documents Included
1	7/1/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online, mentions \$40/\$70 post-incentive (if applicable)
2	7/11/22	Postal	Personalized letter with URL to complete survey online, mentions \$40/\$70 post-incentive (if applicable) List of The Commonwealth Fund’s publications 8-page paper questionnaire Postage-paid reply envelope \$5/\$20 pre-incentive
3	7/20/22	Email	Email with passcode-embedded web link
4	7/21/22	Postal	Personalized letter, with color logo, URL and passcode to complete survey online, mentions \$40/\$70 post-incentive (if applicable) 8-page paper questionnaire Postage-paid reply envelope
5	7/26/22	Email	Email with passcode-embedded web link
6	8/1/22	Email	Email with passcode-embedded web link
7	8/5/22	Email	Email with passcode-embedded web link
8	8/11/22	Email	Email with passcode-embedded web link

SSRS kept track of a master file of contacts initiated by US respondents throughout the field period. This file included information about the reason behind the communication established with the respondent and the decisions made to proactively address the issue raised.

As part of the back-end process, there were some duplicate cases in the US data because respondents took two or more surveys (i.e., both web and paper or two paper surveys). If duplicate cases were found, the following rules were followed to select the cases that were kept in the final data file.

- Cases with the highest completion response rate were kept regardless of the survey mode.
- If duplicate cases for a particular respondent had identical questionnaire completion rates and the mode of completion cases was different (i.e., mail and online), the online case was kept.
- The case with the earliest date of completion was selected for duplicate cases with identical completion response rates and mode of completion (e.g., two mail-based interviews from a single respondent).

Table 21 below shows the completes by mode by sample type.

TABLE 21: US Completes by Mode

	Total US
Web	541
Paper	508
Total	1059

Data Processing and Quality Control

Prior to the field period, SSRS developed a set of instructions for processing paper surveys. While the project team anticipated that most providers would follow instructions and complete the survey correctly, SSRS's standard of practice is to provide guidelines for editing and coding completed paper surveys. These procedures were provided to all partners/vendors that were processing paper surveys. Examples of information communicated in this memo include instructions regarding: (1) processing of data when skip patterns were not followed; (2) write in responses of "Don't know," "Not sure," and "Refused;" (3) processing of multiple response for single-response questions.

SSRS developed a standardized data map to be utilized by all the international partners when structuring their data in ASCII format. The back-end programmer created a program consisting of instructions derived from the skip patterns designated on the data map and editing and coding memos that were shared with each survey-fielding partner. The program confirmed that data were consistent with the definitions of the preset codes and ranges and matched the appropriate bases of all questions. By the end of field, once the integrated data were compiled, an independent checking of all variables was carried out to ensure that all variables were accurately constructed, had the correct number of cases, and were coded according to specifications provided. Frequencies were also run against clean data and reviewed as a further verification of valid codes and skip patterns.

SSRS provided reporting data and disposition reporting templates to each of its survey-fielding partners. On a weekly basis, SSRS reviewed the status of data collection and provided feedback regarding the distribution of completes, field progress, and dispositions. Based on this feedback, SSRS was able to monitor sample productivity, track quotas and deadlines, and provide guidance on how to best handle other fielding aspects.

For the online program, SSRS and its survey partners created a variable that calculated a respondent's completion rate. The calculation was based on the following formula:

$$\frac{\text{Total Questions Asked} - \text{Total Questions Skipped}}{\text{Total Questions Asked}}$$

$$\text{Total Questions Asked}$$

The same calculation was done for all mail or online-based completed interviews at the end of field. The SSRS team reviewed cases that had a completion rate below 80%. Based on this review, three interviews were removed (France (n=1) and the U.S. (n=2)). In addition, nine completed interviews in the UK were removed due to interviewers providing the incorrect survey link to those doctors to complete online (the interviewer-only, webCATI links were provided for these n=9 interviews, which included programming notes, coding instructions, and non-response codes on each screen).

DETAILED WEIGHTING PROCEDURES BY COUNTRY

Overview

In the 2022 International Health Policy (IHP) Survey of Primary Care Providers, data from each country were weighted to ensure the final outcome was representative of the primary care physician (PCP) population, based on the population parameters and selected specialty types outlined in the table below. The weighting procedure accounted for the sample design and probability of selection, as needed, as well as differential non-response across known population parameters. For most countries, the weighting procedure replicated the 2019 weighting protocol.

TABLE 22: Post-Stratification Variables and Respondent Qualifications

	Post-stratification Variables	Respondent	Oversamples
Australia	Gender, age, urbanicity, region	General Practitioners	None
Canada	Gender, age, province	Family Medicine and General Practice - Generalists	All provinces except Ontario
France	Gender, age, region	General Practitioners	None
Germany	Gender, age, region, specialty	General Practitioners	None
Netherlands	Gender, age, region	General Practitioners	None
New Zealand	Gender, age, region	General Practitioners	None
Sweden	Gender, age and region	Primary Care Physicians	None
Switzerland	Gender, age, linguistic region	General Practitioners, Internists, and Pediatricians	Swiss Italian Region
UK	Gender, age, region	General Practitioners	None
US	Gender, age, region, specialty	Internal and Family Medicine Physicians, General Practitioners, and Pediatricians/Internal Medicine Pediatrics	Non-Pediatric Specialties

How to Analyze Data with Oversamples

It is a common practice to oversample certain groups of interest to provide larger sample sizes for analysis. When groups are oversampled, weighting will correct for the oversampling by “weighting down” the groups to their proper proportion of the sample.

It is important for researchers to understand the weighting implications of these oversamples. SSRS typically computes “balancing weights” which means that the weights across the entire sample sum to the total number of interviews. If we have oversampled a group, the sum of that group’s balancing weight will then be less than the number of interviews we completed with the group because that group has been weighted down in the aggregate. If such data were analyzed with a basic statistics package like SPSS, the margin of

error for the oversample population would reflect the weighted n-size and not the number of interviews which would lead to an overestimate of the sample variance.

The following table shows an example of population and interview n-sizes when an oversample is used. For this example, a main cross-section sample of 1,000 was combined with an oversample of 800 among some subpopulation of interest. While the researcher did 920 interviews with the oversample population, the statistical software will run statistical tests as though only 216 interviews were completed.

Example of Oversample N-Sizes

	Natural Population Distribution (%)	Example Study Sample Completes:			Weighted N-size
		Main Sample	Over-sample	Total	
Non-oversample population	88%	880 (88%)	0	880 (49%)	1,584 (88%)
Oversample population	12%	120 (12%)	800	920 (51%)	216 (12%)
Total	100%	1,000	800	1,800	1,800

There are two solutions to this problem. The first is to utilize a statistics package that can apply a Taylor Series Linearization to the data. Under this procedure, the researcher would enter a strata variable²³ into the statistics package that indicates the sample selections upon which under/oversampling occurred. In effect, this will allow the statistics package to calculate proper margins of error for estimates based on the true sample sizes of groups. Taylor Series Linearization will also account for the impact of any complex sample design features, such as stratification, on sample variances. The researcher will also attain a margin of error appropriate to the number of interviews rather than the weighted N-size, which can be a problem in some statistical software packages such as SPSS. Statistics packages with the capability to compute linearized variances estimates include SAS with the survey procedures module, R with the *survey* package, Stata, and SPSS with the Complex Samples module.

If one does not have access to such a package, SSRS will provide a secondary weight to be used to conduct analyses within oversampled groups or between oversampled groups and other respondents, as the main weight supplied with the data will be appropriate for analysis of the overall population only.

Researchers should be aware that these two methods will obtain equivalent point estimates; however, they may not obtain equivalent sample variances, meaning that results of statistical tests could differ depending on the method used. In general, when the two methods differ, Taylor Series Linearization will obtain the most accurate sample variances and statistical tests, both overall and within subgroups. Therefore, if the researcher has access to software that can conduct Taylor Series Linearization, this is the preferred method.

Regardless, SSRS will identify the strata and PSU variables whenever they are applicable, so that researchers can properly analyze their data with the correct margins of error.

²³ Or a Primary Sampling Unit (PSU) for a multi-stage sample design

Australia

The PCP data in Australia were weighted to account for: (1) differential sampling between the GPs from the MDA that were matched to TKW's database, and the GPs that were from the MDA but not TKW database, and (2) differential non-response along known geographic and demographic parameters.

The weighting was conducted in two stages; a base weight followed by post-stratification.

Base Weight:

Sampling Weight

The sampling weight, also referred to as a "design weight", adjusts for the specific process of sampling from the frame, and is calculated as the inverse of the selection probability for each sampled record from the frame. This corrects for the over-sampling of some strata and the under-sampling in others. Sampling weights were computed within the sample source strata. The sampling weight (d_{0i}) for each piece of sample drawn from stratum i is $d_{0i} = N_i/n_i$ where N_i is the total number of records in stratum i and n_i is the amount of sample drawn in stratum i .

Unknown eligibility adjustment

The unknown eligibility adjustment, a_1 , distributes the weights of cases whose eligibility cannot be determined among the cases for which eligibility is known, and can be expressed as:

$$a_1 = \begin{cases} \sum_{i \in s} d_{0i} / \sum_{i \in s, KN} d_{0i}, & i \in s, KN \\ 0, & i \in s, UNK \end{cases}$$

where d_{0i} is the base weight for case i , s is the entire sample, s, KN is the subset of sample for which eligibility status has been determined, and s, UNK is subset sample for which eligibility status could not be determined. This adjustment was computed within the sampling strata.

The unknown eligibility adjusted base weight, d_1 , for unit i is the product of the sampling weight and the unknown eligibility adjustment, or $d_{1i} = d_{0i}a_{1i}$.

Nonresponse adjustment

The next base weight adjustment distributes the weights of eligible non-responders among eligible responders. This nonresponse adjustment, a_2 , can be expressed as:

$$a_2 = \begin{cases} \sum_{i \in s, E} d_{1i} / \sum_{i \in s, ER} d_{1i}, & i \in s, ER \\ 1, & i \in s, IN \\ 0, & i \in s, ENR \end{cases}$$

where d_{1i} is the unknown eligibility adjusted base weight for case i , s, E is the set of all eligible sample units, s, ER is the set of all eligible respondents, s, IN are sample units that are ineligible and s, ENR are eligible nonrespondents (i.e., sample units that were determined to be eligible but without a completed survey). This adjustment was computed within the sampling strata.

The nonresponse adjusted base weight, d_{2i} , for unit i is the product of the sampling weight, the unknown eligibility adjustment, and the nonresponse adjustment, or $d_{2i} = d_{0i}a_{1i}a_{2i}$.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.²⁴

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, urbanicity, and region.

Benchmarks were derived from the National Health Workforce Dataset, Australian Government -- 2020 data.

TABLE 23: Weighted and Unweighted Distributions and Population Parameters for Australia

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	56.7%	52.7%	53.0%
Female	43.3%	47.3%	47.0%
AGE			
<35	4.4%	8.4%	9.0%
35-44	16.8%	26.4%	25.9%
45-54	27.7%	24.3%	25.0%
55-64	33.3%	24.7%	24.0%
65+	17.8%	16.2%	16.0%
URBANICITY			
Major Cities	74.5%	72.1%	72.3%
Inner Regional	17.4%	18.4%	18.2%
Outer Regional	6.9%	7.4%	7.3%
Remote	1.2%	2.1%	2.2%
REGION			
New South Wales (NSW)	31.8%	31.0%	30.9%
Australian Capital Territory (ACT)	0.3%	0.8%	1.7%
Victoria (VIC)	25.2%	25.6%	25.5%
Queensland (QLD)	23.7%	21.1%	20.8%
South Australia (SA)	6.2%	7.5%	7.3%
Western Australia (WA)	8.7%	10.2%	10.2%
Tasmania (TAS)	3.7%	3.0%	2.6%
Northern Territory (NT)	0.3%	0.8%	1.1%

²⁴ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

Weights were trimmed at the 4th and 96th percentiles to prevent individual interviews from having too much influence on the final results.

Canada

The PCP data in Canada were weighted to account for: (1) the over-representation of PCPs in some provinces; (2) the availability of an email address or not (since respondents with email addresses could be contacted both by mail and email); and (3) differential nonresponse along known geographic and demographic parameters.

The weighting was conducted in two stages; a base weight followed by post-stratification.

Base Weight:

Sampling Weight

The sampling weight, also referred to as a “design weight”, adjusts for the specific process of sampling from the frame, and is calculated as the inverse of the selection probability for each sampled record from the frame. This corrects for the over-sampling of some strata and the under-sampling in others. Sampling weights were computed within the province. The sampling weight (d_{0i}) for each piece of sample drawn from stratum i is $d_{0i} = N_i/n_i$ where N_i is the total number of records in stratum i and n_i is the amount of sample drawn in stratum i .

Unknown eligibility adjustment

The unknown eligibility adjustment, a_1 , distributes the weights of cases whose eligibility cannot be determined among the cases for which eligibility is known, and can be expressed as:

$$a_1 = \begin{cases} \sum_{i \in s} d_{0i} / \sum_{i \in s, KN} d_{0i}, & i \in s, KN \\ 0, & i \in s, UNK \end{cases}$$

where d_{0i} is the base weight for case i , s is the entire sample, s, KN is the subset of sample for which eligibility status has been determined, and s, UNK is subset sample for which eligibility status could not be determined. This adjustment was computed within province crossed by the email availability flag.

The unknown eligibility adjusted base weight, d_1 , for unit i is the product of the sampling weight and the unknown eligibility adjustment, or $d_{1i} = d_{0i}a_{1i}$.

Nonresponse adjustment

The next base weight adjustment distributes the weights of eligible non-responders among eligible responders. This nonresponse adjustment, a_2 , can be expressed as:

$$a_2 = \begin{cases} \sum_{i \in s, E} d_{1i} / \sum_{i \in s, ER} d_{1i}, & i \in s, ER \\ 1, & i \in s, IN \\ 0, & i \in s, ENR \end{cases}$$

where d_{1i} is the unknown eligibility adjusted base weight for case i , s, E is the set of all eligible sample units, s, ER is the set of all eligible respondents, s, IN are sample units that are ineligible and s, ENR are eligible nonrespondents (i.e., sample units that were determined to be eligible but without a completed survey). This adjustment was computed within province crossed by the email availability flag.

The nonresponse adjusted base weight, d_{2i} , for unit i is the product of the sampling weight, the unknown eligibility adjustment, and the nonresponse adjustment, or $d_{2i} = d_{0i}a_{1i}a_{2i}$.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.²⁵

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

In Canada, data were weighted by age and gender (for Ontario, Quebec and the rest of Canada) and by province. All benchmarks were derived from the CMA Masterfile, January 2022, Canadian Medical Association.

TABLE 24: Weighted and Unweighted Distributions and Population Parameters for Ontario

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	51.0%	52.4%	52.4%
Female	49.0%	47.6%	47.6%
AGE			
<35	14.6%	7.7%	7.7%
35-44	26.5%	24.8%	24.8%
45-54	18.5%	23.8%	23.8%
55-64	20.5%	24.0%	24.0%
65+	19.9%	19.7%	19.7%

TABLE 25: Weighted and Unweighted Distributions and Population Parameters for Quebec

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	38.9%	43.5%	43.5%
Female	61.1%	56.5%	56.5%
AGE			
<35	29.0%	13.1%	13.1%
35-44	20.1%	20.5%	20.5%
45-54	17.4%	17.9%	17.9%
55-64	21.2%	23.2%	23.2%

²⁵ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

65+	12.3%	25.3%	25.3%
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TABLE 26: Weighted and Unweighted Distributions and Population Parameters for the Rest of Canada

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	50.4%	55.6%	56.2%
Female	49.6%	44.4%	43.8%
AGE			
<35	13.8%	8.3%	8.0%
35-44	26.1%	26.5%	26.4%
45-54	24.8%	25.9%	25.9%
55-64	22.1%	24.0%	24.2%
65+	13.2%	15.2%	15.6%
PROVINCE			
Alberta	15.7%	31.0%	30.7%
British Columbia	13.4%	33.9%	34.7%
Manitoba	12.5%	7.7%	7.6%
New Brunswick	17.0%	6.2%	6.0%
Newfoundland	10.7%	5.0%	4.9%
Northwest Territories	0.5%	0.3%	0.3%
Nova Scotia	13.7%	6.5%	6.5%
Nunavut	0.3%	0.1%	0.1%
Prince Edward Island	1.9%	1.0%	0.9%
Saskatchewan	13.8%	8.0%	7.9%
Yukon Territory	0.4%	0.4%	0.4%

TABLE 27: Weighted and Unweighted Distributions by Province for Canada

	Unweighted (%)	Weighted (%)	Target (%)
PROVINCE			
Alberta	10.1%	13.6%	13.5%
British Columbia	8.6%	14.9%	15.2%
Manitoba	8.0%	3.4%	3.4%
New Brunswick	10.9%	2.7%	2.6%
Newfoundland	6.9%	2.2%	2.1%
Northwest Territories	0.3%	0.1%	0.1%
Nova Scotia	8.8%	2.9%	2.8%
Nunavut	0.2%	0.0%	0.0%
Ontario	10.3%	33.6%	33.6%
Prince Edward Island	1.2%	0.4%	0.4%
Quebec	25.6%	22.5%	22.5%
Saskatchewan	8.8%	3.5%	3.5%
Yukon Territory	0.3%	0.2%	0.2%

In the final weighting step, the weights were adjusted so that the share of each province would reflect the share of that province among Canadian PCPs.

Weights were trimmed at the 2nd and 98th percentiles to prevent individual interviews from having too much influence on the final results.

France

The PCP data in France were weighted to account for: (1) differential sampling across strata, and (2) differential non-response along known geographic and demographic parameters.

The weighting was conducted in two stages; a base weight followed by post-stratification.

Base Weight:

Sampling Weight

The sampling weight, also referred to as a “design weight”, adjusts for the specific process of sampling from the frame, and is calculated as the inverse of the selection probability for each sampled record from the frame. This corrects for the over-sampling of some strata and the under-sampling in others. Sampling weights were computed within the strata. The sampling weight (d_{0i}) for each piece of sample drawn from stratum i is $d_{0i} = N_i/n_i$ where N_i is the total number of records in stratum i and n_i is the amount of sample drawn in stratum i .

Unknown eligibility adjustment

The unknown eligibility adjustment, a_1 , distributes the weights of cases whose eligibility cannot be determined among the cases for which eligibility is known, and can be expressed as:

$$a_1 = \begin{cases} \sum_{i \in s} d_{0i} / \sum_{i \in s, KN} d_{0i}, & i \in s, KN \\ 0, & i \in s, UNK \end{cases}$$

where d_{0i} is the base weight for case i , s is the entire sample, s, KN is the subset of sample for which eligibility status has been determined, and s, UNK is subset sample for which eligibility status could not be determined. This adjustment was computed within the sampling strata.

The unknown eligibility adjusted base weight, d_1 , for unit i is the product of the sampling weight and the unknown eligibility adjustment, or $d_{1i} = d_{0i}a_{1i}$.

Nonresponse adjustment

The next base weight adjustment distributes the weights of eligible non-responders among eligible responders. This nonresponse adjustment, a_2 , can be expressed as:

$$a_2 = \begin{cases} \sum_{i \in s, E} d_{1i} / \sum_{i \in s, ER} d_{1i}, & i \in s, ER \\ 1, & i \in s, IN \\ 0, & i \in s, ENR \end{cases}$$

where d_{1i} is the unknown eligibility adjusted base weight for case i , s, E is the set of all eligible sample units, s, ER is the set of all eligible respondents, s, IN are sample units that are ineligible and s, ENR are eligible nonrespondents (i.e., sample units that were determined to be eligible but without a completed survey). This adjustment was computed within the sampling strata crossed.

The nonresponse adjusted base weight, d_{2i} , for unit i is the product of the sampling weight, the unknown eligibility adjustment, and the nonresponse adjustment, or $d_{2i} = d_{0i}a_{1i}a_{2i}$.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.²⁶

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, and region. All benchmarks were derived via the ASIP-Santé RPPS, DREES processing - data as of 1 January 2022.

TABLE 28: Unweighted Distributions and Population Parameters for France

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	49.6%	54.3%	54.4%
Female	50.4%	45.7%	45.6%
AGE			
<35	19.2%	15.9%	15.8%
35-44	30.8%	20.9%	20.8%
45-54	16.0%	17.3%	17.2%
55-64	26.6%	30.2%	30.1%
65+	7.4%	15.8%	16.1%
PROVINCE			
Grand Est	12.6%	8.4%	8.3%
Nouvelle Aquitaine	12.6%	10.2%	10.3%
Auvergne-Rhône-Alpes	14.9%	12.8%	12.9%
Bourgogne, Franche-Comté	5.8%	4.1%	4.1%
Bretagne	4.2%	5.7%	5.8%
Centre-Val de Loire	3.6%	3.1%	3.1%
Corse	0.6%	0.6%	0.6%
Île-de-France	11.3%	16.8%	16.9%
Occitanie	9.1%	9.9%	9.9%
Hauts-de France	11.5%	8.7%	8.6%
Normandie	3.0%	4.6%	4.6%

²⁶ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

Pays de la Loire	3.4%	5.7%	5.7%
Provence-Alpes, Côte-d'Azur	7.4%	9.2%	9.1%

Weights were trimmed at the 2nd and 98th percentiles to prevent individual interviews from having too much influence on the final results.

Germany

The PCP data in Germany were weighted to account for differential non-response along known geographic and demographic parameters.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.²⁷

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, and region²⁸.

Benchmarks were derived from The National Association of Statutory Health Insurance Physicians (NASHIP): " Statistische Informationen - Bundesarztregister 31.12.2021".

TABLE 29: Weighted and Unweighted Distributions and Population Parameters for Germany

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	51.7%	51.3%	51.2%
Female	48.3%	48.7%	48.8%
AGE			
<35	2.3%	1.1%	1.1%
35-44	18.9%	17.1%	17.1%
45-54	32.9%	28.4%	28.3%
55-64	35.9%	34.6%	34.5%
65+	9.9%	18.8%	19.0%
REGION			
Niedersachsen, Rheinland Pfalz, Hessen, & Baden Wuerttemberg	74.4%	34.7%	34.6%
Rest of the country	25.6%	65.3%	65.4%

²⁷ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

²⁸ To account for the inconsistencies in the fieldwork protocols across the German states which resulted in disproportionate response by region, Region was structured as a two categories variable: (1) Niedersachsen, Rheinland Pfalz, Hessen, & Baden Wuerttemberg, and (2) the rest of Germany.

Weights were trimmed at the 2nd and 98th percentiles to prevent individual interviews from having too much influence on the final results.

The Netherlands

The PCP data in the Netherlands were weighted to account for differential non-response along known geographic and demographic parameters.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.²⁹

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age and region. Benchmarks were derived from 2017 through 2019 data from the Netherlands Institute for Health Services Research (NIVEL).

TABLE 30: Weighted and Unweighted Distributions and Population Parameters for the Netherlands

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	51.2%	42.3%	42.0%
Female	48.8%	57.7%	58.0%
AGE			
<35	4.4%	9.7%	10.5%
35-44	29.3%	30.5%	30.2%
45-54	29.7%	28.9%	28.6%
55-64	31.8%	28.1%	27.8%
65+	4.9%	2.9%	2.8%
REGION			
Drenthe	1.8%	2.9%	3.0%
Flevoland	1.3%	2.0%	2.3%
Friesland	4.7%	3.8%	3.8%
Gelderland	13.3%	12.9%	12.8%
Groningen	3.9%	3.4%	3.4%
Limburg	7.0%	6.7%	6.7%
Noord-Brabant	17.7%	14.3%	14.1%
Noord-Holland	14.4%	16.8%	16.8%
Overijssel	5.5%	6.3%	6.4%
Utrecht	6.8%	8.3%	8.2%

²⁹ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

Zeeland	1.9%	2.1%	2.1%
Zuid-Holland	21.7%	20.5%	20.5%

Weights were trimmed at the 2nd and 98th percentiles to prevent individual interviews from having too much influence on the final results.

New Zealand

The PCP data in New Zealand were weighted to account for differential non-response along known geographic and demographic parameters.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.³⁰

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, and region. Benchmarks were derived from the Royal New Zealand College of General Practitioners' 2020 Workforce Survey.

TABLE 31: Weighted and Unweighted Distributions and Population Parameters for New Zealand

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	42.2%	46.5%	46.7%
Female	57.8%	53.5%	53.3%
AGE			
<35	4.5%	12.0%	14.0%
35-44	18.6%	22.8%	22.3%
45-54	24.4%	19.4%	19.0%
55-64	38.2%	29.1%	28.4%
65+	14.3%	16.7%	16.3%
REGION			
Northern/Auckland	29.2%	36.2%	36.8%
Central North Island	18.0%	19.1%	19.3%
Lower North Island	20.4%	18.3%	18.2%
South Island	32.4%	26.4%	25.8%

³⁰ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

Weights were trimmed at the 4th and 96th percentiles to prevent individual interviews from having too much influence on the final results.

Sweden

The PCP data in Sweden were weighted to account for differential non-response along known geographic and demographic parameters.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.³¹

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, and region. The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, and region. Benchmarks for Age and Gender were derived from the Swedish population registry. Benchmarks for Region were derived from the Occupational Register (YREG).

TABLE 32: Weighted and Unweighted Distributions and Population Parameters for Sweden

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	42.7%	44.5%	44.5%
Female	57.3%	55.5%	55.5%
AGE			
<35	13.8%	15.3%	15.3%
35-44	36.7%	32.4%	32.3%
45-54	22.7%	22.6%	22.6%
55-64	16.8%	18.3%	18.3%
65+	10.0%	11.4%	11.4%
REGION			
Stockholm/Gotland	17.9%	21.0%	21.0%
Uppsala	3.3%	3.2%	3.2%
Södermanland	2.4%	3.0%	3.1%
Östergötland	4.5%	5.3%	5.3%
Jönköping	5.0%	3.9%	3.9%
Kronoberg	1.6%	1.5%	1.5%
Kalmar	2.3%	2.4%	2.4%
Blekinge	1.3%	0.9%	0.9%
Skåne	15.1%	12.6%	12.6%

³¹ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

Halland	3.3%	3.7%	3.7%
Västra Götaland	18.3%	18.8%	18.8%
Värmland	2.9%	2.7%	2.7%
Örebro	3.9%	4.1%	4.1%
Västmanland	1.8%	2.2%	2.2%
Dalarna	2.8%	2.6%	2.6%
Gävleborg	2.4%	2.2%	2.2%
Västernorrland	2.1%	1.8%	1.8%
Jämtland	2.7%	2.2%	2.2%
Västerbotten	3.4%	3.5%	3.5%
Norrbottn	2.9%	2.2%	2.2%

Weights were trimmed at the 2nd and 98th percentiles to prevent individual interviews from having too much influence on the final results.

Switzerland

The PCP data in Switzerland were weighted to account for: (1) the over/under sampling of PCPs in some linguistic regions and (2) differential non-response along known geographic and demographic parameters.

The weighting was conducted in two stages; a base weight followed by post-stratification.

Base Weight: Bias was addressed by applying weights to the data, so that the breakdown of PCPs by province is balanced to the breakdown in the sampling frame (the Swiss Medical Association (FMH) sample).

TABLE 33: Linguistic Region Design Weight

Linguistic Region	FMH Sample (%)	Data (%)	Weight
German	68.0%	70.5%	0.97
French	26.9%	21.9%	1.23
Italian	5.1%	7.7%	0.66

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.³²

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

³² <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, and linguistic region. All benchmarks were derived from The Swiss Medical Association (FMH) member file, February 2022.

TABLE 34: Weighted and Unweighted Distributions and Population Parameters for Switzerland

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	53.7%	54.3%	54.3%
Female	46.3%	45.7%	45.7%
AGE			
<35	3.0%	1.9%	1.9%
35-44	25.0%	20.6%	20.6%
45-54	29.9%	29.1%	28.9%
55-64	28.5%	31.2%	31.2%
65+	13.6%	17.2%	17.3%
LINGUISTIC REGION			
German	70.5%	68.0%	68.0%
French	21.9%	26.8%	26.9%
Italian	7.7%	5.2%	5.1%

Weights were trimmed at the 2nd and 98th percentiles to prevent individual interviews from having too much influence on the final results.

The United Kingdom

The PCP data in the UK were weighted to account for: (1) the oversampling of PCPs in some regions and (2) differential non-response along known geographic and demographic parameters.

The weighting was conducted in two stages; a base weight followed by post-stratification.

Base Weight: Weights were applied to balance the distribution of PCPs by region to the breakdown according to the General Medical Council (GMC).

TABLE 35: Region Design Weight

Region ³³	GMC (%)	Data (%)	Weight
England excluding London	67.1%	48.3%	1.4
London	13.8%	20.5%	0.7
Scotland	11.2%	12.7%	0.9
Wales	4.6%	10.5%	0.4
Northern Ireland	3.3%	8.0%	0.4

³³ Region (S4 in the dataset) is the PSU variable. Please refer to the "How to Analyze Polling Data with Oversample" section for more information.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.³⁴

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, and region. All benchmarks were derived from the General Practitioner Register from the General Medical Council, as of February 1, 2022.

TABLE 36: Weighted and Unweighted Distributions and Population Parameters for the UK

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	67.1%	42.1%	41.8%
Female	13.8%	57.9%	58.2%
AGE			
<35	22.4%	12.6%	12.1%
35-44	50.0%	37.6%	36.4%
45-54	16.6%	25.1%	24.4%
55-64	8.6%	18.8%	19.7%
65+	2.4%	6.0%	7.4%
REGION			
England excluding London	48.3%	66.0%	67.1%
London	20.5%	14.2%	13.8%
Scotland	12.7%	11.5%	11.2%
Wales	10.5%	4.8%	4.6%
Northern Ireland	8.0%	3.4%	3.3%

Weights were trimmed at the 4th and 96th percentiles to prevent individual interviews from having too much influence on the final results.

The United States

The PCP data in the US were weighted to account for: (1) the oversampling of non-pediatric specialties, (2) the availability of an email address or not (since respondents with email addresses could be contacted both by mail and email), and (3) differential non-response along known geographic and demographic parameters.

The weighting was conducted in two stages; a base weight followed by post-stratification.

³⁴ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

Base Weight:

Sampling Weight

The sampling weight, also referred to as a “design weight”, adjusts for the specific process of sampling from the frame, and is calculated as the inverse of the selection probability for each sampled record from the frame. This corrects for the over-sampling of some strata and the under-sampling in others. Sampling weights were computed within the specialty strata. The sampling weight (d_{0i}) for each piece of sample drawn from stratum i is $d_{0i} = N_i/n_i$ where N_i is the total number of records in stratum i and n_i is the amount of sample drawn in stratum i .

Unknown eligibility adjustment

The unknown eligibility adjustment, a_1 , distributes the weights of cases whose eligibility cannot be determined among the cases for which eligibility is known, and can be expressed as:

$$a_1 = \begin{cases} \sum_{i \in s} d_{0i} / \sum_{i \in s, KN} d_{0i}, & i \in s, KN \\ 0, & i \in s, UNK \end{cases}$$

where d_{0i} is the base weight for case i , s is the entire sample, s, KN is the subset of sample for which eligibility status has been determined, and s, UNK is subset sample for which eligibility status could not be determined. This adjustment was computed within the specialty sampling strata crossed by the email availability flag.

The unknown eligibility adjusted base weight, d_1 , for unit i is the product of the sampling weight and the unknown eligibility adjustment, or $d_{1i} = d_{0i}a_{1i}$.

Nonresponse adjustment

The next base weight adjustment distributes the weights of eligible non-responders among eligible responders. This nonresponse adjustment, a_2 , can be expressed as:

$$a_2 = \begin{cases} \sum_{i \in s, E} d_{1i} / \sum_{i \in s, ER} d_{1i}, & i \in s, ER \\ 1, & i \in s, IN \\ 0, & i \in s, ENR \end{cases}$$

where d_{1i} is the unknown eligibility adjusted base weight for case i , s, E is the set of all eligible sample units, s, ER is the set of all eligible respondents, s, IN are sample units that are ineligible and s, ENR are eligible nonrespondents (i.e., sample units that were determined to be eligible but without a completed survey). This adjustment was computed within the specialty sampling strata crossed by the email availability flag.

The nonresponse adjusted base weight, d_2 , for unit i is the product of the sampling weight, the unknown eligibility adjustment, and the nonresponse adjustment, or $d_{2i} = d_{0i}a_{1i}a_{2i}$.

Post-Stratification: Post-stratification was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure.³⁵

³⁵ <https://community.ibm.com/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=17fd2f0b-7555-6ccd-c00c-5388b082161b&forceDialog=0>

Missing data in the raking variables were imputed using hot decking. Hot deck imputation replaces the missing values of a respondent randomly with another similar respondent without missing data. Hot decking was done using an SPSS macro detailed in 'Goodbye, Listwise Deletion: Presenting Hot Deck Imputation as an Easy and Effective Tool for Handling Missing Data' (Myers, 2011).

The PCP survey data were balanced to the distribution of the PCPs along the following parameters: gender, age, region and specialty type. All benchmarks were derived via the American Medical Association (AMA) file from RediData 2022.

TABLE 37: Weighted and Unweighted Distributions and Population Parameters for the US

	Unweighted (%)	Weighted (%)	Target (%)
GENDER			
Male	56.8%	53.9%	53.8%
Female	43.2%	46.1%	46.2%
AGE			
<35	4.9%	4.7%	4.7%
35-44	19.2%	20.4%	20.5%
45-54	25.7%	26.8%	26.8%
55-64	27.5%	25.5%	25.4%
65+	22.8%	22.6%	22.6%
REGION			
East	19.1%	18.9%	18.8%
Midwest	20.8%	21.0%	21.1%
South	34.3%	35.3%	35.3%
West	25.9%	24.8%	24.8%
SPECIALTY TYPE			
Internal medicine physicians	34.4%	36.0%	35.9%
Family medicine physicians	49.3%	39.7%	39.6%
General practitioners	2.0%	1.8%	1.8%
Internal medicine – Pediatric/Pediatricians	14.4%	22.5%	22.7%

Weights were trimmed at the 2nd and 98th percentiles to prevent individual interviews from having too much influence on the final results.

DESIGN EFFECT AND MARGIN OF SAMPLING ERROR

Post-data collection statistical adjustments require analysis procedures that reflect departures from simple random sampling. SSRS calculates the effects of these design features so that an appropriate adjustment can be incorporated into tests of statistical significance when using these data. The so-called "design effect" or *deff* represents the loss in statistical efficiency that results from a disproportionate sample design and systematic non-response.

SSRS calculates the composite design effect for a sample of size *n*, with each case having a weight, *w*, as:³⁶

$$deff = \frac{n \sum w^2}{(\sum w)^2}$$

The survey's margin of error is the largest 95% confidence interval for any estimated proportion based on the total sample — the one around 50%. Margins of error for subgroups will be larger.

It is important to remember that the sampling fluctuations captured in the margin of error are only one possible source of error in a survey estimate. Other sources, such as respondent selection bias, questionnaire wording, and reporting inaccuracy, may contribute additional error of greater or lesser magnitude.

TABLE 38: Design Effect and Margin of Error by Country

	Design Effect	Margin of Error	Population Universe
Australia	1.33	6.3	33,120
Canada	1.91	3.5	45,813
Quebec	1.23	5.6	10,314
Ontario	1.05	8.2	15,414
Rest of Canada	1.71	4.2	20,085
France	1.38	5.0	55,253
Germany	2.00	4.5	55,116
Netherlands	1.14	4.2	10,088
New Zealand	1.22	5.6	5,634
Sweden	1.03	2.2	7,584
Switzerland	1.05	3.0	8,307
UK	1.48	3.8	55,215
US	1.08	3.1	203,292

³⁶ Kish, L. (1992). Weighting for Unequal Pi. Journal of Official Statistics, Vol. 8, No.2, 1992, pp. 183-200.

DELIVERABLES/UPDATES

Bi-weekly and Periodic Updates

Throughout the field period, SSRS provided the Fund with bi-weekly updates of key information tracking overall progress in each country. These reports, designed to provide snapshot information of key variables of interest, included tables for completes per mode of interview by gender, age, region, and language of interview (where applicable). Along with the bi-weekly data reports, SSRS reported on any field-related concerns via conference calls.

In May and April 2022, SSRS provided each international partner with an interim status update on data collection, including details on challenges experienced across countries with the level of response being observed as well as plans to finish data-collection on time and within budget.

Preliminary Data

SSRS delivered a preliminary weighted SPSS dataset to The Commonwealth Fund in August 2022.

Final Data

SSRS delivered the following to The Commonwealth Fund and sponsoring organizations: (1) final weighted SPSS dataset, (2) final weighted, all-country and country-specific banners in Microsoft Word and Excel formats, (3) final methodology report, (5) final versions of the questionnaires in English as well as the translated versions, (6) final created variable and banner specification memos.