SECTION 59 INVESTIGATION

Established in terms of Section 7(a)(b)(c)(d), 8(a) and (k) and 9(2) of the Medical Schemes Act, 131 of 1998

Final Investigation Report

INQUIRY INTO ALLEGATIONS OF UNFAIR RACIAL DISCRIMINATION AND PROCEDURAL UNFAIRNESS BY MEDICAL SCHEMES

25 APRIL 2025

Adv Tembeka Ngcukaitobi SC | Adv Adila Hassim SC | Adv Kerry Williams

Secretariat: Lawtons Incorporated, practising as Lawtons Africa

Customer Care: 0861 123 267
Address: Block A, Eco Glades 2 Office Park, 420 Witch-Hazel Avenue, Eco Park, Centurion, 0157
Email: cmsinvestigation@medicalschemes.co.za
Website: www.cmsinvestigation.org.za

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COMBINED INDEX

SECTION 1: DEFINITIONS

1. "**Act**" means Medical Schemes Act, 1998;

2. "**administrator**" means an administrator of a medical scheme and includes administrators such as Discovery and Medscheme;

3. "**AOD**" means acknowledgment of debt agreement entered into by a Scheme and a provider;

4. "**black**" or "**Black**" bears the same meaning as it does in Dr Kimmie's expert reports and is intended to refer to individuals who identify as black, Indian and/or coloured;

5. "**CMS**" means the Council for Medical Schemes;

6. "**Constitution**" means the Constitution of the Republic of South Africa, 1996;

7. "**Discovery**" means Discovery Health (Pty) Ltd the administrator of DHMS;

8. "**DHMS**" means Discovery Health Medical Scheme ("**DHMS**");

9. "**Equality Act**" means the Promotion of Equality and Prevention of Unfair Discrimination Act, 2000;

10. "**FWA**" means fraud, waste and abuse, a term which is not defined in the Medical Schemes Act but is commonly used in the industry;

11. "**FWA Outcomes Data**" means the data which Discovery, Medscheme and GEMS provided to the Panel, namely the data recording the providers who were

found guilty of FWA from 2012 to June 2019;

12. "**FWA systems**" means the systems used by the Schemes and Administrators to detect, investigate and determine providers who engage in FWA;

13. "**GEMS**" means the Government Employees Medical Scheme;

14. "**HFMU**" means Healthcare Fraud Management Unit;

15. "**HPCSA**" means the Health Professions Council of South Africa;

16. "**Interim Report**" means the Interim Report, dated 16 December 2020, and released by the Panel in January 2021.

17. "**Medscheme**" means Medscheme Holdings (Pty) Limited;

18. "**Minister**" means the Minister of Health;

19. "**non-black**" or "**non-Black**" bears the same meaning as it does in Dr Kimmie's expert reports and is intended to refer to individuals who do not identify as black, Indian and/or coloured;

20. "**PCNS**" means the practice code numbering system owned by the Board of Healthcare Funders and is a PCNS number is a practice number allocated to health care providers;

21. "**Panel**" means the Section 59 Investigation Panel;

22. "**providers**" mean health care providers ordinarily registered in terms of legislation requiring registration to practice;

23. “**Polmed**” means the South African Police Service Medical Scheme;

24. “**scheme**” means a medical scheme and includes medical schemes such as Polmed, GEMS and DHMS;

25. “**Scheme**” and “**Schemes and Administrators**” is a collective term for schemes and administrators and depending on the context is used to refer to Discovery, DHMS, GEMS and Medscheme;

26. “**TOR**” means the Panels Terms of Reference, dated 25 June 2019.

SECTION 2: BACKGROUND AND PURPOSE OF THE FINAL REPORT

27. The preamble to the Constitution calls upon everyone "*to improve the quality of life of all citizens and free the potential of each person*". Systemic inequalities- arising from centuries of injustice, racism, disadvantage and marginalisation of Black people - make such an aspiration impossible. The Constitution is therefore concerned with identifying and rooting out systemic inequalities. The right to equality provides that everyone is equal before the law and has the right to the equal protection and benefit of the law.[1] It also provides that equality includes the full enjoyment of all rights and freedoms.[2] This too is a call, through the right to equality, to identify and root out systemic inequalities.

28. This investigation, through its course, has become focused on how to determine if there is a systemic flaw in the Schemes and Administrators FWA systems, particularly the part of the system which implements the Act and entitles Schemes to claw back monies for providers where the Schemes have suffered loss. The Panel is concerned with any systemic flaws[3] in the implementation of the FWA systems - as they may result in procedurally unfair treatment of all providers and because they may result in black providers being treated differently from non-black providers.

29. The purpose of the prohibition of unfair discrimination in the Constitution is to:

> "*protect persons against treatment which amounts to unfair discrimination; it is not to punish those responsible for such treatment. In many cases,*

[1] Section 9(1).

[2] Section 9(2).

[3] The Panel was not constituted to resolve individual complaints.

particularly those in which indirect discrimination is alleged, the protective purpose would be defeated if the persons complaining of discrimination had to prove not only that they were unfairly discriminated against but also that the unfair discrimination was intentional. This problem would be particularly acute in cases of indirect discrimination where there is almost always some purpose other than a discriminatory purpose involved in the conduct or action to which objection is taken."[4]

30. This Final Report should be read with this Constitutional purpose in mind. The Final Report is not concerned with historical blame; but it concerned with the future protection and realisation of Constitutional aspirations.

Background

31. In early 2019, a number of black health care providers and members of Solutionist Thinkers and the NHCPA made allegations that they were being treated unfairly by Schemes and Administrators based on race and ethnicity.

32. The CMS launched an investigation into these allegations in terms of its statutory mandate. This led to the establishment of an independent panel to conduct an investigation into these allegations and to report on its recommendations to the CMS. The Panel has become known as the Section 59 Investigation Panel (defined as the "**Panel**"), and consists of the authors of this Final Report.

33. The CMS published the Panel's TOR on 25 June 2019. The complaints, objective, mandate and functioning of the Panel are set out in its TOR. The TOR included a call to any interested persons to make written submissions in

[4] *City Council of Pretoria v Walker* 1998 (2) SA 363 (CC), para 43.

response to the items listed in the TOR. Thereafter, in July 2019, the Panel received hundreds of written submissions.

34. The written submissions alleged that the schemes were intimidating and bullying providers through the implementation of their FWA systems, including by refusing to reimburse providers directly and coercing them into agreeing to AODs. The schemes were alleged to be treating providers unfairly and in particular were alleged to be targeting black providers. The NHCPA explained that it had anecdotal evidence that the schemes' forensic audit process was more prevalent among black providers and pointed out that the Panel could obtain the empirical information through its investigation.[5]

35. As a result of these written submissions the Panel decided to appoint its own experts. The written submissions suggested, when considered holistically that there may be a systemic issue with the manner in which the Schemes and Administrators were implementing their FWA systems. However, it was difficult to identify such a systemic issue with any accuracy from the written submissions.

36. The Panel therefore appointed its own experts to assist with the investigation. These experts included Dr Zaid Kimmie ("**Dr Kimmie**") an independent expert who specialises in statistics, statistical modelling, mathematical modelling and the analysis of data, particularly survey data.

37. The Panel also published its Rules of Procedural and its Working Methods. In

[5] NHCPA submission, para 55. The NHCPA also pointed out that GEMS had published a list of providers who members should not consult – the notorious "black list". The list was primarily made up of black providers (para 100). Further of the 56 fraud cases lodged with the HPCSA in May and June 2019, 36 cases were lodged against black providers (para 101).

performing its function, the Panel was guided by the principles of transparency, fairness, and natural and open justice.

38. During the course of 2019 to 2020 the Panel heard evidence from multiple stakeholders, including Schemes and Administrators, both black and non-black providers, and various other private and public entities.

39. As a result of Dr Kimmie's early input, that it was possible to measure differential outcomes, the Panel requested the FWA Outcomes Data from Discovery, GEMS and Medscheme from 2012 to June 2019. The FWA Outcomes Data is a recordal of the providers who were found guilty of FWA by each of the relevant Schemes during the aforementioned time period.

40. Dr Kimmie was able to racialise this FWA Outcomes Data – in other words, with reasonable accuracy he was able to determine the race of each provider in the data. With this racialised FWA Outcomes Data in hand, Dr Kimmie then conducted a statistical analysis on the data which ultimately found that across the board (regardless of the Scheme or Administrator involved; and generally in relation to almost all of the health care disciplines), Black providers were much more likely than non-Black providers to have been found guilty of FWA by the Schemes and Administrators concerned. This greater likelihood was measured in what has become known as a "**risk ratio**". If Black providers were more likely to have been found guilty of FWA then they (as a population in the particular segments of Dr Kimmie's analysis) would have a risk ratio of greater than one.

41. Ordinarily, and assuming a perfect and equal world, the provider population groups (Black and Non-black) should have an equal chance of being found guilty

of FWA and would therefore have a risk ratio of one.

42. A risk ratio which is significantly greater than one is out of the ordinary. The risk ratio is greater than one only if a particular provider population group was more likely to commit FWA; or if those responsible for the FWA Outcomes Data (the Schemes and Administrators) more often than not found that a particular provider population group was guilty of FWA.

43. Dr Kimmie published his results, namely the risk ratios for each Scheme and Administrator and multiple providers groups, in his First Report, which was released in November 2020. Dr Kimmie gave evidence to the Panel in November 2020 and explained the contents of his First Report. The Schemes and Administrators were given an opportunity to comment on Dr Kimmie's First Report, which they duly did. In October 2020, Dr Kimmie provided the Panel with a second report assessing the Schemes and Administrators comments. These reports will be referred to as "**Dr Kimmie's First Report**" and "**Dr Kimmie's Second Report**".

44. The Panel assessed all the written submissions, it heard all the evidence and it considered every response and further written submission made by every stakeholder. The body of evidence was enormous and it is fair to say consumed many hours to process and analyse. The laws governing the implementation of FWA systems is by no means clear. Further, equality law in South Africa is particularly dynamic and constantly in development – bearing in mind its sets out to correct many of the mistakes and injustices of South Africa's collective past.

45. The Panel announced that it was to publish its Interim Report in early 2021. This

announcement was followed by an urgent application by GEMS which attempted to prevent the publication of the Interim Report. The CMS elected not to support the Panel and did not oppose GEMS' application. The Panel decided to oppose the application because it believed there was a public interest in the content of the Interim Report being made public and that it had a duty to give effect to the TOR.

46. The High Court dismissed GEMS' application and the Interim Report was published for comment in late January 2021. The Interim Report included Dr Kimmie's First and Second Reports as annexures.

The hiatus in the investigation, the reappointment of the Panel and further submissions and affidavits

47. The Panel's work in processing the comments on the Interim Report and progressing its investigation so that it could publish a Final Report experienced a hiatus during the course of 2021 to 2023.

48. The hiatus ended in or about mid-2023, when the Panel was briefed by the CMS to complete the Final Report. Because there had been such a long time between receiving comments on the Interim Report and the resumption of the Panel's work, the Panel decided to convene a further set of hearings, and requested stakeholders to make legal submissions on the Interim Report.

49. During these hearings, which took place in June 2023, it became clear that from mid-2021 to mid-2023 there were numerous developments in relation to the manner in which Schemes and Administrators were implementing their FWA

systems.

50. A number of parties making legal submissions therefore requested the Panel to allow a further round of factual submissions so that the Panel was able to determine what might have changed during the course of 2021 to 2023.

51. Discovery was particularly insistent in its request to place further facts before the Panel in relation to these developments. It argued that should the Panel not allow these facts to be introduced into the investigation, the investigation would be rendered unfair and any findings and recommendations by the Panel may be inappropriate or irrelevant.[6] Discovery and others indicated that there were highly relevant facts which they wished to place before the Panel.

52. As a result the Panel allowed parties to place further facts before the Panel regarding any developments that have taken place between 2021 and 2023. The Panel accordingly received further affidavit evidence from a number of stakeholders in July 2023.

The third and further expert report and comments thereon

53. Some of the comments on the Interim Report in April 2021 and some of the legal submissions in June 2023 raised criticisms and concerns with the statistical analysis of the FWA Outcomes Data conducted by Dr Kimmie in his two reports.

54. The Panel accordingly requested Dr Kimmie to approach the criticisms and concerns, as he had always done, with an open-mind and identify which

[6] Discovery's legal submissions, dated 19 June 2023.

criticisms and concerns held the most weight. Based on Dr Kimmie's feedback, the Panel then requested him to re-do his analysis taking the most pertinent criticisms into account.

55. We point out that the Panel did not begin the investigation process with any pre-conceived ideas. The Panel approached the investigation with an open mind. The outcomes which were found to exist in the data analysis were the product of the evidence presented. The submissions from the Schemes were also considered without any predisposition.

56. By July 2023, bearing in mind the time that had passed since the inception of the investigation, the Panel wanted to be sure that the expert advice it was receiving was as accurate as possible. Dr Kimmie accordingly re-did parts of his analysis and, firstly, adapted his racialisation of the data to exclude corporate practices and, secondly, in determining the risk ratio completed a further analysis which accounted for the number of interactions that each provider had with the relevant Scheme or Administrator. These issues were raised by the Schemes and Administrators as criticisms of Dr Kimmie's First Report.

57. Dr Kimmie provided the Panel with a further Report in November 2023 ("**Dr Kimmie's Third Report**"). It is attached as Annexure A. Its findings are summarised in the sections which follow, but in sum, the changes which Dr Kimmie made did not fundamentally change the risk ratios applicable to Black provider populations.

58. The Schemes and Administrators commented on Dr Kimmie's Third Report, and by March 2024 the investigation by the Panel, which included all the comments

on the Panel's interim findings and recommendations, was finally complete.

59. That means that the last set of comments, before this Final Report, were made in March 2024.

The purpose of the Final Report

60. The Panel is now called upon to issue its Final Report on the complaints and allegations in the TOR.

61. In doing so the Panel is still seized with the analysis of the FWA Outcomes Data by Dr Kimmie – in the form of his three reports. The Panel is also seized with a historic body of written submissions, affidavits, oral testimony and legal argument. It also has the benefit of more recent legal argument, further affidavit evidence explaining the developments in the last few years and finally further legal and expert submissions on Dr Kimmie's Third Report.

62. The Final Report does not repeat what was explained in the Interim Report. Where the Panel still endorses its approach in the Interim Report it will say as much. This Final Report accordingly replaces the Interim Report and reflects the Panel's findings and recommendations to the CMS.

63. In the Interim Report, the Panel adopted a framework for the legal analysis of the evidence presented. While accepting that the Panel is not a court of law, but an investigative body, the Panel applied the anti-discrimination provisions of section 9(4) of the Constitution,[7] which states that *"[no] person may unfairly discriminate*

[7] None of the inputs received suggested that the framework of section 9 of the Constitution is not the correct framework to apply in this investigation.

directly or indirectly against anyone on one or more grounds in terms of subsection (3). National legislation must be enacted to prevent or prohibit unfair discrimination."[8]

64. The Panel is grateful for the input from all stakeholders and for the manner in which all stakeholders conducted themselves over what has now been a very arduous investigation over a lengthy period.

65. The Panel wishes to emphasise that any finding relating to race discrimination and a recommendation based on this finding is not a finding that the Scheme and Administrators are racist. In the public domain it appears that the concept of engaging in discrimination and being a racist are too easily conflated. The former – which may mean the FWA system produces disparate outcomes based on race – demonstrates that there are probably errors in the FWA systems which must be corrected. There are in all likelihood numerous systems in the world which would produce similar differential outcomes – and the purpose of the Constitution and those tasked with implementing it – is to constantly strive to undo these unfair systems. It is rightly a work in progress which requires constant monitoring and vigilance.

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[8] The legislation referred to in the section is the Promotion of Equality and Prevention of Unfair Discrimination Act, 2000 (defined as the "**Equality Act**"). Section 9(3) provides:

> "*The state may not unfairly discriminate directly or indirectly against anyone on one or more grounds, including race, gender, sex, pregnancy, marital status, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, culture, language and birth.*"

SECTION 3: THE INTERIM REPORT AND ITS FINDINGS

UNFAIR DISCRIMINATION

66. In the Interim Report, the Panel found that Medscheme, GEMS and Discovery were responsible for unfair racial discrimination against black providers between 2012 and 2019 as a result of their respective FWA systems.

67. The basis for this finding was evidence from black providers about their experience of discrimination, and evidence from two of the Panel's experts Professor Melissa Steyn and Dr Zaid Kimmie.[9]

68. The Panel explained that although it had received hundreds of complaints of discrimination and unfair treatment, the many individual complaints did not prove differential treatment.[10] Further a number of complaints and submissions were made by non-black providers. Notably the complaints themselves do not prove unfair discrimination – as the Schemes pointed out, the complaints were answered by each of them as part of the process before the Panel.[11] The Panel did not conduct a discrimination analysis in respect to each individual complaint. This was not the mandate of the Panel. The investigatory approach of the Panel was, in any event, not suited to conduct an individualised evaluation of each complaint. The approach of the Panel was to make use of a much larger data set over a sufficiently long period of time to investigate whether the outcomes were

[9] A number of parties have mistakenly assumed that Adv Hasina Cassim was an expert appointed by the Panel. Adv Cassim was not an expert appointed by the Panel. She independently made submissions as a result of his personal views on the issue arising in the investigation. Any public references by Adv Ngcukaitobi that Adv Cassim was an expert appointed by the Panel were corrected.

[10] Interim Report, para 433.

[11] Interim Report, paras 438.9 – 440 read with para 446-447 and 453.

discriminatory in effect, even if not in intent.

69. The Panel considered the responses to the complaints and in doing so it was clear that the complaints could not be decided or resolved by the Panel. The black providers believed they were being targeted because of their race and the Schemes said they were targeting any provider who had engaged in FWA.

70. Bearing this difficultly in mind, the Panel explained that it was not going to resolve any complaints and rather that its investigation was focussed on identifying trends and patterns[12] and therefore possible harms associated with the FWA systems implemented by the Schemes. The Panel investigated if the FWA systems had a discriminatory impact. This is what the Panel was mandated to do by its TOR. This approach of the Panel to considering whether discrimination has been established by evaluating trends and patterns through detailed data sets was not disputed in any of the submissions made.

71. In investigating if the FWA Systems had an unfair or discriminatory impact, the Panel used multiple techniques. As summarised in the Interim Report, in additional to considering the complaints and the responses thereto, it also held public hearings and received oral testimony. Further, its investigation included interviewing those responsible for the FWA systems and how they were implemented.[13] It also involved receiving approximately seven years of data (from 2012 to June 2019) regarding the outcomes of each Schemes' FWA

[12] Working Methods of the Panel, Notice 2, dated 29 August 2019.

[13] Interim Report, para 437.3; The summary notes from the interviews were attached to the Interim Report as Annexures D-G of Dr Kimmie's First Report.

systems, namely the FWA Outcomes Data (a term which is already defined).[14]

72. We pause here to explain that the nature of the FWA systems is important, as is the nature of the data that was received by the Panel.

72.1. The Schemes' FWA systems all made use of software or algorithms that were designed to flag providers who were suspected of engaging in FWA.[15] The FWA systems also all made use of other investigative techniques – staff within the Schemes would receive the detail regarding providers who were flagged as engaging in suspicious FWA behaviour and thereafter would engage with these providers, often requesting additional information from the providers to test if they were correctly flagged.[16] None of the Schemes relied entirely on their software or algorithms to determine if a provider was guilty of FWA. Further investigations or engagement occurred and only thereafter did the Scheme decide that a provider was guilty of FWA;

72.2. The data which was collected by the Panel was the Schemes' data regarding providers who were found guilty of FWA (defined as the FWA Outcomes Data). In other words, it was Schemes' data on the outcomes of the FWA processes. The FWA Outcomes Data is an uncontroversial recordal of the providers whom Medscheme, GEMS and Discovery

[14] Interim Report, para 40.

[15] Discovery has designed its own algorithm or tool called the Risk Rating Tool; GEMS outsources this function to Metropolitan who uses a tool purchased from IBM; and Medscheme uses the IFM Model which is licensed from Fair Isaacs Corporation.

[16] Interim Report, para 301 onwards (Medscheme); Interim Report, para 250 onwards (GEMS); Interim Report, para 206 onwards (Discovery).

found had committed FWA.[17] The FWA Outcomes Data is not a recordal of providers who were flagged by the FWA systems as being suspected of having committed FWA. The FWA Outcomes Data is the data which reflects the actual results of the FWA systems as a whole – it consists of those providers who after having been flagged were then investigated and found guilty of FWA by the Schemes.

73. The FWA Outcomes Data (the veracity and integrity of which is accepted by all involved) demonstrates nothing about whether the Schemes correctly or incorrectly found that an individual provider committed FWA. The FWA Outcomes Data is objectively a reflection of who the Schemes found guilty of FWA (and we assume that the Schemes believe their findings are correct, but it is not a fact which the Panel knows or has any interest in determining). The importance of this observation will become more apparent below.

74. Having collected the FWA Outcomes Data, Dr Kimmie – the Panel's expert, conducted an analysis on the data. This analysis was by no means easy as the FWA Outcomes Data used the PCNS numbers issued by BHF to practitioners and did not include the race of the providers who were found guilty of FWA. Dr Kimmie therefore first developed a technique which racialised the data. He used the surnames of providers to determine race and his methodology is described in some detail in his first report, attached as Annexure A to the Interim Report ("**Dr Kimmie's First Report**").[18]

[17] Dr Kimmie's First Report, p 21/123 where it is explained that the data that was used was the providers "*identified as FWA cases*".

[18] Dr Kimmie's First Report, section 3.1, p 7/203.

75. Importantly, there is nothing new or controversial about using surnames to determine the race of a provider. Discovery itself embarked upon an internal exercise to try and racialise its own data – and in so doing appointed Deloitte to audit its methodology and process. In the report issued by Deloitte in January 2020, made available to the Panel, Deloitte explained that:

> "*two indirect methods have been found to be an inexpensive and efficient way to estimate race – surname analysis and geocoding. Geocoding refers to the use of members' and providers' home addresses to infer other information about them, including their race and ethnicity. Surname analysis refers to the use of last names for similar purposes. Such surname analysis can be conducted by allocating a race based on the analysts experience or knowledge, or with reference to a published list where these are available*". (Own emphasis)[19]

76. Deloitte therefore endorsed Dr Kimmie's methodology as being one of the accepted ways of racialising the FWA Outcomes Data (the other way, namely by geocoding, was not in any event open to Dr Kimmie as providers are ordinarily middle class and their geographic locations would have been a less accurate way of racialising the data).

77. Deloitte's endorsement of Dr Kimmie's methodology was one of the early considerations which demonstrated that Dr Kimmie's approach was sound and that his racialisation of the FWA Outcomes Data was reasonably accurate. As will become evident below, the accurateness of the racialisation of the FWA Outcomes Data has become a source of controversy in this investigation.

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[19] See: the Deloitte report entitled "*Data Classification Methodology Evaluation*", dated January 2020, p 3.

78. Having racialised the FWA Outcomes Data, Dr Kimmie then proceeded to conduct a statistical analysis to determine if, in the FWA Outcomes Data, black providers were more likely to be guilty of FWA than non-black providers.[20] His methodology for "*Measuring Bias*" is described in some detail in his First Report.[21] In sum, Dr Kimmie calculated what is known as a relative risk ratio ("**risk ratio**") – which was the risk (or chance or probability) that a group of providers in the FWA Outcomes Data (i.e. black providers) were found guilty of FWA when compared to another group of providers (i.e. non-black providers).[22] Once the FWA Outcomes Data was racialised it was therefore possible to compare the relative positions of black and non-black providers. Had the providers in the FWA Outcomes Data been allocated a sex it would be possible to do the same and compare the relative position of men and women.

79. Dr Kimmie used standard statistical techniques to determine whether the risk ratios were likely to occur by chance or whether they reflected meaningful differences between black and non-black providers.[23] Dr Kimmie explained that

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[20] Dr Kimmie's First Report, section 5, p 21/203.

[21] Dr Kimmie's First Report, section 3.2, p 10/203.

[22] Dr Kimmie's First Report describes the relative risk ratio in both technical and colloquial terms as follows:

> "*The relative risk (risk ratio of an event is the likelihood of its occurrence after exposure to a risk variable as compared with the likelihood of its occurrence in a reference group. So the risk ratio is estimated as the absolute risk with the risk variable divided by the absolute risk in the control group. It is always expressed as a ratio relative to 1*" (section 3.3.2, p 12/203)
>
> and
>
> "*A risk ratio of 1.5 can be interpreted as a 50% higher chance of an outcome relative to the reference group. For example, if we had two groups (male and female say) and we were examining some outcome (let's say whether or not they drink a particular brand of tea). If 30% of men said that they did drink this tea (a risk of 0.3) and 45% of women said they drank this brand (a risk of 0.45) then the risk ratio of women relative to men is 0.45/0.3 = 1.5, and we would interpret this as women are 1.5 times more likely to drink the particular brand of tea.*"
>
> (section 3.3.2, p 12/203-13/203)

[23] Interim Report, para 437.6.

his null hypothesis when conducting the statistical analysis was that there would be no association between race and FWA status. To test this null hypothesis, he conducted a basic statistical test which produces a so-called P-value. The P-value represents the probability that the risk ratios materialised by chance (assuming the null hypothesis to be correct).[24] If the P-value was extremely small the risk ratio could never have emerged by chance and was probably the result of a correlation in the FWA Outcomes Data between being black and being guilty of FWA.[25]

80. It is important to bear in mind that the risk ratio that was determined has nothing to do with the risk of a provider being flagged by the FWA systems. It is a risk ratio applicable to guilty providers (in the FWA Outcomes Data) and accordingly the relative position of black and non-black providers, which Dr Kimmie referred to as a "*racial bias*",[26] reflects a risk ratio of the outcomes of the FWA systems implemented by Medscheme, GEMS and Discovery.

81. Dr Kimmie's analysis produced surprising results. Overall, the FWA Outcomes Data reflected that from 2012 to 2019 black providers were almost one and a half times more likely to be guilty of FWA than non-black providers – and the probability that this occurred as a matter of chance was for all practical purposes zero.[27]

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[24] Section 3.3.3, p 13/203.

[25] Dr Kimmie presentation entitled "*Racial Bias in FWA Identification and FWA Outcomes*", 19 November 2019, slides 25-32.

[26] We note that this reference to racial bias should not be confused with intentional racial discrimination. It is simply a way of describing the relative positions of the set of black and non-black providers within the FWA Outcomes Data.

[27] Interim Report, para 438.3 and 438.4; Dr Kimmie's First Report, section 5.2, p 22/203.

82. When each Scheme was considered separately, the FWA Outcomes Data demonstrated that black providers were more likely than non-black providers to be guilty of FWA. In sum, Dr Kimmie explained what he found, with all the results included in his report, as follows:

82.1. For Medscheme: "*the data shows the most variation among the Administrators. This is a result of the relatively small numbers of FWA cases identified before 2016 (only about 70 cases a year). Over this period (2012 to 2015) the absolute risk of FWA is very small (on the order of 0.2%) so even if the biases are statistically significant they are not particularly meaningful. From 2016 onwards the risk ratios are very high (approximately 4 for 2016 and 2017) implying that Black providers were being identified as FWA cases at four times the rate among Not Black providers.*"[28] In other words, in 2016 to 2017 black providers were 400% more likely than non-black providers to have a guilty FWA status.

82.2. For GEMS: "*the pattern of racial bias is clear from 2013 onwards. The relative risk increases substantially over this period, from 1.5 in 2013 through to 2.5 in 2017.*"[29] In other words, black providers were 50% more likely than non-black providers to be guilty providers in 2013 and 150% more likely than non-black providers to be guilty providers in 2017.

82.3. For Discovery: "*the pattern of racial bias first manifests in 2014 (with a risk ratio of 1.25) and then becomes steadily stronger in subsequent*

[28] Dr Kimmie's First Report, section 5.6, p 27/203.

[29] Dr Kimmie's First Report, section 5.6, p 27/203.

years (rising to 1.61 in 2017). The bias in 2018, while still significant, reverted to the 2014 level." In other words, in 2014 and 2018 black providers were 25% more likely to be guilty providers than non-black providers and in 2017 black providers were 61% more likely than non-black providers to be guilty providers.

83. Dr Kimmie also analysed the risk ratios applicable to black and non-black guilty providers in various disciplines for the full period of FWA Outcomes Data. Not all of the results displayed "*racial bias*" (the language used by Dr Kimmie which is intended to denote the relative risk ratio of black and non-black providers); but a fair number did. These results were recorded in the Interim Report.[30] For example, we drew attention to disciplines where at least one of the Schemes displayed a risk ratio above 4 (which is an extremely high risk ratio):

83.1. There was evidence of racial bias in relation to physiotherapists.[31] Medscheme and GEMS had extraordinarily high risk ratios: Medscheme's black physiotherapists were 12 times more likely than non-black physiotherapists to be guilty providers; GEMS' black physiotherapists were 6 times more likely than non-black physiotherapists to be guilty providers. Discovery's black physiotherapists were 1.87 times more likely than non-black physiotherapists to be guilty providers. Discovery accordingly had a much lower risk ratio, but it was still significantly above 1.

[30] Interim Report, para 438.6.

[31] Dr Kimmie's First Report, section 5.7, p 29/203.

83.2. There was evidence of racial bias in relation to psychologists. Medscheme had a risk ratio of 5.79, GEMS had a risk ratio of 3.87 and Discovery had a risk ratio of 3.81.[32] Medscheme's black psychologists were 5.79 times more likely than non-black psychologists to be guilty providers. GEMS' black psychologists were 3.87 times more likely than non-black psychologists to be guilty providers. Discovery's black psychologists were 3.81 times more likely than non-black psychologists to be guilty providers.

83.3. There was evidence of racial bias in relation to obstetrics. Medscheme had a risk ratio of 2.45, GEMS had a risk ratio of 4.11 and Discovery had a risk ratio of 1.37.[33] Medscheme's black obstetricians were 2.45 times more likely than non-black obstetricians to be guilty providers. GEMS' black obstetricians were 4.11 times more likely than non-black obstetricians to be guilty providers. Discovery's black obstetricians were 2.45 times more likely than non-black obstetricians to be guilty providers.

83.4. There was evidence of racial bias in relation to social workers. Medscheme had a risk ratio of 7.44, GEMS had a risk ratio of 4.01 and Discovery had a risk ratio of 6.91.[34] Medscheme's black social workers were 7.44 times more likely than non-black social workers to be guilty providers. GEMS' black social workers were 4.01 times more likely than non-black social workers to be guilty providers. Discovery's black social

[32] Dr Kimmie's First Report, Table 5.6, p 30/203.

[33] Dr Kimmie's First Report, Table 5.6, p 30/203.

[34] Dr Kimmie's First Report, Table 5.6, p 30/203.

workers were 6.91 times more likely than non-black social workers to be guilty providers.

83.5. There was evidence of racial bias in relation to registered counsellors. Medscheme had a risk ratio of 3.34, GEMS had a risk ratio of 1.88 and Discovery had a risk ratio of 5.12.[35] Medscheme's black registered counsellors were 3.34 times more likely than non-black registered counsellors to be guilty providers. Although GEMS' black registered counsellors were 1.88 times more likely than non-black registered counsellors to be guilty providers, this risk ratio is still significantly higher than 1. Discovery's black registered counsellors were 5.12 times more likely than non-black registered counsellors to be found guilty of FWA.

83.6. There was evidence of racial bias in relation to dieticians. Medscheme had a risk ratio of 9.52, GEMS had a risk ratio of 3.86 and Discovery had a risk ratio of 4.85.[36] Medscheme's black dieticians were 9.52 times more likely than non-black dieticians to be guilty providers. GEMS' black dieticians were 3.86 times more likely than non-black dieticians to be guilty providers. Discovery's black dieticians were 4.85 times more likely than non-black dieticians to be guilty providers.

84. We note that Dr Kimmie also qualified his results in particular respects. Such qualification included that the "*racial bias*":

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[35] Dr Kimmie's First Report, Table 5.6, p 30/203.

[36] Dr Kimmie's First Report, Table 5.6, p 30/203.

"*represents a correlation between [the] race classifier and the FWA status. It may be that the relationship is clarified by some intermediate confounding variable, and that the causal relationship is between that variable and the outcome*."[37]

85. Dr Kimmie accordingly accepted that the results demonstrated a correlation between race and FWA status, and such correlation could be explained by the race of the provider or by some other confounding factor. The Interim Report noted and accepted this qualification.[38] Again the significance of this qualification has become more relevant – as we explain below the Schemes and Administrators comments on the Interim Report indicate that they are of the view that the racially skewed outcomes can be explained by a number of confounding factors.

86. After Dr Kimmie's evidence was presented to the Panel, the Schemes were given an opportunity to respond to his evidence. The Schemes focused on critiquing Dr Kimmie's First Report and argued that his evidence of racially biased effects should be rejected.[39] The Interim Report records a number of arguments made by the Schemes. Each Scheme engaged their own experts which presented evidence to the Panel during, and after, the hearings.[40] Thereafter Dr Kimmie assessed each of the Schemes' responses and provided his further analysis and views to the Panel.[41]

87. The Interim Report found that despite the criticisms of Dr Kimmie's First Report

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[37] Dr Kimmie's First Report, section 3.5, p 15/203.

[38] Interim Report, para 438.2.

[39] Interim Report, para 446.

[40] Interim Report, paras 448 – 453.

[41] Interim Report, Appendix B.

and its methodology, none of the Schemes' own analysis could reduce the risk ratios to levels close to one. On the Schemes and Administrators own versions (supported by their experts) the overall risk ratios were argued to have been reduced to, in the case of Discovery, 1.09, in the case of Medscheme, to 1.35 and in the case of GEMS, to 1.47.[42]

88. The Panel assessed the evidence put up by each of the Schemes and found (on a preliminary or interim basis) that they did not seriously demonstrate that there were either non-differential outcomes or that the discriminatory outcomes were fair.[43] The Panel found that Medscheme and GEMS could not justify why their respective risk ratios were fair in the circumstances. The Panel further rejected Discovery's argument that Dr Kimmie had failed to account for various confounding factors (including providers on direct payment, the year in which the FWA finding was made, and if a provider was investigated as a result of a tip-off).[44] On this basis the Panel indicated that it was of the view that Discovery's risk ratio of 1.09 was artificially low.[45]

89. The Panel was of the view (on a preliminary or an interim basis) that the FWA systems therefore caused differential outcomes based on race. This meant that the race discrimination was presumptively unfair and the Schemes were required to justify why the discrimination was fair.[46] The Schemes argued that preventing

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[42] Interim Report, para 480.

[43] Interim Report, para 446, and paras 476 - 480.

[44] Interim Report, para 461 onwards.

[45] Interim Report, para 480.2.

[46] Interim Report, para 482. This flows from the application of section 9(5) of the Constitution which states "*[d]iscrimination on one or more of the grounds listed in subsection (3) is unfair unless it is established that the discrimination is fair*." See also: section 13(1) of the Equality Act. In terms of the

FWA was a worthy and important societal goal and that they were obliged to take these steps to protect members' funds.[47] The Panel found, despite the importance of eradicating FWA, the systems used by the Schemes were having a disproportionate impact on black providers which was affecting their dignity and quality of life – and that the Schemes had failed to rebut the presumption of unfairness. The Panel found the FWA systems resulted in unfair discrimination – which was particularly egregious in the case of Medscheme, which had extraordinarily high risk ratios.[48] The Panel noted further that Discovery's risk ratio began to decrease in 2019 when its FWA systems came under scrutiny – suggesting that there was space for correcting the racially disparate outcomes reflected in the risk ratios.[49]

COMMENTS AND CRITICISMS OF THE INTERIM REPORT

Unfair discrimination

90. Interested and affected parties commented on the Interim Report within months of it being published. As explained above, the Panel was not briefed to complete the Final Report until the middle of 2023. The Panel called for further hearings from 26-28 June 2023 so that interested and affected parties could, in addition

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so-called 'Harksen test', the following enquiry must be conducted where a policy or practice has been found to constitute discrimination:

> "*(b)(ii) If the differentiation amounts to 'discrimination', does it amount to 'unfair discrimination'? If it has been found to have been on a specified ground, then unfairness will be presumed. If on an unspecified ground, unfairness will have to be established by the complainant. The test of unfairness focuses primarily on the impact of the discrimination on the complainant and others in his or her situation.*" (*Harksen v Lane NO and Others* 1998 (1) SA 300 (CC) at paras 53 and 54).

[47] Interim Report, para 485.

[48] Interim Report, para 490.

[49] Interim Report, para 488.

to their original comments, also make legal submissions on the Interim Report.

91. For convenience we summarise the comments and legal submissions, made between 2021 and 2023, thematically. Where necessary we explain who made the comment or submission and what evidence was put up to support it.

The Schemes did not cause the discrimination, alternatively, the Schemes cannot discriminate where they rely on neutral software or algorithms to flag providers for investigation or where they rely on member tip-offs / whistleblowers

92. Medscheme submitted that it did not cause the discriminatory outcomes.[50] Medscheme explained that it was not the cause of the whistleblowing investigations and that the outcomes of the whistle blowing investigations should be removed in order to determine Medscheme's risk ratio. Medscheme's expert submitted that Medscheme's risk ratio would reduce if the FWA outcomes which emanated from whistleblowers were removed.[51]

93. GEMS submitted that it did not cause the unfair discrimination – because amongst other things the so-called correlation emerges out of an obligation to investigate black providers who are either the subject of a tip-off or flagged by their analytical systems.[52] GEMS' expert, Insight Actuaries, noted that the FWA Outcomes Data could be divided into two categories: those outcomes derived from the Vuvuzela Hotline (i.e. investigations which were initiated as a result of

[50] Medscheme Holdings (Pty) Ltd Response to Interim Report, dated 6 April 2021, para 5.1.12.

[51] Dr Mike Bergh report entitled "*Further numerical work on risk ratios including response to Dr Kimmie's report of October 2020*" (Annexure N to Medscheme Holdings (Pty) Ltd Response to Interim Report, dated 6 April 2021), section 1.4.

[52] GEMS' legal submissions, dated 13 June 2023, paras 42 to 46.

GEMS' tip-off line) and those outcomes derived from the use of GEMS' analytical software (operated by Metropolitan). GEMS' expert sought to demonstrate that the "*remediated risk ratio*" emanating from the Vuvuzela Hotline was 1.3 and the "*remediated risk ratio*" emanating from the analytics was 1.24. On the basis that the remediated risk ratio was lower for its analytical system, GEMS argued that its analytical process is "*neutral and independent*".[53] GEMS further argued that it could not be found to have discriminated based on the risk ratio applicable to the Vuvuzela Hotline as it was legally obliged to investigate these tip-offs.[54]

94. Medscheme and GEMS' arguments fail to address the legal problem that they face – which is where their own data (namely their FWA Outcomes Data) demonstrates racially discriminatory outcomes they are required to explain why such outcomes are fair. It cannot be that Medscheme and GEMS avoid responsibility for the outcome of their investigations simply by virtue of the way in which they originally identified a provider as being in need of investigation. Both GEMS and Medscheme fail to properly consider that the discriminatory outcomes are evident in their own data regarding providers who were found guilty of FWA. It may well be that both Medscheme and GEMS are obliged to investigate providers who are flagged by tip-offs or whistleblowers, but this obligation does not explain why black providers in this group are disproportionately at risk of guilty findings at the conclusion of the investigations by Medscheme and GEMS.

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[53] GEMS' legal submissions dated 13 June 2023, paras 40.7 and 40.8; Insight Actuaries, dated February 2021, section 7 entitled "*Vuvuzela Hotline*".

[54] Insight Actuaries, dated February 2021, section 7 entitled "*Vuvuzela Hotline*".

95. Discovery argued that because Dr Kimmie only identified discrimination in relation to flagging of providers by its RRT algorithm, there is no evidence of discrimination thereafter in the investigation phase where the surnames of providers were known.[55]

96. Discovery's argument is factually incorrect. Dr Kimmie's analysis was not based on the RRT flagging data. As explained above, Dr Kimmie's analysis was based on the FWA Outcomes Data – this was data which Discovery provided and which reflected the providers which Discovery found guilty of FWA. We note that Discovery has moved away from this argument in its final legal submissions.[56]

Dr Kimmie (and therefore the Panel's reliance on Dr Kimmie's First Report) failed to consider various confounding factors which might explain the discriminatory outcomes

97. Medscheme argued that there are approximately six, possibly eight, confounding factors which would reduce its risk ratio dramatically[57] (Medscheme's expert uses the language of variables rather than confounders). Medscheme argues that a failure to consider these additional confounding factors means that the investigation was incomplete – and Medscheme argued that the "*unrestricted*

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[55] Discovery's legal submissions, dated 19 June 2023, para 45.3 and 51.3.

[56] Discovery's final legal submission dated 24 February 2024, paras 12, 14 and 15.

[57] Dr Mike Bergh report entitled "*Further numerical work on risk ratios including response to Dr Kimmie's report of October 2020*" (Annexure N to Medscheme Holdings (Pty) Ltd Response to Interim Report, dated 6 April 2021), sections 1.1 and 1.2. These variables include:

> "*Whether the provider is auxiliary or not as defined by Medscheme.*
> *Juristic services indicator: Whether the provider is a juristic entity or not.*
> *Network type: Whether the provider is on or off network.*
> *Tip off indicator: Whether the FWA instance resulted from a whistle-blower tip-off or not.*
> *Discipline description*
> *Equally sized classes of number of claim lines*"; and

Arguably also include year and medical discipline (Mr Bergh explained that "*aggregation bias described in this document is just another way of referring to additional variables*" (section 1.2). He goes on to list "*year*" and "*medical discipline*" as additional variables in the section on aggregation bias (section 1.1).

inclusion of additional variables related to medical discipline and #claims lines can result in a substantial reduction in the risk ratio".[58]

98. GEMS argued that the confounding factor which Dr Kimmie failed to identify were societal ills (such as economic hardship). GEMS' expert explained that this was "*not to suggest that persons facing greater societal ills are more likely to act nefariously. This is, however, to recognise a possible relationship between societal ills such as economic hardships such as fraud, waste and abuse*".[59]

99. Discovery argued that the confounding factors which Dr Kimmie failed to identify were: the year in which a case was flagged, whether a provider was on direct payment, and whether a provider was the subject of a tip-off in the previous year.[60] Discovery argued that the Panel incorrectly rejected direct payment as a confounder in its Interim Report[61] as factually "*a substantial majority of practitioners (65%) who use the direct payment system are white*".[62]

100. Notably, the three Schemes do not agree on what must be regarded as confounding factors – they all make different suggestions. It is unclear what methodology the Schemes used to determine possible confounding factors and how this affects the reliability of their own revised risk ratios.

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[58] Dr Mike Bergh report entitled "*Further numerical work on risk ratios including response to Dr Kimmie's report of October 2020*" (Annexure N to Medscheme Holdings (Pty) Ltd Response to Interim Report, dated 6 April 2021), section 1.2.

[59] Insight Actuaries Report, section 4.1.6 entitled "*Confounding Factors*".

[60] Discovery legal submissions, dated 19 June 2023, para 46.

[61] The Panel had found that because black providers are more likely to be paid directly by the Schemes factually it did not amount to a confounder (Interim Report, para 464-464).

[62] Discovery Health Written Submission (Gilbert Marcus SC and Adrian Friedman), dated 2 April 2021, para 25.

101. The Panel has nevertheless taken the collective concern that it may have erred in the Interim Report by incorrectly excluding legitimate confounding factors, which could affect the analysis. In this regard the Panel re-engaged Dr Kimmie to consider this. He was asked to check if any of the confounding factors raised by the Schemes were legitimate confounding factors, according to accepted statistical definitions, and if they met the definition then he was asked to consider the impact that any confounding factor may have on his analysis.

Dr Kimmie (and therefore the Panel because of its reliance on Dr Kimmie's First Report) made various mathematical errors

102. GEMS argued that Dr Kimmie's analysis was flawed in two material respects. First, Dr Kimmie's analysis failed to account for exposure – in other words, Dr Kimmie failed to account for the extent to which GEMS beneficiaries engaged with black and non-black providers.[63] Second, it was not possible to assign a race to public hospitals, corporate practices or group practices as these entities do not have surnames which make an assignment or race rationally possible.[64]

103. Medscheme made a similar submission when it explained that Medscheme will

[63] GEMS legal submission, dated 13 June 2023; Insight Actuaries Report, dated February 2021, section 4.1.5 entitled "*Exposure*". Insight Actuaries explained this mistake as follows:

> "*Assume that there are 10 practitioners. Five are black and five are non-black. Assume that the black practitioner are very popular amongst beneficiaries and each has 95 interactions. This translates to 475 consultations. The non-black practitioners are not as popular amongst beneficiaries and each has 5 consultations. This translates to 25 interactions. Whilst black practitioners constitute just 50% of practices, they are responsible for 95% of interactions with beneficiaries. Whilst non-black practitioners constitute just 50% of practices, they are responsible for 5% of interactions with beneficiaries. It is thus a simple mathematical reality that black practitioners are more likely to be investigated for fraud, waste and abuse. Exposure would need to be accounted and adjusted for when comparing black and non-black practitioners*." (p 15)

[64] GEMS legal submissions, dated 13 June 2023, para 40.4; Insight Actuaries Report, dated February 2021, section 4.1 entitled "*Technical Flaws*".

interact with a far higher number of black providers because its membership (presumably the membership of the schemes it administers) are predominantly black.[65] The Panel has treated this as an argument that Dr Kimmie failed to account for exposure or stated differently the extent to which Medscheme members interacted with black and non-black providers.

104. Discovery argued that Dr Kimmie's approach that there is discrimination was questionable because he made a mathematical or statistical mistake, when calculating the risk ratio, by counting the number of investigations in the numerator which meant that if a provider was investigated in multiple years they were counted multiple times in the numerator but only once in the denominator. Discovery argued that this invalidated the results.[66]

The Schemes' Revised Risk Ratios

105. We note that some of the Schemes conducted further analyses, taking into account their criticisms of Dr Kimmie's analysis, and determined a revised risk ratio.

106. GEMS' expert found that the correct risk ratio for GEMS was 1.28.[67] Although its expert qualified this view by stating that Dr Kimmie's results were still fundamentally flawed because further detailed studies and audits were required to correct any racial misclassifications and because there may be a multiplicity

[65] Medscheme Holdings (Pty) Ltd Response to Interim Report, dated 6 April 2021, para 5.2.13.

[66] Discovery legal submissions, dated 19 June 2023, para 45.4.

[67] Insight Actuaries Report, dated February 2021, section 5 entitled "*Partially Remediated Results*".

of other confounding factors.[68]

107. Discovery conducted its own analysis based on what it believed may be confounding factors. It calculated its revised risk ratio as 1.09 – explaining that the confounding factor responsible for the greatest reduction in the risk ratio was whether a provider was on direct payment.[69] Discovery's experts argued that direct payment was a confounding factor, but did not express a view whether the risk ratio of 1.09 was correct or incorrect – instead Discovery's expert stratified providers into two groups and determined revised risk ratios for these two groups (of 1.038 and 0.983).[70]

108. Medscheme originally submitted (during January 2020) that its risk ratio should only be based on cases that were investigated as a result of its flagging software. It argued that because it was compelled to investigate cases emanating from whistleblowers these should be excluded. On this basis it revised its overall risk ratio to 2.99.[71] Medscheme also engaged an expert who appears not to have settled on a final risk ratio. It seems that Medscheme's final comment was that the Panel's investigation was incomplete as a result of a failure to consider the various flaws in Dr Kimmie's methodology.[72] Medscheme proposed multiple

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[68] Insight Actuaries Report, dated February 2021, section 5 entitled "*Partially Remediated Results*".

[69] Transcript, 29 January 2020, page 126; see also the Power point presentation accompanying the oral evidence entitled "*Analysis of fraud, waste and abuse*", p 11.

[70] Dr Lehohla and Dr Naidoo "*Expert Independent Evaluation on Section 59 Investigation Interim Report*", 2 April 2021, page 41.

[71] Medscheme Holdings (Pty) Ltd Response to Interim Report, dated 6 April 2021, paras 5.2.9, 5.1.12.1. and 5.1.28.3

[72] Medscheme Holdings (Pty) Ltd Response to Interim Report, dated 6 April 2021, paras 5.1.7 – 5.1.13.

possible risk ratios including, 1.35, 1.02, 1.01 and 0.88.[73]

THE PANEL'S RESPONSE TO THE COMMENTS AND CRITICISMS

109. A number of comments on the Interim Report (as summarised above) meant that it was necessary for the Panel to re-engage Dr Kimmie. In particular, the comments that first Dr Kimmie may not have accounted for exposure of beneficiaries to black and non-black providers and second that he may have not properly accounted for the racial classification of hospitals, group practices and corporate practices. The Panel requested Dr Kimmie revisit his analysis taking the comments into account. The Panel therefore also requested additional data from Medscheme, GEMS and Discovery so that Dr Kimmie could conduct further analysis.

110. Dr Kimmie delivered a third report to the Panel entitled "*Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Analysis*", which is attached marked "**A**" ("**Dr Kimmie's Third Report**").

111. Dr Kimmie's Third Report explained what further analysis he conducted in order to assist the Panel:[74]

    111.1. First, he explained that he had not accounted for exposure between providers and the Schemes and therefore arguably this skewed his results by treating a practitioner with relatively few interactions as

[73] Dr Mike Bergh, Adjustments to Medscheme's risk ratio using additional variables, and IFM score trends for relevant variables, dated 7 February 2020, page 2.

[74] Dr Kimmie's Third Report, paras 3-5.

identical to a practitioner with a large number of interactions;

111.2. Secondly, he accepted the criticism that the list of practitioners included entities of a corporate nature and that assigning these entities a default classification of non-black might have skewed his results.

112. Dr Kimmie also addressed Discovery's argument that being on direct payment was a confounder. As explained above, Discovery had argued that direct payment was a confounder as a substantial majority of white providers (65%) were on direct payment. Dr Kimmie explained why in his view Discovery's approach was wrong. Factually, Discovery's data evidenced that 81% of black providers were on direct payment and 65% of white providers were on direct payment, therefore as a relative statement (or relative proportion), black providers were more likely to be on direct payment (81% is greater than 65%).[75] Because on the whole black providers were more likely than non-black to be on direct payment, direct payment could not be a confounder (according to the well-accepted and formal definition of a confounder in statistical science).[76]

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[75] Dr Kimmie's Third Report, page 3.

[76] Dr Kimmie's Third Report, pages 1-2. Dr Kimmie explained as follows:

> "*In the case of direct payment we know that Black practitioners are more likely to be on direct payment. From the DH data in 2019, for example, 10,423 Black practitioners were on direct payment, and 2,410 were not. So, 81% of Black practitioners were on direct payment. In the same year 17,297 Not-Black practitioners were on direct payment, and 9,314 were not. So, 65% of Not-Black practitioners were on direct payment. The data for the other years is not significantly different and does not change the assertion made. I note that it does not matter that more not-Black than Black practitioners were on direct payment – I am making a statement about the relative proportions and not the absolute numbers. Finally, it would seem obvious that this relationship (Black practitioners are more likely to be on direct payment) is due to the fact that Black practitioners are more likely to be dealing with patients who are not able to carry the cost of treatment. There is thus a causal relationship between being a Black practitioner and being on direct payment, and by our definition direct payment cannot be considered a confounder.*"

113. Dr Kimmie conducted a further analysis which excluded corporate practices and which accounted for the number of interactions that a provider had with the particular Scheme. Dr Kimmie tested whether these adjustments to his analysis materially affected his original assessment of the risk ratios. He found that they did not.[77]

114. The Panel provided a copy of this Report to the Schemes and other interested party to comment on. A copy of this notice requiring comment by 11 December 2023, and the notice extending this date until 12 January 2024 and 31 January 2024, are attached marked Annexures B, C and D respectively.

115. When calling for comment, the Panel also requested that the Schemes assume that the Panel would rely on the Dr Kimmie's reports, including the Third Report, and asked that the Schemes rebut the presumption of unfair discrimination. It was unclear to the Panel if all the Schemes believed they had been given an opportunity to do this – and it was accordingly a prudent approach in the circumstances.

116. The Panel also pointed to a factual error that it believed was made by at least one of the Schemes – and explained that the FWA Outcomes Data was data relating to providers who were found guilty of FWA by the Schemes themselves (the so-called FWA Outcomes Data). The Panel explained that the FWA Outcomes Data was not a recordal of providers who were flagged by the FWA systems as possibly having committed FWA.

[77] Dr Kimmie's Third Report, pages 4-5.

COMMENTS ON DR KIMMIE'S THIRD REPORT

117. Medscheme appears to have accepted the correctness of Dr Kimmie's analysis – but argued that there are other reasons that the Panel should not have regard to Dr Kimmie's analysis. Medscheme argued (as it did in response to the Interim Report) that there are other "*variables*" which should be investigated by the Panel – as there are other "*variables*" which affect Medscheme's risk ratio.[78] Medscheme accepted that being on direct payment was not a confounder.[79]

118. GEMS stated that it was satisfied with the adjustments that Dr Kimmie made to his analysis based on the number of interactions that providers had with the Scheme.[80] GEMS was critical of Dr Kimmie's analysis as it argued that not enough corporate practices were excluded. GEMS' expert "*based on the practice names*" available to this expert, "*has identified nearly 8 000 practices which are state practices, group practices or corporate practices*" which were not excluded by Dr Kimmie.[81] GEMS did not provide the list of names available to its expert and further did not provide the list of the 8 000 practices which it alleged that Dr Kimmie failed to exclude from the data set. GEMS did not take issue with the opinion of Dr Kimmie that being on direct payment is not a confounder.

119. Discovery failed to submit comments in accordance with the time period set out

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[78] Medscheme Response to Notice dated 4 December 2023 and Commentary on Dr Kimmie's Third Report, dated 31 January 2024, page 31, para 5.5.

[79] Medscheme Response to Notice dated 4 December 2023 and Commentary on Dr Kimmie's Third Report, dated 31 January 2024, page 31, para 5.5.1; "*Commentary on the impact of other variables and the number of visits on risk ratios*", Mike Bergh OLSPS, 24 February 2024, page 2.

[80] GEMS Comments in Respect of Dr Kimmie's Third Report, dated 31 January 2024, page 6, para 10.

[81] GEMS Comments in Respect of Dr Kimmie's Third Report, dated 31 January 2024, page 5, para 8.4. See also: "*Summarised Assessment of the Updated Expert Report pertaining to section 59 Investigation*", Insight Actuaries and Consultants, December 2023, page 3, para 2.1.

in the aforementioned notice.[82] Discovery requested an extension for submission of its comments but such extension was not granted. Discovery subsequently submitted a further four reports, on 26 February 2024 and 3 March 2024, which included commentary on Dr Kimmie's Third Report. Albeit that the Panel was under no obligation to consider these comments we have done so. Discovery is critical of Dr Kimmie's Third Report – its actuaries argue that:

119.1. Dr Kimmie has not properly excluded corporate practices;[83]

119.2. Dr Kimmie has not properly treated the number of visits as a weight – instead they suggest it was only treated as a factor;[84]

119.3. Dr Kimmie is incorrect in his view that being on direct payment is not a confounder. Discovery argues that because the majority of both black and non-black practices are on direct payment, it is a confounder.[85] Discovery remains of the view that being on direct payment explains the different risk ratios experienced by black and non-black providers.[86] In another part of Discovery's comments their counsel argue that: "*Discovery's point is that it cannot be found to have discriminated on the basis of race in circumstances in which (a) its entire system is constructed in a race neutral way (b) there is … a disproportionate likelihood that certain race groups will be found to have committed FWA*

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[82] Discovery submitted three documents on 26 February 2024 and then a further document on 4 March 2024.

[83] "*Discovery Feedback on Dr Kimmie's November 2023 Report*", para 2.3, page 17-22.

[84] "*Discovery Feedback on Dr Kimmie's November 2023 Report*", para 3.3, page 34-37.

[85] "*Discovery Feedback on Dr Kimmie's November 2023 Report*", para 4.1, page 39-43.

[86] "*Written Submissions: Discovery Health (Pty) Ltd and Discovery Health Medical Scheme*", para 23.3, page 25.

(c) this disproportionality is coincidental because it arises from external factors which are correlated with factors that affect the opportunity for FWA (most notably, direct payment)".[87]

120. As explained above, the Panel asked the Schemes to assume for the purpose of commenting that the Panel would rely on Dr Kimmie's Third Report for the purpose of any discrimination analysis and therefore that the Schemes would need to be given an opportunity to rebut any presumption of unfair discrimination.

121. The Schemes were generally reluctant to do this as they remained adamant that *inter alia* the Panel did not have the power to decide whether there was indirect discrimination, that in any event their FWA systems did not discriminate at all and further that they were not the cause of any differential outcomes between black and non-black providers.

122. We accordingly turn to assess the legal submissions made by the Schemes.

[87] "*Written Submissions: Discovery Health (Pty) Ltd and Discovery Health Medical Scheme*", para 23.3, page 25.

SECTION 4: UNFAIR DISCRIMINATION

123. As explained in the introductory section the investigation has now spanned many years and has involved numerous phases. The Panel has received written complaints, affidavit evidence responding so such complaints, expert evidence from numerous experts, including our own and that of the Schemes and Administrators, formal legal submissions, oral evidence from individuals and organisations, and legal argument during in-person and virtual proceedings. The evidence amounts thousands of pages of both written and oral evidence.

PRELIMINARY ISSUES

124. Before turning to assess the evidence, we must address three preliminary legal issues.

    124.1. First, we must determine the nature of the Panel's powers in order to ensure that we are entitled to make findings as well as recommendations to the CMS;

    124.2. Second, we must determine the scope of the Panel's powers in order to ensure we are entitled to make findings regarding both direct and indirect unfair discrimination (referred to as explicit or implicit discrimination by some Schemes); and

    124.3. Third, if we decide we have the power to make findings regarding both direct and indirect discrimination then we must decide which legal test is to be used to make such findings. As explained above some Schemes

have argued we should apply the Equality Act rather than the Constitution.

The nature of the Panel's powers are investigative and include the power to make findings

125. The TOR explained that the Panel was appointed by the CMS because:

125.1. the CMS has the power to investigate complaints and settle disputes in relation to the affairs of medical schemes and to advise the Minister on any matter concerning medical schemes; and

125.2. the CMS has the power to enter into agreements with any person for the performance of any specific act or function or the rendering of any service.

126. The TOR recorded that a multi-disciplinary Steering Committee ("**the Steering Committee**")[88] was established which supported the establishment of an independent investigation to conduct an inquiry into the allegations listed above.

127. It was as a result of these powers of the CMS and the support of the Steering Committee that the Panel was appointed. The Panel is effectively performing the functions of the CMS – but it is independent of the CMS.

128. The TOR recorded that the Panel was appointed to perform the following "*services and functions*":

[88] The Steering Committee included almost all the stakeholders that made submissions to the Panel.

"*(i) Investigate complaints ("the Complaints") and allegations received by the CMS relating to section 59 of the Act and Regulation 5 and 6 of the Regulation;*

(ii) Make recommendations to the CMS in relation to addressing the Complaints and allegations;

(iii) Identify any trends emerging from the Complaints and allegations which may require further legal or policy interventions;

(iv) Make recommendations to the CMS in relation to appropriate further administrative, legal or policy interventions that may be required;

(v) Make recommendations to the CMS in relation to appropriate amendments to legislation and regulations that may be required." (Own emphasis)

129. There is no doubt that the Panel was appointed to perform an investigative function. The TOR say as much. Further the investigation which the Panel was called upon to perform went beyond the complaints initially made by the NHCPA and others. It included investigating a wider set of allegations.

130. It was also appointed to identify trends emerging from the complaints (rather than resolve the complaints) and to make a host of recommendations relating to:

130.1. addressing the complaints and allegations, including making recommendations on further legal or policy interventions;

130.2. making recommendations to the CMS for any amendments to legislation or regulations that the Panel believes may be required;

130.3. trends which are identified by the Panel and/or emerging from the complaints and allegations and which may require intervention (whether

it be administrative, legal or policy interventions).

131. These investigative powers are relatively wide and were intended to give the Panel flexibility into determining why it came to be that black providers were claiming that they were the subject of racial profiling and were racially discriminated against.

132. It is clear that the Panel has wide investigatory powers relating to discrimination based on race. The next question is whether such investigative powers includes the power to make findings.

133. It seems to us that the power to investigate is meaningless without the power to make findings. Further, bearing in mind that the Panel was also required to make a variety of potentially complex administrative, legal and policy recommendations it further seems that the Panel must have an implied power to make findings. The reason for this is that a recommendation must be justified. In order for a recommendation to be justified it must be based on a finding. Findings in this investigation are based on a mix of fact and law. Broadly speaking they should be reasonably probable.

134. However, the findings made by the Panel are not final in effect. The findings underpin the Panel's recommendations to the CMS – and the recommendations are placed before the CMS for consideration. The CMS is not required to accept either the Panel's findings or its recommendations. The CMS must independently apply its mind to the findings and recommendations and then decide on its own course of action (if any). We do not suggest that the CMS should initiate a separate investigation. We make only the obvious point that the

CMS is not bound by our findings and recommendations. Our findings are not self-executing, but can be enforced only if the CMS accepts them as its own findings and recommendations, and then makes a further decision to pursue a particular course of action.

The scope of the Panel's powers includes to make findings on race discrimination

135. The TOR explained that the investigation followed allegations that members of NHCPA (who are black) were "*being unfairly treated and their claims withheld by medical aid schemes based on race and ethnicity*".

136. The TOR summarised the "*allegations*" as follows:

> "*(i) targeting Black and Indian health care practitioners ("practitioners") in relation to conducting practice audits;*
>
> *(ii) forcing Black and Indian practitioners to enter into settlement agreements for the payment of large monetary amounts where alleged fraud or other illegal conduct is suspected;*
>
> *(iii) generally engaging in racial profiling in the manner in which such medical schemes and their administrators are making use of section 59 of the Medical Schemes Act, 1998 ("the Act");*
>
> *(iv) illegally refusing to pay Black and Indian practitioners for services rendered to patients;*
>
> *(v) causing Black and Indian owned health care practices to close down their practices, as a result of unlawfully withholding payments, and as a result reducing access to healthcare*."

137. It is clear that the Panel was appointed following certain complaints and

allegations by black providers relating to allegations of discriminatory conduct based on race and ethnicity. Ultimately the manner in which the inquiry was set up, the expertise available, the complaints received, and the submissions made permitted only a race based investigation, rather than an enquiry into ethnicity. We have had no concerns raised on whether the Interim Report was unduly narrow in not also dealing with ethnicity. As such, we have continued in this Final Report to focus on allegations of race discrimination.

138. The argument that the Panel has no power to investigate racial discrimination is difficult to understand. This is the precise function we were asked to perform. It would be absurd to suggest that when there are complaints of, for example, black providers being targeted, that this does not amount to an allegation of discriminatory conduct based on race. Similarly, allegations that black people were being forced to enter into settlement agreements; or that black people were illegally not being paid; or that black people were being forced to close down their practices clearly amount to allegations of racially discriminatory conduct.

139. Medscheme argued that it was treated unfairly because it was only called upon to answer an allegation of intentional or direct discrimination and that the Panel is acting outside of the scope of its power in the TOR. This cannot be correct. The Panel's TOR referenced a range of the complaints and allegations, which were self-evidently, wide enough to include direct and indirect discrimination, both because of the language used, and what the Constitution explains amounts to equal or non-discriminatory treatment. The Panel cannot accept that Medscheme had no insight, both practically and legally, into what discrimination means in the ordinary course, and what it means in the Constitution.

140. The Panel accordingly was mandated to investigate and make findings and recommendations regarding unfair discrimination based on race, as elucidated upon in the Constitution. If there was any doubt about this, it was made clear in the TOR which reminded all stakeholders that the CMS has an obligation to promote rights and the Constitution and to implement the Equality Act.

141. Therefore, the Panel has the power to made findings relating to race discrimination – and making such findings are important as they are the precursor to, and justification for, any recommendations which the Panel may make to the CMS.

What legal test should underpin any finding relation to the impact of the FWA systems

142. As explained above, some Schemes have taken issue with the direct application of section 9 of the Constitution to determine whether there has been unfair discrimination. They argue that the Panel is required to apply the Equality Act and more particularly section 14 of the Equality Act which sets out how to determine if there has been unfair discrimination based on race.

143. We remain uncertain as to why the Schemes believe there is a material difference between the application of the Equality Act and the Constitution. In our view, the application of both would (and should) result in the same outcome. This is because the Constitution is the supreme law and determines how the Equality Act is interpreted. Also the Equality Act embodies and implements the Constitution's guarantee of equality. We nevertheless consider the argument made by the Schemes.

144. The Equality Act provides that:

144.1. if a "*complainant*" makes out a case of discrimination then the "*respondent*" must prove, on the facts that the discrimination did not take place.[89] If the discrimination did take place then if it is on a listed ground it is presumed to be unfair and the "*respondent*" must prove that the discrimination is fair;[90]

144.2. to determine if a "*respondent*" has proved that discrimination is fair the Court must consider the context, certain listed factors and whether the discrimination reasonably and justifiably differentiates between persons according to objectively determinable criteria intrinsic to the activity concerned.[91]

145. We accept that that the principle of subsidiarity applies to Courts. We are not a court. But we are bound by the Constitution. Any person tasked to investigate racial discrimination must have regard to the Constitution, the Equality Act and the equality jurisprudence of South Africa. However, we are not resolving an individual dispute by a doctor against a Scheme. We are assessing whether the outcomes of the FWA systems are racially discriminatory. The framework of the Constitution is, naturally, our guiding light. The mere fact that we are not dealing with an individual dispute does not mean that the Constitution does not apply. After all the trends, policies and practices affect real people in concrete situations, and any recommendations that we may make will also affect

[89] Section 13(1)(a).

[90] Section 13(2)(a).

[91] Section 14(2).

individuals.

146. We have not imposed an onus on anyone. We have simply sought to apply the framework of the Constitution to the investigative function at hand.

147. Further, the powers and functions of an Equality Court, including the Court's remedial powers, are far wider than the Panel's powers and functions. Courts may for example issue binding orders, order payment of damages, restrain unfair practices, order that certain opportunities are made available and order unconditional apologies.[92] The Panel does not have any of these remedial powers.

148. The function that the Panel performed was primarily investigative, and then to the extent that it is called upon to make recommendations, its function also includes making various findings. In drawing conclusions arising from its investigative functions, the Panel had to apply a legal framework. It had to consider the legal meaning of its outcomes. But this does not mean that it is performing a judicial function comparable to that of an Equality Court in terms of the Equality Act.

149. Therefore, it seems to us that the Panel ought not to apply the Equality Act, but the principles underpinning that Act will influence its analysis of the law. This is only because that Act is a product of the Constitution and it is inevitable that there will be overlaps between the subject matter of the Equality Act and section 9 of the Constitution.

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[92] Section 21(2).

Having said this – and even thought we believe it is appropriate to apply section 9 of the Constitution – because of the findings and recommendations we make we do not believe it is necessary to make a final determination of whether there has been unfair race discrimination as proscribed by section 9 of the Constitution.

150. The CMS is not obliged to accept our findings and recommendations. The CMS must make its own decision taking into account the contents of this Final Report. The importance of the CMS applying its mind to our findings and recommendations is particularly acute as the facts at issue in this investigation relate to a period long past (2012 - June 2019). Much has happened since 2012, and even 2019, and the CMS is required to take this into account when considering the findings and recommendations.

THE EVIDENCE

151. As we have explained, the Panel did not set out to decide individual complaints. There are other mechanisms by which these can be resolved. The Panel was concerned with the implementation of the FWA systems by Schemes. This was particularly the case as these FWA systems emanated from, or had their genesis in, a power that the Act gave the Schemes to claw back monies from future payments to providers in certain legislated circumstances.

152. Much of the evidence placed before the Panel suggested that there may be systemic unfair discrimination in the implementation of the FWA systems by the Schemes. Systemic discrimination is an issue which has not been extensively addressed by our courts or administrative bodies. We are only aware of one

case in which it has been pertinently raised.[93]

153. By “systemic discrimination”, we mean forms of discrimination which reflect disproportionate outcomes or biases in the manner in which practices, policies and procedures of certain institutions impact on groups of people who share similar characteristics, such as race, gender, sexual orientation or ethnicity. Arguably systemic discrimination is more important to address as it entrenches embedded inequalities which are often difficult to identify and root out. Systemic discrimination tends to affect a group as a whole or part of a group in a disproportionately disadvantageous manner. This is distinct from individual discrimination which focuses on the position of the individual (as a group member). Addressing individual discrimination is only a small step towards addressing systemic discrimination. Because of its nature, systemic discrimination focuses on institutional structures, which embed the discriminatory outcomes. Our Constitution’s conception prohibits both individual and systemic discrimination.

154. Whether the FWA systems resulted in systemic discrimination based on race is accordingly this issue that engaged us. But before we proceed, we must explain our approach to assessing and evaluating the evidence.

The evaluation of the evidence

155. The Panel’s investigation was not conducted in accordance with the rules of court. It is accordingly not possible to weigh the evidence in a way that a Court

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[93] *Social Justice Coalition and others v The Minister of Police and others*, case no EC03/2016 (Western Cape High Court).

may weigh evidence in application or trial proceedings.

156. The function the Panel performed is more analogous to the performance of an administrative function. When administrators perform administrative functions they often have to make findings. Administrators will make findings based on facts and opinions. They will also have different tools available to them (as compared to Courts) which they use to make their findings. Administrators often have regard to statistical studies and will evaluate statistical evidence. Statistical studies and evidence are useful to assess systems and their impact on people. In our view, the performance of functions by the Panel is analogous to administrative functions. We are accordingly entitled to make findings based on the facts and opinions available to us.

157. The Panel's Working Method provided that the rules of evidence as applicable to investigative bodies will be applied by the Panel.[94] The authority for this approach was the investigation by the Marikana Commission, which was also investigative. The Marikana Commission explained that:

157.1. The functions of a commission of inquiry are generally not truly judicial because there are no facts in issue to be decided judicially, therefore the "*rules of evidence may be relaxed*";[95]

157.2. In *S v Sparks and Others*[96] it was decided that "*[a] court of law is bound by rules of evidence and the pleadings, but a Commission is not. It may*

[94] Notice 2, para 8.

[95] Para 1.3, page 22.

[96] 1980 3 SA 952 (T), at 961B-C.

inform itself of facts in any way it pleases - by hearsay evidence and from newspaper reports or even through submissions or representations or representations on submissions without sworn evidence";[97]

157.3. No party investigated by the Commission bears a burden of proof as there is no *lis* to be decided between any parties;[98]

157.4. The Commission's task is, amongst other things, to make factual findings on matters which are in dispute. If it cannot do so, it must say so;[99]

157.5. Commissions should evaluate all the available evidence and come to a view of the probabilities based on the facts.[100]

158. We remain of the view that the approach to the evaluation of the evidence adopted by the Marikana Commission is appropriate. We note, however, that the Marikana Commission did not assess statistical studies and evidence. We accordingly have been required to adapt our approach to the evidence bearing this difference in mind and particularly because the statistical evidence and opinions presented to the Panel has become central to any assessment of race discrimination.

159. The Panel was entitled to collect evidence in varied ways. Having done so, we must assess the facts and opinions based on the probabilities and if we cannot

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[97] Para 1.4, page 22.

[98] Para 2.3, page 24.

[99] Para 2.3, page 24.

[100] Para 3.1, page 26.

decide an issue based on the facts or opinions we must say so.

160. The challenges of assessing conflicting statistical evidence have been grappled with by courts in other jurisdictions. The United Kingdom ("**UK**") has given some useful guidance to courts assessing statistical opinion evidence, particularly where a probabilistic determination must be made based on the statistical evidence.[101] In the context of a case which involved a determination of the cause of a disease based on epidemiological (statistical) evidence, the UK Supreme Court explained the different degrees of certainty required of courts when making a determination of cause on the one hand, and the degree of certainty adopted by scientists/statisticians making a determination of cause on the other hand.[102] For a statistician/scientists, her opinion is based on whether there is scientific certainty or not; whereas for a court its view is based on an assessment of where the probabilities lie.[103] So for a scientific or statistical expert, she is not interested in the probabilities, but is rather interested in certainty. If a scientist or statistical expert comes to the point of finding X as probable this is the starting point from which she must set off on a further inquiry. In contrast, if a court comes to the point of finding X as probable this is the end point.

161. As was explained in by the UK Supreme Court (quoting another judgment which

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[101] *Sienkiewicz v Greif* [2011] 2 AC; [2011] UKSC 10.

[102] *Ibid*, paras 6-12.

[103] *Ibid*, para 9:

> "*When a scientific expert gives an opinion on causation, he is likely to do so in terms of certainty or uncertainty, rather than probability. Either medical science will enable him to postulate with confidence the chain of events that occurred, i e the biological cause, or it will not. In the latter case he is unlikely to be of much assistance to the judge who seeks to ascertain what occurred on a balance of probability*."

grappled with the same issue):[104]

> "*In ordinary (non-lawyers') language, to say that one regards something as 'probable' is by no means to say that one regards it as 'established' or 'proved'. Yet in the civil courts, where we say that a pursuer must prove his case on a balance of probabilities, what is held to be probable is treated as 'proved'. … the expert in question would normally, in the exercise of his profession, adopt an approach to such issues starkly divergent from that incumbent upon a court. Whether one uses the word 'scientific' or not, no hypothesis or proposition would be seen as 'proved' or 'established' by anyone with any form of medical expertise merely upon the basis that he had come to regard it as probably sound. (Indeed, I think even the word 'probable' would be reserved for situations where the likelihood is thought to be much more than marginal.) And even if, in relation to any possible proposition or hypothesis, such an expert even troubled to notice that he had come to the point of regarding it as not merely possible but on balance 'probable', then I think he would regard that point as one from which he must set off on further inquiry, and by no means as being (as it is in the courts) a point of arrival. Mere marginal probability will not much interest him. But it must satisfy a court*." (Our emphasis)[105]

162. We highlight the different degrees of proof required by courts on the one hand and scientists/statisticians on the other hand because it is pertinent to the approach we have adopted to the evidence in this investigation. As explained above, we are not a court, but are rather exercising a function which is administrative in nature. But our approach to the evidence to some degree is informed by the approach adopted by courts and we accordingly are entitled to assess the evidence and make findings, based on the facts and the opinion

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[104] *Dingley v Chief Constable, Strathclyde Police* 1998 SC 548.

[105] *Ibid*, at 603.

presented. It is also possible that we have to exercise a less exacting standard than a court – but because we do not exercise a less exacting standard than a court we do not consider this possibility further.

163. Notably we are not expected to decide with scientific/statistical certainty where a particular truth lies. We are concerned with *what is more probable than not* in the circumstances.

164. As an aside, some of the Schemes suggested that we had misinterpreted the Marikana Commission's report and that the correct interpretation was that an investigative body was not allowed to make factual findings. On this score we note that where the Marikana Commission refrained from making factual findings the Commission was concerned about the consequence of making factual findings which lead to prosecution or investigation for prosecution.[106] Importantly the Panel is not making findings which may lead to prosecution or investigation for prosecution. The Panel has repeatedly emphasised that it is not even resolving or adjudicating complaints from the providers. Therefore, because the Panel is performing a completely different investigative function, which according to the TOR is primarily concerned with addressing alleged systemic discrimination and procedural unfairness, we do not consider the parts of the Marikana Commission's report, which suggest factual findings should be avoided, relevant to any findings of the Panel.

[106] Paras 3.6 to 3.7 (where the Commission said that it would not make factual findings where it recommended prosecution or further investigations which may lead to prosecutions). The reason for this approach is it would compromise the position of any party who may be prosecuted or investigated for prosecution – if the Commission had made any factual findings. Such factual findings were for the prosecuting authorities and the courts to make.

A probabilistic assessment of the evidence

165. We now turn to assess the evidence on differential outcomes in the risk ratios between black and non-black providers for the period between 2012 and June 2019.

166. To do this we focus on the expert evidence, and in particular the Panel's expert, Dr Kimmie, and the criticisms directed at Dr Kimmie's reports by GEMS', Medscheme's and Discovery's experts.

167. But first we turn to briefly explain our approach to the evidence from the complainants. The Schemes and Administrators have suggested that we approach the providers' complaints with a degree of circumspection as they argued that they answered the complaints fully and, based on what is set out in their answers, were entitled to find the providers guilty of FWA.

The evidence of the complainants

168. The Panel has grappled with how to assess the evidence from the complainants.

169. The complainants had genuinely held beliefs that they had been racially discriminated against. The complainants were often completely unrepresented and if they were represented then they were often less well-resourced than the Schemes. Solutionist Thinkers and the NHCPA used activism rather than lawyers to further their complaints and concerns.

170. In our view, it would be an affront to a person's dignity to suggest that their experience of discrimination is somehow irrelevant to an inquiry into systemic

discrimination. The Panel has therefore considered the evidence from the complainant providers and has accepted that they believe that they were discriminated against on the grounds of race. There is no basis to reject the providers' experience of being discriminated against as the Schemes appear to suggest we should do.

171. The Panel is aware that Discovery, GEMS and Medscheme provided answers to the providers' complaints. In most instances the Schemes denied that they had discriminated against complainants and further set about demonstrating that the complainant was correctly found guilty of FWA.

172. The guilt of otherwise of a particular provider is not relevant to our investigation into whether the implementation of the FWA systems amounted to discrimination. The reason we say this is that even if all the providers who were found guilty of FWA in the FWA Outcomes Data were guilty there is still reason to protect guilty providers from being discriminated against. The Constitution prohibits all discriminatory outcomes – the guilt of a black provider does not justify a guilty black provider being treated differently to a guilty non-black provider.

173. The next question is what to do with the evidence from the complainants and how to weigh it to reach a finding. It seems to us that because we are not deciding individual complaints that this evidence should carry some weight. It is counter-intuitive to ignore multiple allegations of the experience of race discrimination by a relatively discrete number of Schemes. The experience of the complainants has therefore been taken into account. The Panel points out that this experience has been given credence as it has in many respects been affirmed by the risk ratios in Dr Kimmie's Reports.

174. It is to this evidence that we now turn.

The expert evidence

175. We have explained Dr Kimmie's evidence above. For the purpose of our assessment, we revisit the important parts below.

176. Dr Kimmie was provided with complete data from Medscheme, GEMS and Discovery respectively which reflected which providers (by virtue of their names and practice numbers) were found or determine to be guilty of some FWA activity (defined as the FWA Outcomes Data). The integrity or correctness of the data is not disputed. It records exactly who was determined by each Scheme to be guilty of FWA between 2012 and June 2019. It reflects the end result of the operation or implementation of their FWA systems for a period of six and a half years - the approximate period during which black providers alleged that they were being treated unfairly.

177. The FWA Outcomes Data is undisputed fact. What is disputed is how to analyse and interpret this data.

178. Dr Kimmie developed a technique for racialising the FWA Outcomes Data. In other words, Dr Kimmie developed a technique for assigning race to each provider found guilty of FWA. This technique had not been done in South Africa before - but it had been done internationally using a methodology that Dr Kimmie adopted.

179. The technique for racialising the FWA Outcomes Data involved making a assumption about the race of the provider based on the providers' surname , and

taking into account of the possibility that there were surnames which were impossible to assign a race. The detailed methodology is described in Dr Kimmie's reports. He explained that the methodology he used was based on both the international literature on the subject as well as practices in various other jurisdictions.[107]

180. Dr Kimmie's methodology adopted a conservative approach to assigning a race to providers in the FWA Outcomes Data. The default classification was non-black which meant that if there were errors in the racialisation of the data any error would decrease black providers' risk ratios (and make it closer to one) rather than increase the risk ratios. Dr Kimmie adopted this conservative approach in order to ensure the integrity of his results.[108]

181. In 2023, after the call for further legal submissions and the virtual hearings, Dr Kimmie engaged in further refinements of his methodology. He excluded obvious public hospitals, incorporated practices and group practices from the FWA Outcomes Data as they were difficult to assign a race (this was done following comments from GEMS[109] and Discovery[110]).

182. Dr Kimmie also accounted for the number of interactions that providers had with

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[107] Transcript, 19 November 2019, p 27-28.

[108] Sections 3.1 and 5.2.1 of Dr Kimmie's First Report. Dr Kimmie explained that:

> "*Finally, it is likely that this estimate of the risk ratio underestimates the real difference between Black and White practitioners. As indicated in the methodology section the racial classification has been conservative, with the default classification being Not Black. This will, on the assumption that the classification is independent of the outcome (as is the case here), tend to increase the risk rate among the not Black group, thus reducing the risk ratio*" (p 23/203).

[109] GEMS legal submissions, 13 June 2023, para 40.4, read with Insight Report, dated February 2021.

[110] The expert report of Dr Pali Lehohla and Dr Arulsivanathan Naidoo, section 9.

the Schemes (this was also done following comments from Medscheme[111]).

183. With a racialised FWA Outcomes Data set in hand and a revised methodology based on some of the comments, Dr Kimmie then set out to analyse if the FWA Outcomes Data demonstrated differences between black and non-black providers – particularly whether the data demonstrated if black providers were more at risk of having been found guilty of having committed FWA. This is all that could be determined from the FWA Outcomes Data – as it represents an end result of the implementation of the FWA systems by the Schemes.

184. Whether the data demonstrated differences between black and non-black providers is a relatively straightforward statistical exercise. It involved determining the risk that black providers would be found guilty of FWA (this is called the absolute risk) and then measuring this risk against a reference group, in this case non-black providers (this is called the relative risk). This is standard statistical technique where the black providers are the exposed group and the non-black providers are the control group.

185. The analysis determined how much more or less likely black providers in the FWA Outcomes Data were guilty of FWA. Were black and non-black providers treated in the same way (and by this we mean were the implementation of the FWA systems to have the same consequences for black and non-black providers) then there would be no difference between the two population groups, and the relative risk ratio would be one.

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[111] Mike Bergh "Further numerical work on risk ratios including responses to Dr Kimmie's report of October 2020", dated 29 March 2021.

186. Any risk ratio above one would mean that there were disproportionate or differential impacts on black providers. This analysis was done using a common statistical programme which provided an assessment of whether the result came about as a result of chance or if it could be attributed to race. Any risk ratio that was calculated, also came with what is known as a P-value. If the P-value was below 0.01 then it was likely that the risk ratio could be attributed to the provider being black.

187. Dr Kimmie was accordingly able to assign risk ratios for black providers in various respects. He divided the data by year and by discipline - and provided the Panel with the risk ratios for all the years and for each discipline.

188. He was also able to determine the risk ratio for all the years in question for each of GEMS, Medscheme and Discovery. The net result of this analysis in November 2023 (after the aforementioned adjustments had been made) was that for 2012 to 2019:

188.1. The overall risk ratio for GEMS was between 1.5 and 2.39;

188.2. The overall risk ratio for Discovery was between 1.37 and 2.34; and

188.3. The overall risk ratio for Medscheme was between 3.21 and 3.41.[112]

189. The full summary of Dr Kimmie's analysis tables are included in his Third Report which is already attached as Annexure A.

[112] We have reported on the ranges using both the full PCNS dataset and the PCNS dataset where Dr Kimmie removed corporate practices.

190. Although Dr Kimmie did not report on this in his Third Report, the risk ratios when analysed on a per year and on a per discipline basis would also have remained significantly above one for the particular disciplines that we have discussed above, namely psychologists, social workers, dieticians, obstetricians and counsellors. We attach Dr Kimmie's full analysis of the risk ratios broken down into a per year and per discipline basis as Annexure E.[113]

191. The results suggest that the implementation of the FWA systems by GEMS, Medscheme and Discovery affect black and non-black providers differently, regardless of the year in which a provider was found guilty of FWA and regardless of the discipline of the provider. The implementation of the FWA systems resulted in black providers being more likely to have a guilty FWA status than non-black providers.

192. Now we explain each of GEMS, Medscheme and Discovery's response to Dr Kimmie's analysis; and we further explain why we are satisfied that the criticisms do not materially undermine or disrupt Dr Kimmie's analysis - which is that black providers in the FWA Outcomes Data were more likely to be guilty of FWA than non-black providers, when the FWA systems were implemented by the Schemes and Administrators.

193. This matters because if the consequence of the implementation of the FWA systems means that black providers are disproportionality more at risk of being guilty of FWA then the consequence of the implementation of the FWA systems

[113] "*Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Tables - Disciplines*", dated 20 June 2024.

are discriminatory.

GEMS' expert's evidence

194. GEMS levelled the following criticisms at Dr Kimmie's Third Report through its expert:[114]

194.1. first, it submitted that the methodology for racialising the data did not take into account certain practices that could not be racialised and that there were errors in the data when it checked the results of the racialisation. It also conducted a desktop audit of the data and found classification errors;

194.2. second, it submitted that Dr Kimmie had not accounted for a number of confounding factors. GEMS had previously submitted that social circumstance may also be the cause of the risk ratio for black providers being greater than one.

195. We have considered GEMS' expert's criticisms and do not believe that they are significant enough to materially change the results of Dr Kimmie's analysis. Our reasons for this are summarised below:

195.1. GEMS did not provide the results of the analysis it conducted demonstrating the misclassification that allegedly took place in the racialisation of the FWA Outcomes Data. Despite multiple opportunities to present these findings, GEMS has not done so, leaving the reasons

[114] GEMS' comments in respect of Dr Kimmie's Third Report, dated January 2024.

for withholding the information unclear. Additionally, it could have provided these results in response to the Third Report and it did not;

195.2. GEMS said nothing about the conservative approach that Dr Kimmie had adopted when racialising the FWA Outcomes Data. Dr Kimmie acknowledged that the racialisation was imperfect but built in a mechanism which dealt with difficulties of classification which would have decreased the risk ratio for black providers;

195.3. GEMS' argument that the confounding factor, namely "societal ills", has not been taken into account is incorrect. In our view, societal ills is not a confounding factor. If the outcome of societal ills is that black providers are more likely than non-black providers to be investigated for FWA as suggested by GEMS then it is not a confounder as it is a consequence of race.

196. Further, the possibility that societal ills are associated with FWA outcomes is precisely why a legal person holding power, like schemes do in the private health sector, ought to take greater diligence in protecting against discriminatory outcomes.

197. Notably GEMS' expert indicated that it was satisfied that Dr Kimmie had in the Third Report accounted for the number of interactions that a provider had with a Scheme. On this score it explained that the adjustments appear to be sound.[115] This is an important concession – particularly bearing in mind how we treat

[115] *Ibid*, para 10.2. Insight Report, "Summarised Assessment of the Updated Expert Report pertaining to Section 59 Investigation", dated December 2023, para 2.3.

Discovery's argument on this score (Discovery continued to argue that Dr Kimmie had not properly accounted for the number of interactions that a provider had with a Scheme).

Medscheme's expert evidence

198. Medscheme's primary submission is that the Panel was not able to identify a causal nexus between the Medscheme risk ratios and any conduct on the part of Medscheme. Medscheme submitted that without identifying cause, it cannot be held responsible for its risk ratios and the onus to justify the differential or discriminatory treatment does not shift to it.[116]

199. In Medscheme's response to the Third Report, its expert, Dr Bergh, identified certain "*variables*", such as (a) method of payment / direct payment; (b) whistle-blower tip offs; and (c) whether a provider is an auxiliary provider, as being "*variables*" which require further investigation.[117]

200. Medscheme accepted that these three variables are *not* confounders (in contrast to Discovery who argues that direct payment / method of payment *is* a confounder). Medscheme appeared to have argued that a risk ratio should be calculated on a different data set which effectively excludes the cases arising out of the three aforementioned variables. As we understand Medscheme's expert's argument - it is that the three aforementioned variables are "*out of Medscheme's control*" and it therefore cannot be held responsible for the risk ratios produced

[116] Medscheme "Response to Notice dated 4 December 2023 and Commentary on Dr Kimmie's Third Report", dated 31 January 2024, paras 2.4.3, 3.13 and 4.

[117] Dr Mike Bergh "Commentary on the impact of other variables and the number of visits on risk ratios", dated 24 February 2024, at para 1.

by providers subject to these variables. Medscheme's expert submitted as follows:

> "*… even though the variables (a)-(c) are nonconfounders, they are implicated in the mechanism that determine [the risk ratio] and an understanding of mechanism is relevant to why the putative [risk ratio] for Medscheme is ~3. Mechanisms suggest interventions that have the potential to, for example, reduce or increase the value of the [risk ratio]. For example mitigations implied by (a) to (c) might be (i) not to investigate whistle blower tip offs; (ii) disallow indirect payment methods; and ignore any IFM scores for auxiliary providers. To the extent that these mechanisms are not within Medscheme's control, these mechanisms and their impact on [risk ratios] are not the result of racially discriminatory actions taken by Medscheme*" (Own emphasis)[118].

201. In essence Medscheme's expert submitted that there are other causes of the Medscheme risk ratios (besides Medscheme implementing its FWA systems), namely the choice that a provider makes as to the method of payment, the person who whistleblows and the choice to be an auxiliary provider. Medscheme's expert suggests that these variables require further investigation.

202. Medscheme's expert accepted that Dr Kimmie has revised the Medscheme risk ratios in his Third Report, having taking into account the frequency of interactions that a provider has with a Scheme.[119] All that Medscheme's expert says on this score is that Medscheme needs to investigate the differences between

[118] Dr Mike Bergh "Commentary on the impact of other variables and the number of visits on risk ratios", dated 24 February 2024, at para 1.

[119] Dr Mike Bergh "Commentary on the impact of other variables and the number of visits on risk ratios", dated 24 February 2024, at para 4.

Medscheme's own calculations and those of Dr Kimmie.[120] Again, Medscheme accepted that Dr Kimmie's approach to accounting for frequency of interactions was acceptable – which has implications for how we engage with Discovery's continued criticism of this aspect of Dr Kimmie's Report.

203. We find that Medscheme has not seriously disputed Dr Kimmie's risk ratios:

203.1. first, Medscheme is bound by the results of its own FWA Outcomes Data. The integrity of this data is undisputed.

203.2. second, Medscheme has not suggested that there is any particular methodological flaw in the statistical analysis that Dr Kimmie conducted – which produced Medscheme's risk ratios, particularly taking into account the additional analysis done in the Third Report. Medscheme's expert accepts that the three aforementioned variables he has identified (as requiring investigation) are not confounders.

203.3. third, like GEMS, Medscheme did not say anything about the conservative approach that Dr Kimmie had adopted when racialising the FWA Outcomes Data. In our view this approach meant that the racialisation of the FWA Outcomes Data remained useful to understanding the impacts of the FWA systems on black and non-black providers;

203.4. fourth, Medscheme's expert also does not take issue with Dr Kimmie's

[120] Dr Mike Bergh "Commentary on the impact of other variables and the number of visits on risk ratios", dated 24 February 2024, at para 4.

methodology in the Third Report – which accounted for the number of interactions a provider has with a Scheme. Medscheme's expert explained that the reasons for the differences in his own calculations and that of Dr Kimmie's need to be "*investigated further and understood*"[121];

203.5. fifth, Medscheme's risk ratios are by far the largest (and have been consistently the largest throughout the Panel's investigation). In these circumstances Medscheme cannot distance itself from these risk ratios.

Discovery's evidence

204. Discovery engaged multiple experts during the course of the investigation. Its response to the Third Report was no different. It presented a document compiled by its own internal actuaries as well as letters from a local and an international expert.[122]

205. In summary, Discovery argued, itself and through its experts, that Dr Kimmie's methodology and risk ratios are incorrect because:

205.1. first, Dr Kimmie has misclassified the race of providers in the FWA Outcomes Data;[123]

205.2. second, being on direct payment is a confounder and accordingly

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[121] Dr Mike Bergh "Commentary on the impact of other variables and the number of visits on risk ratios", dated 24 February 2024, at para 4.

[122] Discovery feedback on Dr Kimmie's November 2023 Report, a letter from Professor Joan Costa-Font, dated 20 February 2014 and a letter from Dr Pali Lehohla, dated 4 March 2024.

[123] Discovery feedback on Dr Kimmie's November 2023 Report, pages 7-8; The letter from Dr Pali Lehohla, dated 4 March 2024.

explains why some providers have high risk ratios;[124]

205.3. third, Dr Kimmie ignores all other potential confounders – this being illustrated by the variance in the risk ratios per year and per discipline.[125] One of Discovery's experts also suggests that "*social determinants*" may be a further confounding factor[126] - this is similar to the argument made by GEMS that social circumstances or societal ills are a confounder;

205.4. fourth, Dr Kimmie has not properly accounted for the effect that the number of visits may have on the risk ratios. As explained above, Discovery argues that he treated the number of visits as a factor rather than a weight;[127]

205.5. fifth, Dr Kimmie has ignored the rate at which practitioners are flagged for investigation to try and understand why they are being unfairly targeted;[128]

205.6. sixth, Dr Kimmie without justification assumes that the true risk ratio of the population is one.[129]

206. We have already explained why we have rejected the first to third submissions above. As for "social determinants", we are of the view that this is not a

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[124] Discovery feedback on Dr Kimmie's November 2023 Report, pages 7-8; The letter from Dr Pali Lehohla, dated 4 March 2024

[125] Discovery feedback on Dr Kimmie's November 2023 Report, pages 7-8.

[126] The letter from Professor Joan Costa-Font, dated 20 February 2024.

[127] Discovery feedback on Dr Kimmie's November 2023 Report, pages 7-8.

[128] Discovery feedback on Dr Kimmie's November 2023 Report, pages 7-8.

[129] Discovery feedback on Dr Kimmie's November 2023 Report, pages 7-8; The letter from Dr Pali Lehohla, dated 4 March 2024.

confounding factor, but an outcome of racial stratification in society, which is in and of itself a product of the past. It seems to us illogical to use the fact of social disadvantage to explain (or explain away) racial disparities.

207. We are also surprised by Discovery's insistence that there are errors in the manner in which the FWA Outcomes Data was racialised by Dr Kimmie. In the oral hearings in 2019 Discovery explained that it had used a names based methodology to racialise its own data.[130] Further, in January 2020, Discovery developed its own methodology using names and surnames, and other techniques, to racialise its FWA Outcomes Data.[131] Deloitte was appointed to perform a random sampling exercise on the Discovery results to confirm that they were accurate. and explained that:

> "*while agreement between two independent classifications [ie that of Discovery and Deloitte] may result in a high level of accuracy, given the data restraints it is impossible to measure the actual accuracy achieved*" (Own emphasis).[132]

208. In relation to the fourth submission, it is noteworthy that GEMS and Medscheme do not agree with the Discovery submission. GEMS and Medscheme are satisfied with the change that Dr Kimmie made to account for exposure.

209. In relation to the final two submissions, Discovery's experts do not provide sufficient detail for us to assess their criticism.

210. The Panel's approach was never to conduct a judicial trial on disputed issues.

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[130] Discovery slide presentation, dated 29 January 2020, slide 63.

[131] The Deloitte report entitled "Data Classification Methodology Evaluation", dated January 2020, p 4.

[132] The Deloitte report entitled "Data Classification Methodology Evaluation", dated January 2020, p 7.

The purpose of the investigation will not be served by such an approach. We find that even if the final two submissions of Discovery are correct, they do not materially undermine Dr Kimmie's conclusions. First, Dr Kimmie was never briefed to determine the rate at which providers were being flagged and why black providers may be being targeted. Second, the assumption that providers ordinarily ought to experience a risk ratio of one – is an assumption that providers when treated equally would experience a risk ratio of one. There does not seem to be anything irrational about this assumption – particularly bearing in mind it seems fair to assume black and non-black providers ought to be equally at risk of being guilty of FWA – because black and non-black providers have equivalent propensities for FWA.

CONCLUSION

211. In sum, having weighed the evidence our view is that Dr Kimmie's risk ratios are on balance correct. If there is validity to the criticism then such criticisms of his approach may result in the risk ratios being reduced – but not to a material degree. The risk ratios are sufficiently accurate to establish differential impacts that the FWA systems had on black providers for the years under investigation.

212. To recalibrate, in summary, the average overall risk ratios for the period 2012 to June 2019[133]:

212.1. <u>in relation to GEMS</u>, ranged from 1.57 to 1.99 depending on the methodology used. This meant that black providers subject to the GEMS

[133] Using the racialised FWA Outcomes Data with obvious corporate practices removed (referred to as the "Reduced PCNS").

FWA systems were between one and a half and two times more likely than non-black providers to have been found guilty of FWA;[134]

212.2. in relation to Medscheme, ranged from 3.38 to 3.41 depending on the methodology used. This means that black providers subject to the Medscheme FWA systems were approximately three and a half times more likely to have been found guilty of FWA;[135]

212.3. in relation to Discovery, ranged from 1.48 to 2.34 depending on the methodology used. This means that black providers subject to the Discovery FWA systems were between one and a half or two and a third times more likely to have been found guilty of FWA.[136]

213. These differential risk ratios mean that there is race discrimination. The FWA systems resulted in black providers experiencing different outcomes from non-black providers. Black providers were more likely to have been found guilty of FWA.

214. When these risk ratio results are combined with the experience of black providers – that they believed they were being discriminated against – on a probabilistic assessment, the FWA systems discriminated against black providers. In our view it is more likely that the black providers correctly identified flaws in the implementation of the FWA systems – that they were disproportionately impacting black people.

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[134] Annexure A, Table 1.2, page 6 of 8.

[135] Annexure A, Table 1.4, page 7 of 8.

[136] Annexure A, Table 1.6, page 8 of 8.

SECTION 5: PROCEDURAL FAIRNESS

FINDINGS IN THE INTERIM REPORT

215. The main issue arising from the Panel's consideration of procedural fairness in the Interim Report was the proper interpretation of the claw back power in section 59(3) of the Medical Schemes Act. Section 59(3) provides as follows:

> "*Notwithstanding anything to the contrary contained in any other law a medical scheme may, in the case of—*
>
> *(a) any amount which has been paid bone fide in accordance with the provisions of this Act to which a member or a supplier of health service is not entitled to; or*
>
> *(b) any loss which has been sustained by the medical scheme through theft, fraud, negligence or any misconduct which comes to the notice of the medical scheme,*
>
> *deduct such amount from any benefit payable to such a member or supplier of health service.*"

216. The Panel concluded that the powers exercised by the Schemes under this provision are public powers constrained by the principles of administrative justice in sections 1 and 33 of the Constitution.[137] We further concluded that, even if we are wrong and the relationship between the Schemes and healthcare providers is purely private, "*the exercise of coercive private powers are also subject to the protections of administrative justice by way of the common law*".[138]

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[137] Interim report, dated 16 December 2020, para 558.

[138] Interim report, dated 16 December 2020, para 559.

217. We therefore found that section 59(3), properly interpreted, requires Schemes to act in a procedurally fair and reasonable manner before deducting money under section 59(3).[139] In this context, a decision to deduct money is reasonable if there is a rational connection between the action taken and the reasons for it,[140] and further if it is proportionate in the sense that there is a balance between the adverse effects of the decision and the benefits it seeks to achieve.[141] Further, the decision will be procedurally fair if the provider has a fair hearing before the decision is taken[142] – incorporating procedural steps such as adequate notice and a reasonable opportunity to make representations – and that the decision-maker is impartial.[143]

218. Based on our view that the Schemes exercise a public power, we then considered the application of section 59(3) of the Act. In particular, we looked at the circumstances in which Schemes can place providers on indirect payment. We said that, to justify doing so, Schemes must either source their power in sections 59(2)[144] and 59(3) of the Act, or in a contract between them and the health care provider.[145] We explained that neither section 59(2) or (3) of the Act

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[139] Interim report, dated 16 December 2020, para 567.

[140] Interim report, dated 16 December 2020, para 569.

[141] Interim report, dated 16 December 2020, para 570.

[142] Interim report, dated 16 December 2020, para 575.

[143] Interim report, dated 16 December 2020, para 579.

[144] Section 59(2) of the Act provides that:

> "*A medical scheme shall, in the case where an account has been rendered, subject to the provisions of this Act and the rules of the medical scheme concerned, pay to a member or a supplier of service, any benefit owing to that member or supplier of service within 30 days after the day on which the claim in respect of such benefit was received by the medical scheme.*"

[145] Interim report, dated 16 December 2020, para 606.

envisages the Schemes placing provides on indirect payment.[146] That was not the end of our enquiry. We also considered section 57(4)(c) of the Act, which refers to the duty of the board of trustees of a Scheme to ensure "*that proper control systems are employed by or on behalf of a scheme*". We found that this subsection empowered Schemes to place health care providers on indirect payment.[147] On this score, a proper system of financial control would include systems which prevent payments being made to providers where it is reasonable certain that such providers are engaged in fraud, theft, professional misconduct or negligent behaviour which is causing the Scheme loss.[148]

219. The Panel concluded that a proper control system would entail treating health care providers procedurally fairly before placing them on indirect payment and ensuring that the decision to place them on indirect payment was reasonable.[149] This would, in particular, entail:

219.1. The Scheme notifying the provider in writing that it is considering placing the provider on indirect payment and affording the provider the chance to make meaningful representations on that proposed course of conduct.

219.2. The Scheme considering a provider's representations before making any final decision; and

219.3. thereafter making a reasonable decision, based on the facts and the impact that the decision will have on the provider (to ensure that the

[146] Interim report, dated 16 December 2020, paras 617-618.

[147] Interim report, dated 16 December 2020, para 622.

[148] Interim report, dated 16 December 2020, para 622.

[149] Interim report, dated 16 December 2020, para 635.

consequences of the decision are not disproportionate).[150] Relevant also to reasonableness would be the question of for example whether the FWA was a result of "*serious organised fraud*", on the one side of the spectrum, or more innocent coding errors on the other side.[151]

220. We made use of the above findings to consider the reasonableness of the Schemes' procedures around confidential patient information,[152] and found that Schemes ought only to request non-confidential redacted versions of patients' files; that it is not reasonable for a scheme to exercise its powers in terms of section 59(3) if a provider refused to provide confidential patient information; and that it is improper and unreasonable for a scheme to place a provider on indirect payment if the provider refused to provide confidential patient information.[153]

221. Section 59(3) of the Act refers to two amounts, one described as an amount to which a member or provider is not entitled, and the other being a loss sustained by the Scheme through fraud, theft, negligence or professional misconduct. Only these amounts may be deducted from future benefits in terms of section 59(3). But this begs the question as to how such amounts are to be calculated.[154]

222. The Panel indicated that the method of calculation should be justifiable, in that it should be based on the logic of mathematics and/or statistics.[155] The Panel suggested that the methodology used to calculate either losses, or the amounts

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[150] Interim report, dated 16 December 2020, para 636.
[151] Interim report, dated 16 December 2020, para 637.
[152] Interim report, dated 16 December 2020, para 639.
[153] Interim report, dated 16 December 2020, para 658.
[154] Interim report, dated 16 December 2020, para 670.
[155] Interim report, dated 16 December 2020, para 672.

to which a member or provider is not entitled, should not have disproportionately harsh impacts on members or providers.[156]

223. A disproportionate impact on providers often appeared to arise out of the fact that an audit, and hence a calculation of amounts owed or losses experienced, may have gone back as far as three years. The Panel explained that it appeared that the disproportionate impacts could be avoided if the Schemes limited the audit of any provider to between one and one and one and a half years.[157]

224. In addition, there are certain safeguards that we proposed be adopted to ensure that any claw backs in terms of section 59(3) are procedurally fair. In particular, we suggested that the Scheme consider appointing an independent mediator to assist with negotiating and concluding any AODs.[158]

225. All of these recommendations flow from our overarching conclusion that the Schemes exercise a public power, and are based on our interpretation of the meaning of proper control mechanisms in terms of section 57(4) of the Act.

DEVELOPMENTS SINCE THE PUBLICATION OF THE INTERIM REPORT

226. There were far fewer comments and criticisms of the Interim Report directed at the interpretation that the Panel gave to sections 59(2) and 59(3) of the Act and the requirement that the Schemes and Administrators introduced certain practices to ensure procedurally fair and reasonable decision-making.

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[156] Interim report, dated 16 December 2020, para 673.

[157] Interim report, dated 16 December 2020, para 673.

[158] Interim report, dated 16 December 2020, para 697.

227. In fact, when the Panel called for legal submissions in June 2023, a number of stakeholders argued (successfully) that the Panel should allow stakeholders to place additional factual material before the Panel to explain the developments that had taken place since 2021, many of which involved implementing the findings and recommendations in the Interim Report relating to procedural fairness.

228. The Schemes and Administrators argued that the Panel's findings, particularly in relation to procedural fairness, needed to be updated with these new developments. As explained above, the Panel allowed further factual submissions on these developments – and these are summarised below.

CMS' submissions

229. The CMS explained that before the Panel commenced its investigation, it had started engaging stakeholders on a structure to deal with so-called section 59 disputes, as well as formal codes of good practice.[159] The CMS also explained the progress it had made since the publication of the Interim Report.[160]

230. Since the publication of the Interim Report, the CMS started work on the establishment of a tribunal focused on FWA ("**FWA Tribunal**"). The CMS submitted that this FWA Tribunal "*will effectively resolve disputes arising within the medical schemes industry, between members of the medical schemes, service providers, and any other relevant stakeholder*".[161] A number of other

[159] CMS' further factual submissions, 21 July 2023, para 11.

[160] CMS' further factual submissions, 21 July 2023, para 4.

[161] CMS' further factual submissions, 21 July 2023, para 15.

stakeholders also make mention of this FWA Tribunal.

231. In order to establish this Tribunal, CMS has drafted its rules, which have been shared with other stakeholders for comment.[162] Any concerns raised will be addressed by two appointed officials, who are legally qualified.[163] The draft rules were shared with the Panel.[164]

232. The FWA Tribunal is intended to be procedurally fair and will give parties "*rights of representation*", allow them to "f*urnish evidence, call witnesses and cross-examine witnesses*", and will allow for appeals.[165] The CMS also explained that it is also taking steps aimed at better protecting confidential patient information. These steps are:[166]

    232.1. Developing a Code of Conduct applying to programmes matching personal information, as well as the protection of patient's data in automated decision-making;

    232.2. Planning to host workshops with the HPCSA and the Information Regulator on issuing the following: a Circular on the importance of protecting patient information, and a guideline for obtaining information during investigations of claims;

    232.3. Establishing a Joint Technical Team with the HPCSA to address

[162] CMS' further factual submissions, 21 July 2023, para 17.
[163] CMS' further factual submissions, 21 July 2023, para 17.
[164] CMS' further factual submissions, 21 July 2023, para 16.
[165] CMS' further factual submissions, 21 July 2023, para 15.
[166] CMS' further factual submissions, 21 July 2023, para 18.

transgressions relating to the release of confidential patient information and coding disputes;

232.4. Consulting with professional health bodies on a Code to prescribe a retention period of health records; and

232.5. Working on standards and commentary to inform a "*high-level principle-based framework that serves as the minimum standard of self-regulation*" in relation to FWA algorithms.

233. In addition, the CMS explained that they will be introducing laws and regulations relating to education and training in the coming 12 months, relating to the following issues: administrative obligations, including accurate coding and record-keeping; understanding rules around benefits and billing; consent and disclosure requirements; operational challenges in the FWA framework; the enhancement of interpersonal and negotiation skills amongst forensic investigators and other personnel who engage with health care providers; and encourage a shift towards a consensus-driven, interest-based bargaining approach.[167]

234. More generally, the CMS submitted that they are continuing to engage stakeholders in the industry, and are developing guiding principles for good practice in the industry.[168] The CMS has held FWA summits and FWA workshops, and has adopted an FWA Charter including strategic partnerships with other regulators and industry role players, to address the issues identified in

[167] CMS' further factual submissions, 21 July 2023, para 14.

[168] CMS' further factual submissions, 21 July 2023, para 13.

the Interim Report.[169] Further detail was provided on these developments in the submissions made by Discovery - which are also summarised below.

235. The CMS also explained that it is revising letter templates in line with the findings in the Interim Report.[170]

236. Despite taking these various steps, the CMS is concerned that more engagement with the industry is needed to resolve issues related to the following: the independence of FWA processes if they are funded by schemes; the management of costs for all parties; commitment to a mediation framework; and collaboration on education and communication.[171]

237. Going forward, the CMS would like to see facilitation of FWA processes by independent parties such as the FWA Tribunal.[172] In its view, stakeholders must be encouraged to participate in FWA processes in a way that solves problems and builds trust,[173] and the CMS explained that it believes facilitators play an important role in this regard.[174]

Medscheme's submissions

238. Medscheme explained that it has decommissioned its IFM system and in 2021 developed a new FWA flagging/analytical system called DOTS. DOTS was

[169] CMS' further factual submissions, 21 July 2023, para 20.
[170] CMS' further factual submissions, 21 July 2023, para 25.
[171] CMS' further factual submissions, 21 July 2023, para 24.
[172] CMS' further factual submissions, 21 July 2023, para 26.
[173] CMS' further factual submissions, 21 July 2023, para 27.
[174] CMS' further factual submissions, 21 July 2023, para 28.

implemented from 1 April 2022.[175] Medscheme explained that its new system incorporates artificial intelligence and makes use of neutral information with no indicators of racially identifying information. It focuses on behavioural billing patterns, using machine learning and artificial intelligence to predict the risk of irregular claims.[176]

239. Medscheme did not share any detailed information relating to DOTS with the Panel. Its submissions as to how DOTS works was at a very high level. The Panel was not informed about the factors which DOTS may use nor the inputs into any algorithm; and neither was the Panel informed about the nature of the algorithms or the artificial intelligence which Medscheme is using to manage its FWA system.

240. Medscheme also explained that in 2021 it developed a new case management system which has been implemented from 1 April 2022.[177] The system has been updated in the following ways:[178]

    240.1. The risk of bias has decreased, as provider's details are only visible once flagged for FWA using DOTS.[179]

    240.2. There is additional oversight throughout the case management system, as certain functions require managerial assessment and approval before

[175] Medscheme's further factual submissions, 21 July 2023, para 6(3), page 6.
[176] Medscheme's further factual submissions, 21 July 2023, para 6(3), page 6.
[177] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 7
[178] Medscheme's further factual submissions, 21 July 2023, para 6(4).
[179] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 8.

further steps may be taken in an FWA investigation.[180] In particular, an experienced FWA manager must:

240.2.1. consider all case files after the completion of a risk exposure assessment, before an audit is conducted or a case is closed;[181]

240.2.2. approve the movement from certain phases in the automated audit process, to the next phase;[182]

240.2.3. approve all letters regarding an FWA investigation before they may be sent to health care providers; and[183]

240.2.4. approve case closure.[184]

240.3. The case management system has been automated in the following ways:

240.3.1. audits relating to FWA have been automated, and the new system allows for tracked changes and version control of documents;[185]

240.3.2. phases are embedded in the automated audit process, to

[180] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 8.
[181] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 9.
[182] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 9.
[183] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 10.
[184] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 8.
[185] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 8.

ensure that all steps are followed;[186]

240.3.3. automated communication templates are used;[187]

240.3.4. various validation checks are now automated;[188]

240.3.5. various dashboard/visibility functions have been added to the case management system, for example, to highlight delays and other red flags in the FWA investigation process;[189]

240.3.6. pop-up errors appear on letters to be sent to providers in the event that relevant notes have not been added, or have been incorrectly categorised in the case file.[190]

241. In 2021, Medscheme also updated their FWA investigation processes.[191] In particular, greater leniency is allowed in the process, for example by allowing extensions for the submission of supporting documents. Further, the time period of an FWA audit may not be longer than three years, and may be shorter depending on the nature of the case.

242. In response to the interim report, Medscheme undertook to review their FWA communication templates.[192] Medscheme explained that word choices and tone

[186] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 9.
[187] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 9.
[188] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 10.
[189] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 10.
[190] Medscheme's further factual submissions, 21 July 2023, para 6(4), page 10.
[191] Medscheme's further factual submissions, 21 July 2023, para 6(5), page 11.
[192] Medscheme's further factual submissions, 21 July 2023, para 6(6), page 12.

have been changed to be more engaging and less accusatory.

243. Since 2021, Medscheme has ensured greater Scheme involvement in respect of FWA investigations.[193] Most Schemes administered by Medscheme have updated their service level agreements with Medscheme.

244. Medscheme explained that it has taken steps to improve the functioning of its FWA team. They have increased the team's resources, by increasing funding for training and education, increasing resources for quality checks and increasing total number of fraud examiners.[194] They have also adopted an open-door policy with all their representatives,[195] and taken steps to promote a culture of awareness, empathy and professionalism when dealing with FWA cases.[196] Medscheme explained that it signed the FWA Charter, the FWA Code of Good Practice ("**FWA Code**") and the FWA Tribunal Rules on 24 November 2022.[197]

GEMS' submissions

245. GEMS explained that it has changed the name of its initial FWA process from "*desktop investigation*" to "*review*".[198] The people performing such reviews no longer refer to themselves as "*forensic investigators*", and their job titles have been removed from email signatures and letters.[199] Further, the "*forensic*" or "*fraud investigation*" unit is now called the "*GEMS Claims Risk Management*"

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[193] Medscheme's further factual submissions, 21 July 2023, para 6(7), page 13.
[194] Medscheme's further factual submissions, 21 July 2023, para 6(10), page 15.
[195] Medscheme's further factual submissions, 21 July 2023, para 6(12), page 17.
[196] Medscheme's further factual submissions, 21 July 2023, para 6(11), page 16.
[197] Medscheme's further factual submissions, 21 July 2023, para 6(1), page 3.
[198] GEMS' further factual submissions, 14 July 2023, para 2.5.1.
[199] GEMS' further factual submissions, 14 July 2023, para 2.5.3.

unit.[200] GEMS submitted that this change in language is meant to convey a more neutral stance which is less threatening, and will remove the negative perceptions associated with the term "*investigation*".[201]

246. In addition, changes have been made to the written correspondence that is sent to providers. GEMS now ensures that detailed information is provided on the irregular billing behaviour identified, as well as the necessary steps or exact information required from providers.[202] GEMS submitted that this is intended to establish a more cooperative and collaborative dialogue between GEMS and providers than was previously the case, when template letters may have given the impression that a conclusion of guilt had already been reached.[203]

247. GEMS submitted that its general approach in seeking dialogue is manifest also in the various engagements they have sought with providers since publication of the Interim Report. These are both general engagements, which may be virtual, face-to-face or telephonic, and education letters sent to specific providers to highlight an area of potential FWA concern.[204]

248. GEMS made several submissions relating to their practices around placing providers on indirect payment. GEMS appears to have adopted a new standard operating procedure for identifying outliers – although no detail was provided.[205] Further, GEMS explained that "*the decision-making process when considering*

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[200] GEMS' further factual submissions, 14 July 2023, para 2.5.3.
[201] GEMS' further factual submissions, 14 July 2023, para 2.5.3.
[202] GEMS' further factual submissions, 14 July 2023, para 2.6.3.
[203] GEMS' further factual submissions, 14 July 2023, paras 2.6.1 and 2.6.4.
[204] GEMS' further factual submissions, 14 July 2023, paras 2.8.3 and 2.8.5.
[205] GEMS' further factual submissions, 14 July 2023, para 2.12.3.

whether to load indirect payment filters has been enhanced to incorporate the Panel's recommendation to diversify the individuals involved in policy and procedure design".[206]

249. If, however, indirect payment is to be implemented, there is an extensive process that must be followed. Once a claims risk analyst has identified a concern, their manager must provide a motivation for suspension of direct payment to senior managers, investigation managers and operations managers, for their approval.[207] If the motivation is approved, it may not be implemented until the provider in question has been given reasons for the suspension of direct payment.[208] Further, if the provider addresses or explains the concern that was raised, the manager will submit a motivation for the suspension of direct payment to be lifted, so that indirect payment no longer applies.[209] Claims risk analysts' key performance measurements have been designed so that they are disincentivised from suspending direct payment, or allowing the suspension to continue for longer than 30 days.[210] Finally, if a provider has been placed on indirect payment, they are invited to apply for reinstatement, and offered assistance in this process.[211]

250. GEMS has also made changes to the timeframes within which providers must provide requested information and documentation, allowing for more flexibility

[206] GEMS' further factual submissions, 14 July 2023, para 2.12.4.
[207] GEMS' further factual submissions, 14 July 2023, para 2.13.1.
[208] GEMS' further factual submissions, 14 July 2023, para 2.13.5.
[209] GEMS' further factual submissions, 14 July 2023, para 2.13.2.
[210] GEMS' further factual submissions, 14 July 2023, para 2.13.4.
[211] GEMS' further factual submissions, 14 July 2023, para 2.10.

and understanding when providers request extensions.[212] GEMS submitted that while this has a negative impact on turnaround times in FWA reviews, it is committed to the principle of *audi alterem partem*.[213] GEMS explained that it therefore ensures that following each finding of irregularity, the provider in question has an opportunity – and enough time – to explain the circumstances surrounding the identified issue.[214]

251. GEMS has also added to the time allowed for the assessment of whistleblower allegations. Where previously the receipt, consideration and decision-making on whistleblower complaints needed to occur within 48 hours, now this process happens over 10 working days.[215] This period allows for a more robust assessment of the allegations and ensures providers have sufficient opportunity to review their records, verify the claims submitted, and provide a comprehensive response.[216] GEMS submitted that the extra time has a minimal effect on the quantitative outcomes of their assessments, but it does allow providers to recognise their mistakes or misunderstandings.[217] If a provider does not cooperate with the process around whistleblower allegations, analytical tools are used against quantitative assessment criteria to determine if further assessment is required, or if it is enough for the provider to be monitored for a period of time.[218]

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[212] GEMS' further factual submissions, 14 July 2023, para 2.7.2.
[213] GEMS' further factual submissions, 14 July 2023, para 2.7.3.
[214] GEMS' further factual submissions, 14 July 2023, para 2.7.3.
[215] GEMS' further factual submissions, 14 July 2023, paras 2.11.1-2.11.2.
[216] GEMS' further factual submissions, 14 July 2023, para 2.11.2.
[217] GEMS' further factual submissions, 14 July 2023, para 2.11.5.
[218] GEMS' further factual submissions, 14 July 2023, para 2.11.6.

252. The final category of changes made by GEMS is the creation of systems which allow for more flexibility around debt collection. In particular, GEMS' debt management policy has been amended so that there is no cap on the period for repayment of debt;[219] an affordability assessment, in the form of the providers' monthly income and expenses, is considered when arriving at the terms in an AOD agreement;[220] the AOD may be amended if the providers' financial circumstances change;[221] there is a claims risk sub-forum which considers the affordability assessment and the proposed AOD before GEMS issues a decision;[222] and a cooling-off period has been included in the AOD template.[223]

Discovery's submissions

253. Discovery summarised the developments which were initiated by CMS as well as developments which have taken place as a result of Discovery's own internal efforts.[224]

254. Discovery's view is that its FWA investigations must be fair to both providers and schemes,[225] and must balance the need for effective and objective investigations with the rights of providers and the preservation of providers' dignity.[226] Discovery accepted that FWA systems must be both procedurally and

[219] GEMS' further factual submissions, 14 July 2023, para 3.1.4.3.
[220] GEMS' further factual submissions, 14 July 2023, para 3.1.4.4.
[221] GEMS' further factual submissions, 14 July 2023, para 3.1.4.6.
[222] GEMS' further factual submissions, 14 July 2023, para 3.1.4.8.
[223] GEMS' further factual submissions, 14 July 2023, para 3.1.4.9.
[224] Discovery's further factual submissions, 14 July 2023, para 2.
[225] Discovery's further factual submissions, 14 July 2023, para 5.
[226] Discovery's further factual submissions, 14 July 2023, para 6.

substantively fair.[227]

255. In relation to the CMS led developments, Discovery explained that the CMS facilitated FWA industry summits – in 2019, 2021 and 2022.[228] Discovery submitted that while some work relating to these summits occurred before the publication of the Interim Report, most of the important developments have taken place since then.[229] The 2019 summit – prior to publication of the Interim Report – was convened to attempt to make private health care more affordable, and led to the publication of the FWA Charter.[230] Adherence to the FWA Charter is voluntary,[231] and obliges schemes to curb FWA, accepting that FWA has a direct impact on the affordability of private health care.[232] The FWA Charter required the development of an Industry Code of Good Practice.[233]

256. The FWA Summit in 2022 led to both the publication of the draft FWA Code,[234] and the taking of steps to establish an FWA Tribunal.[235]

257. The FWA Code was drafted with extensive input from the Health Funders Association.[236] The FWA Code makes it clear that methods of combatting FWA must be consistent with the Bill of Rights.[237] It defines the terms “fraud”, “waste”

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[227] Discovery’s further factual submissions, 14 July 2023, para 7.
[228] Discovery’s further factual submissions, 14 July 2023, para 10.
[229] Discovery’s further factual submissions, 14 July 2023, para 10.
[230] Discovery’s further factual submissions, 14 July 2023, para 11.
[231] Discovery’s further factual submissions, 14 July 2023, para 11.1 and 11.4.
[232] Discovery’s further factual submissions, 14 July 2023, para 11.2 and 11.3.
[233] Discovery’s further factual submissions, 14 July 2023, para 11.5.
[234] Discovery’s further factual submissions, 14 July 2023, para 13.
[235] Discovery’s further factual submissions, 14 July 2023, para 15.
[236] Discovery’s further factual submissions, 14 July 2023, para 13.1.
[237] Discovery’s further factual submissions, 14 July 2023, para 13.2.

and “abuse”,[238] and sets out the fundamental principles it is based on, including clarity and transparency, fair and lawful investigation processes without coercion or intimidation, collaboration and inclusivity, trust and cooperation, and both the protection of the sustainability of schemes and the protection of members from perverse expenditure.[239] The general approach of the FWA Code is to both confer rights and impose obligations on stakeholders, schemes and providers, with respect to FWA.[240]

258. The FWA Code also details the principles to be used in the rules, policies and standard operating procedures which should apply in FWA investigations. These include rules around the use of data and algorithms, data mining methods, systems around compliance and reporting, audits, record-keeping, collaboration among medical schemes, the recognition of the rights of providers under investigation, and dispute resolution and arbitration mechanisms.[241] Importantly, the FWA Code has detailed provisions on data sharing and the protection of patients’ confidential information, and schemes are now precluded from placing a provider on indirect payment if providers refuse to provide a patient’s confidential information.[242]

259. Discovery explained that the second important development that followed the 2022 FWA Summit was that steps were taken to establish an FWA Tribunal.[243]

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[238] Discovery’s further factual submissions, 14 July 2023, para 13.3.
[239] Discovery’s further factual submissions, 14 July 2023, para 13.4.
[240] Discovery’s further factual submissions, 14 July 2023, para 13.5-13.7.
[241] Discovery’s further factual submissions, 14 July 2023, para 13.8.
[242] Discovery’s further factual submissions, 14 July 2023, para 13.9.
[243] Discovery’s further factual submissions, 14 July 2023, para 15.

260. CMS circulated draft rules for this body, and is in the process of taking submissions from stakeholders on the way in which the FWA Tribunal processes will interface with the processes set out in sections 47 to 50 of the Act. As is well known, these sections of the Act allow for complaints where the Act has been breached, and further provide mechanisms for the resolution of those complaints.[244]

261. The FWA Tribunal is intended to both resolve disputes relating to methods employed to combat FWA, and to implement the FWA Code.[245] It will be empowered primarily to resolve FWA complaints, but will have ancillary powers such as the ability to refer matters to the CMS.[246] Further, it is intended to be composed of both individuals with legal training and individuals from professional regulatory bodies.[247]

262. The draft rules of the FWA Tribunal set out a complaint procedure, in terms of which the complainant first files a detailed complaint in the form of an affidavit, the respondent then answers the complaint, and the complainant may reply.[248] These draft rules provide for various mechanisms that are similar to those seen in the rules of court, including interim relief, legal representation and costs orders.[249]

263. In relation to Discovery's internal initiatives, in 2021 it established the Health

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[244] Discovery's further factual submissions, 14 July 2023, para 15.1.
[245] Discovery's further factual submissions, 14 July 2023, para 15.3.
[246] Discovery's further factual submissions, 14 July 2023, para 15.5.
[247] Discovery's further factual submissions, 14 July 2023, para 15.4.
[248] Discovery's further factual submissions, 14 July 2023, para 15.6.
[249] Discovery's further factual submissions, 14 July 2023, para 15.7-15.10.

Professionals Reference Group ("**HPRG**"). This group is intended to allow stakeholders to contribute to the fairness and effectiveness of Discovery's forensic processes,[250] and the consensus has been that there was room for improvement.[251] Seven provider associations participated in the HPRG from the outset, including Solutionist Thinkers.[252] An independent chair was appointed, supported by an attorney, and regular meetings have been held.[253]

264. Through the HPRG meetings, a range of guiding principles for the development of a fair and effective forensic system have been agreed.[254] The HPRG also reached consensus on the ways in which Discovery's FWA investigations could be improved, including by reducing the three-year window within which an investigation may be triggered,[255] by managing the balance of power in meetings so that practitioners do not feel intimidated or coerced,[256] by developing a more nuanced systems around FWA to distinguish between fraud and honest Coding mistakes,[257] and by recognising the importance of *audi alterem et partem*.[258]

265. Discovery has responded to the concerns identified by the HPRG in various ways. Firstly, while Discovery submitted that FWA cases involving potential misinterpretations of Codes constitute less than 15% of the total annual

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[250] Discovery's further factual submissions, 14 July 2023, para 18.
[251] Discovery's further factual submissions, 14 July 2023, para 20.3.
[252] Discovery's further factual submissions, 14 July 2023, para 19.
[253] Discovery's further factual submissions, 14 July 2023, para 20.
[254] Discovery's further factual submissions, 14 July 2023, para 20.4.
[255] Discovery's further factual submissions, 14 July 2023, para 20.5.2.
[256] Discovery's further factual submissions, 14 July 2023, para 20.5.3.
[257] Discovery's further factual submissions, 14 July 2023, para 20.5.4.
[258] Discovery's further factual submissions, 14 July 2023, para 20.5.8.

investigations,[259] they have nevertheless undertaken to address this issue.[260] They have established an internal billing review committee, which has the mandate to review potential irregularities to distinguish between genuine fraud and *bona fide* errors in the interpretation of Codes;[261] centralise decision-making processes; and engage with providers associations to provide support in the use of Discovery's systems.[262] In the context of the latter, in 2022 and 2023, 17 workshops and training sessions were held to assist health care providers in using the Codes correctly.[263]

266. Discovery explained that the internal billing review committee also has oversight over letter templates before they are distributed to providers.[264] The scale of Discovery's operations has meant that it is necessary for standardised wording to be used, but the billing review committee may make changes to wording in the case of specific providers.[265] The billing review committee has also updated the template wording where providers are invited to meetings as part of the FWA investigation process. The Discovery representatives who will be present are now identified in these letters, the provider is informed that they may bring a representative, and the provider is encouraged to involve their professional association.[266]

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[259] Discovery's further factual submissions, 14 July 2023, para 25.
[260] Discovery's further factual submissions, 14 July 2023, para 25.
[261] Discovery's further factual submissions, 14 July 2023, para 27.
[262] Discovery's further factual submissions, 14 July 2023, para 27.
[263] Discovery's further factual submissions, 14 July 2023, para 31.
[264] Discovery's further factual submissions, 14 July 2023, para 31.
[265] Discovery's further factual submissions, 14 July 2023, para 32.1.
[266] Discovery's further factual submissions, 14 July 2023, para 32.2.

267. Discovery submitted that it is not possible to shorten the three-year period within which an FWA investigation may be triggered, because this period is necessary to identify trends of behaviour, and because of the sheer volume of claims.[267] However, a further update to the template letters sent to providers is that greater clarity is provided on data requests, and it is expressly recorded that providers have the opportunity to engage with Discovery on what may be feasibly provided.[268]

268. In addition, Discovery has taken steps to enhance their dispute prevention and resolution processes.[269] Discovery conducted a pilot process for the independent facilitation of dispute resolution, through Tokiso Dispute Settlement (Pty) Limited, and have since received support from the HPRG for the establishment of an independent dispute resolution process.[270] Seven panellists have been appointed, and providers will be informed of the existence of this process during FWA investigations.[271]

269. More broadly, Discovery has taken steps to ensure that FWA investigations are not premised on an assumption of guilt, and that they are courteous and fair.[272] They have launched an extensive “soft-skills” training programme, which was first conducted in May/June 2022 and have been incorporated into both

[267] Discovery’s further factual submissions, 14 July 2023, para 32.3.
[268] Discovery’s further factual submissions, 14 July 2023, para 32.3.
[269] Discovery’s further factual submissions, 14 July 2023, para 33.
[270] Discovery’s further factual submissions, 14 July 2023, para 33.
[271] Discovery’s further factual submissions, 14 July 2023, para 33.3.
[272] Discovery’s further factual submissions, 14 July 2023, para 34.

Discovery's onboarding and refresher training.[273]

270. Finally, Discovery made submissions on the need for guidelines on when matters are referred to law enforcement agencies or the HPCSA.[274] They note that the HPRG has complained that the HPCSA is slow to respond and to complaints and does not impose suitable penalties.[275] Nevertheless, they submit that they have clear Standards of Practice documents with respect to reporting of cases to regulatory and law enforcement bodies, which are continuously updated.[276] Further, their reporting procedures are fully in line with the requirements of the Prevention and Combating of Corrupt Activities Act, particularly section 34(a), which relates to when Discovery must report a matter to the Directorate of Priority Crime Investigations.[277] In this context, Discovery has made it clear to the HPRG that where practitioners made an honest mistake and undertake to repay the money that they received in error, this will not be reported as fraud.[278]

Polmed's submissions

271. Albeit that Polmed is administered by Medscheme, it elected to make its own legal submissions to the Panel in June 2023.[279] Polmed explained the steps it had taken to improve the procedural fairness of its FWA processes.

272. Broadly, however, in their general comments, Polmed declared its abhorrence

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[273] Discovery's further factual submissions, 14 July 2023, para 34.
[274] Discovery's further factual submissions, 14 July 2023, para 35.
[275] Discovery's further factual submissions, 14 July 2023, para 35.4.
[276] Discovery's further factual submissions, 14 July 2023, para 35.1.
[277] Discovery's further factual submissions, 14 July 2023, para 35.2-35.3.
[278] Discovery's further factual submissions, 14 July 2023, para 35.4.
[279] Polmed's legal submission, dated 27 June 2023.

for racism,[280] alongside the need to eradicate FWA.[281] Polmed explained that it has a constitutional obligation to protect their members' funds from FWA,[282] but decline to comment on the question of whether Schemes engage in racial discrimination, as a matter is currently before the Equality Court.[283] They also expressed their commitment to the principles of due process,[284] the right to a fair public hearing,[285] reasonableness and fairness,[286] *audi alterem et partem*,[287] administrative justice,[288] and the fact that self-help is prohibited.[289]

273. In 2021, following the publication of the Interim Report, Polmed introduced a dispute resolution process which it administers together with Medscheme. From Polmed's submissions it appears that it has taken some of the responsibility of managing disputes in-house. Polmed explained that it has introduced a process to resolve disputes with members and will soon also introduce a process to resolve disputes with providers.[290]

274. The process begins when there is an apprehension of the possibility of a member having engaged in FWA, either because it was picked up using Medscheme's algorithm or because a report was made by a whistleblower.[291] Medscheme then

[280] Polmed's further factual submissions, 12 July 2023, paras 10-13.
[281] Polmed's further factual submissions, 12 July 2023, para 7.
[282] Polmed's further factual submissions, 12 July 2023, para 7.
[283] Polmed's further factual submissions, 12 July 2023, paras 4-5.
[284] Polmed's further factual submissions, 12 July 2023, para 14.
[285] Polmed's further factual submissions, 12 July 2023, paras 16-7.
[286] Polmed's further factual submissions, 12 July 2023, para 19.
[287] Polmed's further factual submissions, 12 July 2023, para 20.
[288] Polmed's further factual submissions, 12 July 2023, para 31.
[289] Polmed's further factual submissions, 12 July 2023, paras 41-5.
[290] Polmed's further factual submissions, 12 July 2023, paras 47.
[291] Polmed's further factual submissions, 12 July 2023, para 50.

conducts a forensic investigation based on the claims data submitted by the provider.[292] If the investigation suggests that the member has in fact been involved in fraud, Medscheme prepares a memorandum for Polmed's Fraud Forum.[293] That Fraud Forum consists of Polmed officials from the clinical department, operations department and legal department.[294]

275. The Fraud Forum considers the Medscheme memorandum, informs the member of the accusation against them, and invites them to respond.[295] The Fraud Forum also provide Polmed's Principal Officer with a recommendation on the outcome of the investigation.[296] The Principal Officer then communicates with the member in question and invites them to make representations on the recommendations made.[297] The member may either appeal the recommendation or accept it.[298]

276. Where a member wishes to appeal the recommendation of the Principal Officer, the matter is escalated to the Complaints Dispute Resolution Committee ("**CDRC**").[299] The CDRC considers the matter, and can either overturn or uphold the decision of the Principal Officer.[300] If the CDRC chooses to uphold the decision, the provider is afforded 30 days to respond to the outcome of the appeal.[301]

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[292] Polmed's further factual submissions, 12 July 2023, para 49.
[293] Polmed's further factual submissions, 12 July 2023, para 52.
[294] Polmed's further factual submissions, 12 July 2023, para 52.
[295] Polmed's further factual submissions, 12 July 2023, para 53.
[296] Polmed's further factual submissions, 12 July 2023, para 54.
[297] Polmed's further factual submissions, 12 July 2023, para 56.
[298] Polmed's further factual submissions, 12 July 2023, para 56.
[299] Polmed's further factual submissions, 12 July 2023, para 57.
[300] Polmed's further factual submissions, 12 July 2023, para 58.
[301] Polmed's further factual submissions, 12 July 2023, para 58.

277. If the CDRC finds a member has acted fraudulently, it will liaise with the South African Police Service and in some cases the matter may be referred to the Directorate of Priority Crime Investigation.[302]

278. The decision of the CDRC may be appealed in terms of section 48 of the Act.[303] However, Polmed submitted that this process is beset with delays, and it may be advisable to consider an arbitration process as an alternative mechanism to settle a dispute.[304]

Solutionist Thinkers' submissions

279. Solutionist Thinkers was the only provider association that made submissions in 2023. It appears to have been less convinced that there were material changes made to the FWA systems being implement by the schemes or that the CMS was making progress in ensuring that the FWA systems were fair.

280. Solutionist Thinkers explained that it still believed there was intentional racial profiling of black health care providers by GEMS, Discovery and Medscheme.[305]

281. Solutionist Thinkers was of the view that the Interim Report had not caused significant change. It stated that "health care practitioners continue to face demands for information dating back beyond 90 days, requiring audits spanning up to three years or two years".[306] Specifically, it alleges that "Medscheme has

[302] Polmed's further factual submissions, 12 July 2023, para 59-60.
[303] Polmed's further factual submissions, 12 July 2023, para 65.
[304] Polmed's further factual submissions, 12 July 2023, para 65.
[305] Solutionist Thinkers' legal submission, 25 June 2023, para 3.
[306] Solutionist Thinkers' legal submission, 25 June 2023, para 8.

moved from better to worse in the past two years with auditors that are brutal and ruthless towards our members leaving no room for negotiation or engagement" but that "GEMS has a willingness to improve its system, they have stopped conducting unfair audits against health care providers, and GEMS is more willing to work with providers since the release of the Interim Report"[307].

282. Solutionist Thinkers also submitted that the Panel should recommend that providers who had been unfairly treated, and from whom monies should not have been clawed back, should be reimbursed.[308]

283. No provider association made submissions on Dr Kimmie's Third Report.

ASSESSMENT OF DEVELOPMENTS AND REMAINING ISSUES

284. It is evident from the above submissions, from a procedural fairness perspective, that since the publication of the Interim Report, extensive developments have taken place. Stakeholders have engaged with each other and at times changed their approach to the identification and investigation of FWA.

285. The CMS and the Schemes and Administrators appear to have accepted much of the Panel's analysis regarding the nature of the power exercised by the Schemes and the meaning of the Act and what this means for implementing their FWA systems through section 59(3) of the Act. They also appear to have accepted many of the findings and recommendations in the Interim Report – and have sought to uphold procedural fairness in the implementation of their FWA

[307] Solutionist Thinkers' legal submission, 25 June 2023, para 8.

[308] Solutionist Thinkers' legal submission, 25 June 2023, para 4.

systems.

286. We turn to briefly explain the handful of areas where there is still some controversy.

The recommendation that providers should be notified within three months of any billing irregularity

287. In the Interim Report the Panel recommended that providers be notified within three months of the Scheme identifying a billing irregularity that may lead to a claw back in terms of section 59(3) of the Act.[309]

288. The reason for this was that if providers were subject to an early warning system they were more likely to self-correct quickly and this would lead to less loss or waste. Ultimately it seemed as if it was in the interest of members and preserving members' funds to ensure that providers were notified early of their possible misdemeanours and were given an opportunity to correct their behaviour.

289. The Schemes argued against the recommendation as it would not give it enough time to make effective use of its analytics and the trends which emerge in the data over longer periods of time.[310]

The recommendation that audits be limited to a period less than three years

290. The Panel suggested that the three year audit period that a number of the Schemes were using was unfair and had a disproportionate effect on

[309] Interim Report, para 745.

[310] Discovery response to the Interim Report, 5 April 2021, para 6.1, page 522.

providers.[311] The Panel suggested that the disproportionate impacts on providers would be avoided if the audits were limited to a year or a year and a half.

291. The Schemes were dissatisfied with this recommendation and explained that they required time to identify certain FWA trends in the data – for example, providers routinely charging for consultations for a longer time than they actually spend with a patient. The Schemes argued that because of the need for this time and because there are such large volumes of claims, it was not always possible to intervene earlier and it was important to be able to audit and claim back monies for a three year period.[312]

The recommendation that independent mediators be present at meetings between Schemes and providers

292. The Panel recommended that an independent mediator be present at meetings between Schemes and providers who were being investigated and accused of FWA.[313] The mediator would be tasked to assist in determining the type of FWA at issue, the amount that the Scheme had lost or overpaid and the repayment

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[311] Interim Report, para 673.

[312] Discovery further factual submission, 14 July 2023, para 32.3. See also the submission from the Professional Provident Society, dated 5 April 2021 where it raised a similar concern stating that limiting the audit period would affect it in the following manner:

> "*We use data analysis and artificial intelligence models to identify anomalies and outliers, some of the models we use require data analysis over a longer period of time in order to be accurate.*
>
> *b) Limiting the audit period of claims will affect our models in terms of their accuracy as limited data will be used.*
>
> *c) We have in the past identified cases where providers submitted irregular claims for a period of greater than 3 three years, ignoring and/or limiting the audit period as suggested in the Interim Report would be unfair towards the schemes*".

[313] Interim Report, para 746.

mechanism. The Panel believed this was a statutory function and recommended the CMS bear the responsibility and cost of appointing these independent mediators.[314]

293. The CMS does not appear to take issue with the principle that an independent person should be engaged to mediate between providers and Schemes. It however was of the view that this function would appropriately be performed by the FWA Tribunal.[315]

294. Discovery argued that even requiring the CMS to bear the cost would have a negative impact as the costs would ultimately be borne by members (who fund the CMS through levies imposed on the Schemes).[316]

The recommendation that there be full algorithmic transparency

295. The Panel recommended that there be full algorithmic transparency. We explained that the full workings of the algorithm should be visible, transparent and accessible to both the people who use algorithms but also to the people who are *affected* by the algorithmic systems. Specifically, it is necessary that the inputs into, and construction of, the algorithm should be known.[317]

296. Discovery argued that this would be be inappropriate because the recommendation fails to recognise that the algorithms are intended to identify deviant and unethical behaviour. Exposing the algorithms to the public could

[314] Interim Report, para 746.

[315] CMS comments on Interim Report, dated 5 April 2021, page 21 (para 2.12.2).

[316] Discovery submission, 2 April 2021, para 41.1.

[317] Interim Report, para 748.

seriously compromise the effectiveness of detection and, therefore, the interests of medical scheme members.[318]

297. Medscheme has since the publication of the Interim Report developed its own software which not only includes algorithms but also makes use of artificial intelligence. In explaining this development to the Panel, Medscheme did not engage the Panel in any meaningful way on the transparency of its algorithm.[319] It did, however, offer to do so – and this is an offer which we recommend be taken up by the CMS as part of our recommendations in the final section of the Report.[320]

[318] Discovery submission, 2 April 2021, para 41.3

[319] Medscheme further factual submission, dated 21 July 2023, page 4.

[320] Medscheme further factual submission, dated 21 July 2023, page 5.

SECTION 6: FINDINGS AND RECOMMENDATION

Procedural fairness

298. The Panel affirms its analysis in the Interim Report on the manner in which procedural fairness in the implementation of the Schemes' FWA systems can be applied.[321]

299. The Panel acknowledges the developments and changes that the Schemes and Administrators have made and introduced since early 2020, many of which are argued to be designed to ensure the procedural fairness of their FWA systems.

300. Because of the passage of time and the above mentioned changes and developments since the inception of the investigation, we do not make any further findings and recommendations relating to the procedural fairness of the Schemes' FWA systems, other than those already made in the Interim Report.[322]

301. We accordingly confirm our findings and recommendations in the Interim Report. In relation to our recommendations, we are of the view that:

    301.1. Schemes and Administrators should develop an early warning systems, whereby Schemes notify providers as soon as Schemes become aware of any circumstances which might lead to the application of section 59(3) of the Act. Such an early warning system will not only prevent prejudice to providers who may innocently be engaging in wasteful behaviour but will also benefit the Schemes as providers engaging in abusive

[321] Interim Report, paras 502-679.

[322] Interim Report, paras 502-679; and 741 - 752.

behaviour are likely to adopt corrective measures rapidly thereby preventing further or ongoing loss to Schemes;

301.2. There is a need to review the audit and claw back time period. Schemes will investigate claims made by a provider suspected of FWA for a period of three historic years; and will equally claw back monies for a period of three years where the Schemes believe there is a justification to do so. As we have explained in the Interim Report, there are times where this causes unjustifiable hardship to providers. We accept that there are also times where such an approach may be necessary to protect the Scheme. In our view, there is a need to review the audit and claw back time periods bearing in mind the different positions of providers;

301.3. There ought to be a mechanism to assist providers in engaging the Schemes once providers are accused of conduct which amounts to FWA. The Interim Report suggested a mediator perform this role. In response some stakeholders have suggested that the FWA Tribunal may perform this role. The Panel cannot weigh in on which option would be most appropriate – or if there are other viable options which ensure fairness. We therefore only recommend that there ought to be assistance provided to providers when engaging the Schemes during an investigation – to ensure equality of arms between Schemes and providers and to ensure that any negotiations relating to claw backs and AODs are fair;

301.4. There must be complete transparency regarding the software, the algorithms and the artificial intelligence programmes that Schemes use

to monitor claims made by providers and members alike. If the Schemes persist with the argument that they will not allow this transparency because it will undermine the detection of FWA, then the CMS must introduce a mechanism where *it* (the CMS) at least has full transparency relating to the software, the algorithms and the artificial intelligence programmes that Schemes use. The Schemes ought to be accountable to a public body for the systems they use – as this in turn ensures accountability to the public whilst still maintaining a form of confidentiality which we understand to be necessary to ensure the effectiveness of the algorithms or programmes.

302. All of the above recommendations relate to particular areas where the CMS may wish to make proposed changes and/or additions to section 59(3) of the Act. It appears that the section that gave rise to the FWA systems is light on regulatory detail and could be expanded upon so that it properly regulates the more intrusive aspects of the FWA systems developed by Schemes and their Administrators over the last decade.

303. The CMS as the regulator responsible for the implementation of the FWA systems is required to ensure that Schemes and Administrators act procedurally fairly. It is within the CMS's discretion as to how it chooses to progress this goal with the various stakeholders, bearing in mind our findings and recommendations.

Ensuring equal treatment of providers by the FWA systems

304. We have gone to great lengths to explain the evidence which the Panel assessed to decide if the FWA systems as implemented between 2012 to June 2019 caused discriminatory outcomes or resulted in unequal treatment.

305. The methodology that Dr Kimme developed is a useful tool for all stakeholders to measure the performance of the FWA systems and to keep check that they do not cause discriminatory outcomes or unequal treatment.

306. In relation to this historic period, we have found that the Schemes have not materially disputed the risk ratios that Dr Kimmie calculated in his Third Report, which are set out in detail in a document attached as Annexure A.

307. It further seems that calculating an overall risk ratio for the period between 2012 and June 2019 for all the Schemes and Administrators is not the only useful measure of discriminatory outcomes. It seems equally useful to assess the Schemes' performance on an annual basis for each discipline. These results will reveal how practitioners in each discipline were treated every year and is a good measure of the effects of the FWA systems, particularly on black providers.

308. Without breaking down the risk ratios in this way it is possible to lose sight of years where discriminatory treatment may have been particularly acute and further to lose sight of the disciplines in which black providers experienced more discriminatory treatment. Equally the breakdown of the risk ratios also shows the disciplines where there were no discriminatory outcomes.

309. We have already attached these risk ratios per year and per discipline as

Annexure E and point out that from these risk ratios it is evident that, for a number of years and for a number of disciplines, the risk ratios were extremely high and certainly not close to one. For example (and we only mention a few examples but there are many more examples if regard is had to the risk ratios set out in Annexure E):

309.1. For GEMS, black dental therapists in 2014 experienced risk ratios of between 2.7 and 3.27 – i.e. were generally approximately three times (300% more) more likely than non-black dental therapist to be guilty of FWA;[323]

309.2. For Discovery, black psychiatrists in 2017 experienced risk ratios of between 3.44 to 3.77 – i.e. black psychiatrists where generally approximately three and a half times (350% more) more likely than non-black psychiatrists to be guilty of FWA;[324]

309.3. For Medscheme, black anaesthetists in 2018 experienced risk ratios of between 6.39 and 6.78 – i.e. black anaesthetists were generally approximately six and a half times (650% more) more likely than non-black anaesthetists to be guilty of FWA[325].

310. We note that all of these risk ratios are probable risk ratios – as explained above we do not need to make scientifically certain determinations of the risk ratios –

[323] "Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Tables - Disciplines", dated 20 June 2024, Table 2.6, page 32 of 83.

[324] "Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Tables - Disciplines", dated 20 June 2024, Table 1.14, page 8 of 83.

[325] "Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Tables - Disciplines", dated 20 June 2024, Table 3.28, page 71 of 83.

findings based on what is probable is enough for the purpose of this Final Report. These probable risk ratios only relate to the historic period – the period between 2012 and June 2019. The Panel cannot and does not comment on any conduct of the Scheme or outcomes for black providers since June 2019.

311. The methodology developed by Dr Kimmie to measure any discriminatory outcomes by the Schemes and Administrators is a useful tool. Breaking down the risk ratios on an annual and per discipline basis also is a useful tool – particularly to understand the effects on black providers. It has the potential to give all stakeholders a clear view on whether black and non-black providers are being treated equally each year and in each discipline.

312. The expert evidence presented by the Schemes and Administrators has demonstrated that there may still be scope to improve Dr Kimmie's methodology. The Schemes and Administrators should continue to engage with the CMS to improve the tool that Dr Kimmie has developed so that it can be used in the future for ongoing monitoring of the impact of the FWA systems on black and non-black providers.

313. Since we are not a court of law, and neither are we adjudicating individual complaints, with the benefit of a trial, we decided not to make legal findings about unfair discrimination in terms of section 9 of the Constitution or the Promotion of Equality and Prevention of Unfair Discrimination Act 4 of 2000 for the historic period. We considered it sufficient to make only a factual finding that the evidence of the risk ratios before us shows racial discrimination against black service providers by the Schemes.

314. There are a number of reasons for this approach:

314.1. first, many years have passed since the Panel was mandated to conduct this investigation. Much has changed during this time and in particular the Schemes and Administrators appear to have remedied some of the shortcomings in their FWA systems, either in response to our findings of the Interim Report or the publicity in this matter;

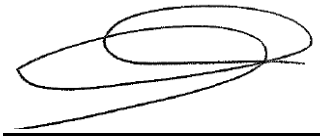
314.2. second, during the investigation Dr. Kimmie has gone to great lengths to develop a valuable tool for measuring discriminatory outcomes in the FWA systems. While the risk ratios produced by Dr Kimmie's methodology have faced some criticism, the findings confirm that the tool is robust, even though no conclusion has been reached that these ratios amount to unfair discrimination under the Constitution. The relevance of this tool remains significant. We hope that it will encourage ongoing monitoring of risk ratios, using this tool, by both the Schemes themselves and the CMS in the future. This continuous monitoring should promote equality and protect providers from unequal outcomes into the future;

314.3. thirdly, it is important that the gains of this investigative process are not lost. This is particularly the case where so much time has passed since the inception of the investigation. The risk of making legal findings of unfair discrimination, in breach of the Constitution, is that it may may lead to prolonged future legal proceedings. In our view, it is more appropriate for specific individual cases of unfair discrimination to be addressed on a case-by-case basis, with specific facts of each case, and the defence of the affected scheme to be properly analysed.

315. Our recommendation therefore is that the CMS and stakeholders must ensure that the implementation of the FWA systems does not breach section 9 of the Constitution and the provisions of the Equality Act.

316. In applying FWA systems the Schemes and CMS should make use of the tool which has been developed by Dr Kimmie to monitor the risk ratios for each discipline on an annual basis. The Schemes and Administrators may engage with the CMS to improve this tool and enhance the methodology if they wish.

Tembeka Ngcukaitobi SC



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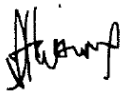
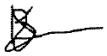


Kerry Williams



Chambers, Sandton
25 April 2025

FINAL REPORT – LIST OF ANNEXURES

ANNEXURES

Annexure A: Dr Kimmie, “Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Analysis”, dated 24 November 2023 (referred to as Dr Kimmie’s Third Report);

Annexure B: Notice entitled “Notice: Section 59 Investigation – Opportunity to Comment on Dr Kimmie’s New Report”, dated 24 November 2023;

Annexure C: Notice entitled “Notice: Section 59 Investigation – Opportunity to Comment on Dr Kimmie’s New Report and Provide Written Justifications for Any Unfair Discrimination”, dated 4 December 2023;

Annexure D: Email correspondence to Medscheme, GEMS and Discovery providing notice of extending comment period on Dr Kimmie’s new report to 31 January 2024, dated 9 January 2024;

Annexure E: Dr Kimmie, “Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Tables - Disciplines”, dated 20 June 2024.

Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Analysis

Compiled by
Dr. Zaid Kimmie

Friday 24th November, 2023

Contents

1

Introduction and Structure of Report

1. This report should be read in conjunction with previous reports that I have submitted to the Panel.

2. Based on the analysis previously conducted and the responding reports submitted by the experts retained by parties the Panel requested further statistical information from Discovery, MedScheme and GEMS (collectively referred to as the schemes in the remainder of this document), as set out below.

3. My initial analysis did not account for any measure of the level of interaction between a practitioner and the scheme and therefore, by treating a practitioner with relatively few interactions as identical to a practitioner with a large number of interactions potentially biased my results.

4. The schemes were therefore each asked to provide a count of the number of interactions (visits or claims) of each practitioner, per year, with their scheme.

5. I also noted that the list of practitioners contained a number of entities that were of a corporate nature (partnerships, hospitals, franchises) and that assigning these entities a default racial classification of "Not Black" also potentially biased the results of my analysis.

6. I have, elsewhere, responded to the assertions that other potential confounding variables should be considered in the analysis. My position remains unchanged – the candidate variables proposed do not meet the technical requirements to be considered as confounders.

7. However, I will take this opportunity to deal with the assertion that being on "direct payment" is a potential confounder. Recall (the complete details are in the previous reports that I submitted) that the formal definition of a confounder is:

    - A variable associated with the exposure (in our case it must be associated with race)

- A variable associated with the outcome (being found guilty of FWA)
- A variable that is not an intermediate variable in the causal pathway between exposure and outcome (it cannot be a consequence of race)

I have noted elsewhere that only in the Discovery expert submission was the correct definition provided, but that in the subsequent analysis this definition was ignored and an incorrect definition applied.

In the case of direct payment we know that Black practitioners are **more likely** to be on direct payment. From the DH data in 2019, for example, 10,423 Black practitioners were on direct payment, and 2,410 were not. So, 81% of Black practitioners were on direct payment. In the same year 17,297 Not-Black practitioners were on direct payment, and 9,314 were not. So, 65% of Not-Black practitioners were on direct payment. The data for the other years is not significantly different and does not change the assertion made.

I note that it does not matter that more not-Black than Black practitioners were on direct payment – I am making a statement about the relative proportions and not the absolute numbers.

Finally, it would seem obvious that this relationship (Black practitioners are more likely to be on direct payment) is due to the fact that Black practitioners are more likely to be dealing with patients who are not able to carry the cost of treatment. There is thus a causal relationship between being a Black practitioner and being on direct payment, and by our definition direct payment cannot be considered a confounder.

1.1 Analysis

1. The complete code used to produce these additional results will be submitted as an appendix to this analysis.

2. **Inclusion of corporate practices** I will use two versions of the data – one in which the easily identifiable corporate practices have been removed and one containing all practices. In particular all practices whose names included terms such as "INCORPORATED, HOSPITAL, MEDICLINIC, CLINIX, PRIVATE CLINIC, GENESIS, NETCARE, LIFE, HOSPITIUM, DONALD GORDON, PRIVATE, CLINIC, PARTNER, AMBULANCE, CLICKS" have been removed from the "reduced" version of the data set. This accounts for just under 6,500 practices.

3. The analysis below will be run separately for each version of the data set.

4. The number of interactions between the practitioner and the scheme has been included in the data. I will analyse each scheme separately and not attempt to consolidate the results across all schemes.

5. The question of how to treat the number of visits analytically remains something of a challenge. One option is to treat them simply as a measure of the weight to attach to each practitioner, and therefore use them in their raw form. This option runs the risk that the results could be affected by a small number of outliers. An alternative is to categorise the number of visits into deciles,[1] i.e. treat them as (ordinal) categories ranging from 'low' (the first decile) through to 'high' the tenth decile. In the analysis that follows I will use both approaches.

6. I have noted the comments, particularly by the Discovery experts, about the correct unit of interest. In the analysis that follows I believe that the correct unit of interest is the practice, and that by stratifying the analysis by year (as I will do below) and by accounting for number of visits we will effectively deal with the objections raised.

7. Finally, the analysis will make use of a logistic regression[2] to fit a model to the data. The variable of interest is whether or not there is a difference in outcomes (being found to have committed FWA) between Black and Not Black practitioners. The output of a logistic regression model is the natural log of the odds ratio. I will for clarity convert this output to a risk ratio, which is the measure used in initial report.[3]

8. I will fit three separate models:

   8.1 The base model will mimic my original analysis and fit the model "fwa black" – asking the question about a relationship between being classified "Black" and have been found to have committed FWA.

   8.2 The second model will run the logistic regression but include the raw number of visits. This asks the question of whether there is a relationship between being classified "Black" and having been found to have committed FWA when accounting for the number of visits. The actual effect of the number of visits (that practitioners with larger number of visits were more likely to have been found to have committed FWA) is of no particular interest to us here, all we are concerned about is accounting for this effect when considering our original question.

   8.3 The third model is a copy of the second model, but with the variable for number of visits replaced with an ordinal variable (from 1 to 10) measuring the decile within which the number of visits fell.

9. As indicated above each of these three models will be run separately for each scheme, and for each year within that scheme, and for the full and reduced versions of the provider database. In total we will therefore run 156 models, as seen in the tables below.

[1] 10 categories with approximately equal numbers of observation in each category, with the 1/10th of the lowest values falling in the first decile, etc

[2] In R I will use a general linear model (glm) specifying a binomial distribution.

[3] In particular I will use the function oddsratio_to_riskratio in R

10. In order to assist in the interpretation of the results I will give the risk ratio associated with the analysis (which should be interpreted as set out in my original report) and the 95% confidence interval associated with the risk ratio.

11. The caveats about how to interpret risk ratios, p-values and confidence intervals set out in my original report remain. The confidence intervals should serve as a guide for assessing the variability of the measure we are considering and not as an absolute measure. So, if the risk ratio is 1.1 with a 95% confidence interval of [1.02, 1.2] then we would be justified in saying that there may be some effect, but that it is likely not meaningful. On the other hand if the risk ratio is 2.5 with a 95% confidence interval of [1.9, 2.9] then we should be confident in our conclusion that there is some meaningful effect at play.

1.2 Modeling Results

1. The tables showing the detailed results of the analysis are given in the tables below. I will summarise the main findings here.

2. **GEMS**

   2.1 The base model with full PCNS data matches the original analysis very closely, with a risk ratio of 1.76 across the full data set, and at or about a risk ratio of 2 from 2015 onward.

   2.2 Including the raw number of interactions does not materially affect the estimates other than for 2013. In general the estimates were slightly higher with the raw number of interactions included.[4]

   2.3 Including categorised (into deciles) number of visits generally reduces the risk ratio slightly (from 1.76 across all years to 1.5).

   2.4 The base model with reduced PCNS data produces, in the main, slightly higher estimates of the risk ratio, but the difference is marginal.

   2.5 In conclusion, adjusting for the number of visits and the inclusion of corporate-type practices does not significantly affect my original findings with respect to GEMS.

3. **MedScheme**

   3.1 The base model with full PCNS data matches the original analysis very closely, with a risk ratio of 3.3 across the full data set, and at or about a risk ratio of 3 from 2017 onward. The extreme value of 8 that occurs in 2015 also matches the extreme value (of 9) in the original analysis.

[4] It is likely that extreme outliers biased the results of this regression, but I have included it for completeness sake. This comment applies to all the regressions run with the raw number of visits.

3.2 Including the raw number of interactions does not affect the risk ratio estimates

3.3 Including categorised (into deciles) number of visits also does not affect the risk ratios.

3.4 The base model with reduced PCNS data produces, in the main, very marginally higher estimates of the risk ratio, but the difference does not appear to be meaningful.

3.5 In conclusion, adjusting for the number of visits and the inclusion of corporate-type practices does not significantly affect my original findings with respect to Medscheme.

4. **Discovery**

4.1 The base model with full PCNS data matches the original analysis very closely, with a risk ratio of 1.37 across the full data set. The slightly extreme value of 1.53 occurs in 2017.[5]

4.2 Including the raw number of interactions marginally increases the risk ratio estimates, to about 1.7.

4.3 Including categorised (into deciles) number of visits also increases the estimates of the risk ratios.

4.4 The base model with reduced PCNS data produces, in the main, results that are not materially distinguishable from that of the full PCNS data set.

4.5 In conclusion, adjusting for the number of visits and the inclusion of corporate-type practices does not significantly affect my original findings with respect to Discovery.

[5] In the Discovery expert analysis this year was identified as an outlier, and removed from further analysis. Such a step is, in my view, not supportable and contaminates the remainder of their analysis.

1.3 Analysis Tables

Year	Base	Base + Visits	Base + Visits2
2012	1.47 [1.27, 1.71]	1.68 [1.43, 1.96]	1.16 [0.99, 1.36]
2013	1.62 [1.44, 1.81]	2.05 [1.82, 2.31]	1.32 [1.17, 1.49]
2014	1.75 [1.54, 2]	1.77 [1.55, 2.02]	1.46 [1.27, 1.67]
2015	2.08 [1.79, 2.41]	2.09 [1.8, 2.42]	1.72 [1.47, 2]
2016	2.3 [1.99, 2.66]	2.58 [2.22, 2.99]	1.96 [1.69, 2.28]
2017	2.45 [2.03, 2.97]	2.46 [2.03, 2.97]	2.11 [1.73, 2.56]
2018	1.84 [1.52, 2.21]	1.84 [1.53, 2.22]	1.58 [1.31, 1.92]
2019	1.89 [1.27, 2.83]	1.89 [1.27, 2.83]	1.71 [1.14, 2.56]
All Years	1.76 [1.66, 1.87]	2.18 [2.05, 2.32]	1.5 [1.41, 1.61]

Table. 1.1. Race and FWA outcomes, 2012-2019, GEMS, All PCNS

Year	Base	Base + Visits	Base + Visits2
2012	1.63 [1.39, 1.91]	1.82 [1.54, 2.14]	1.19 [1, 1.4]
2013	1.8 [1.6, 2.02]	2.22 [1.96, 2.52]	1.35 [1.19, 1.53]
2014	1.97 [1.72, 2.27]	1.98 [1.72, 2.28]	1.48 [1.28, 1.72]
2015	2.4 [2.05, 2.81]	2.4 [2.05, 2.81]	1.81 [1.53, 2.13]
2016	2.53 [2.17, 2.95]	2.81 [2.4, 3.29]	1.98 [1.69, 2.33]
2017	2.84 [2.31, 3.49]	2.84 [2.31, 3.5]	2.21 [1.79, 2.73]
2018	2.09 [1.71, 2.54]	2.09 [1.71, 2.55]	1.68 [1.37, 2.06]
2019	2.36 [1.53, 3.68]	2.36 [1.53, 3.68]	2.02 [1.3, 3.17]
All Years	1.99 [1.87, 2.12]	2.39 [2.23, 2.55]	1.57 [1.47, 1.69]

Table. 1.2. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS

Year	Base	Base + Visits	Base + Visits2
2013	4.01 [2.46, 6.65]	3.98 [2.44, 6.6]	4.08 [2.5, 6.8]
2014	3.48 [1.99, 6.21]	3.49 [1.99, 6.23]	3.57 [2.04, 6.4]
2015	8.13 [4.72, 14.87]	8.16 [4.73, 14.94]	8.03 [4.65, 14.74]
2016	4.21 [3.4, 5.22]	4.23 [3.42, 5.25]	4.43 [3.56, 5.53]
2017	3.22 [2.7, 3.84]	3.22 [2.7, 3.84]	3.19 [2.67, 3.83]
2018	2.69 [2.32, 3.11]	2.69 [2.33, 3.12]	2.68 [2.31, 3.12]
2019	3.05 [2.42, 3.87]	3.08 [2.44, 3.91]	3.01 [2.38, 3.83]
All Years	3.21 [2.95, 3.5]	3.21 [2.95, 3.5]	3.37 [3.07, 3.71]

Table. 1.3. Race and FWA outcomes, 2012-2019, MedScheme, All PCNS

Year	Base	Base + Visits	Base + Visits2
2013	4.13 [2.49, 7.04]	4.1 [2.47, 6.98]	3.96 [2.38, 6.77]
2014	3.4 [1.93, 6.14]	3.41 [1.93, 6.16]	3.2 [1.81, 5.79]
2015	7.55 [4.38, 13.8]	7.57 [4.39, 13.86]	7.12 [4.13, 13.07]
2016	4.33 [3.47, 5.42]	4.35 [3.49, 5.45]	4.23 [3.38, 5.33]
2017	3.48 [2.9, 4.2]	3.49 [2.9, 4.2]	3.31 [2.74, 4.01]
2018	2.99 [2.56, 3.49]	2.99 [2.56, 3.5]	2.85 [2.43, 3.34]
2019	3.07 [2.42, 3.92]	3.1 [2.44, 3.96]	2.88 [2.26, 3.69]
All Years	3.41 [3.12, 3.73]	3.41 [3.12, 3.73]	3.38 [3.06, 3.73]

Table. 1.4. Race and FWA outcomes, 2012-2019, MedScheme, Reduced PCNS

Year	Base	Base + Visits	Base + Visits2
2012	1.11 [1.01, 1.22]	1.24 [1.13, 1.36]	1.49 [1.34, 1.64]
2013	1.15 [1.05, 1.26]	1.3 [1.18, 1.43]	1.54 [1.39, 1.7]
2014	1.23 [1.13, 1.34]	1.39 [1.28, 1.52]	1.75 [1.6, 1.92]
2015	1.42 [1.3, 1.54]	1.56 [1.44, 1.7]	1.96 [1.79, 2.14]
2016	1.29 [1.19, 1.4]	1.44 [1.32, 1.56]	1.66 [1.52, 1.82]
2017	1.53 [1.42, 1.65]	1.89 [1.75, 2.05]	1.91 [1.76, 2.07]
2018	1.22 [1.13, 1.32]	1.52 [1.41, 1.64]	1.53 [1.41, 1.66]
2019	1.08 [0.98, 1.2]	1.4 [1.25, 1.55]	1.36 [1.22, 1.51]
All Years	1.37 [1.33, 1.42]	1.73 [1.67, 1.79]	2.23 [2.13, 2.34]

Table. 1.5. Race and FWA outcomes, 2012-2019, Discovery, All PCNS

Year	Base	Base + Visits	Base + Visits2
2012	1.2 [1.09, 1.32]	1.28 [1.16, 1.41]	1.53 [1.38, 1.7]
2013	1.26 [1.15, 1.39]	1.36 [1.24, 1.5]	1.61 [1.45, 1.79]
2014	1.36 [1.25, 1.48]	1.5 [1.38, 1.64]	1.85 [1.68, 2.03]
2015	1.51 [1.38, 1.64]	1.62 [1.49, 1.77]	1.99 [1.82, 2.19]
2016	1.43 [1.31, 1.56]	1.58 [1.44, 1.72]	1.78 [1.62, 1.95]
2017	1.78 [1.64, 1.92]	2.09 [1.92, 2.26]	2.12 [1.94, 2.31]
2018	1.38 [1.27, 1.49]	1.63 [1.5, 1.76]	1.64 [1.51, 1.79]
2019	1.26 [1.13, 1.4]	1.51 [1.35, 1.69]	1.48 [1.32, 1.65]
All Years	1.48 [1.43, 1.52]	1.8 [1.74, 1.87]	2.34 [2.23, 2.46]

Table. 1.6. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS

"Annexure B"

Established in terms of Section 7(a)(b)(c)(d), 8(a) and (k) and 9(2) of the Medical Schemes Act, 131 of 1998.

NOTICE

Reference: Section 59 Investigation Report
Contact person: Mr SJ Thema
Contact number: 011 775 6386
E-mail: sj.thema@lawtonsafrica.com
Date: 24 November 2023

Notice: Section 59 Investigation – Opportunity to Comment on Dr Kimmie's New Report

1. The Panel has received Dr Kimmie's additional analysis ("**Dr Kimmie's third report**") based on the additional data provided by Discovery, Medscheme and GEMS post the hearings in July 2023.

2. The Panel accordingly makes Dr Kimmie's third report available from comment from interested parties. It is attached to this notice marked Annexure "**A**".

3. In addition to comments which Medscheme, GEMS and Discovery may have on the third report, the Panel also wishes to provide these parties with an opportunity to rebut any presumption of unfairness following from the findings in Dr Kimmie's third report, which may be relied upon by the Panel. We request Medscheme, Discovery and GEMS to provide their justifications for these outcomes (or arguments regarding fairness) on the basis that they assume that they bear the onus to justify the discrimination as being fair – should the Panel decide to rely on Dr Kimmie's reports.

4. The Panel emphasises that the data on which Dr Kimmie relied in this third report and the previous two reports attached to the Interim Report is data on the FWA outcomes – it is Medscheme, GEMS and Discovery's data relating to providers who were found guilty of FWA by

the schemes and administrators themselves. The data is an uncontroversial recordal of the providers whom Medscheme, GEMS and Discovery found had committed FWA. The FWA Outcomes Data is not a recordal of providers who were flagged by the FWA systems as possibly having committed FWA. Kindly ensure that any justification of the discriminatory outcomes bear this fact in mind.

5. **The closing date for comments is Monday, 11 December 2023.**

The Investigation Panel is completely independent of the Council for Medical Schemes, and all queries related to the Section 59 Investigation should be directed to the Secretariat/briefing attorneys of the Panel, Lawtons Africa as follows:

Contact Person/s: Mr SJ Thema /Mr Sipho Mtsweni
Email: sj.thema@lawtonsafrica.com / sipho.mtsweni@lawtonsafrica.com
Telephone: 011 775 6386 / 011 523 6192

/Ends/

"Annexure C"

Established in terms of Section 7(a)(b)(c)(d), 8(a) and (k) and 9(2) of the Medical Schemes Act, 131 of 1998.

NOTICE

Reference: Section 59 Investigation Report
Contact person: Mr SJ Thema
Contact number: 011 775 6386
E-mail: sj.thema@lawtonsafrica.com
Date: 4 December 2023

Notice: Section 59 Investigation – Opportunity to Comment on Dr Kimmie's New Report and Provide Written Justifications for Any Unfair Discrimination

1. The Panel has received Dr Kimmie's additional analysis ("**Dr Kimmie's third report**") based on the additional data provided by Discovery Health, Medscheme and GEMS, post the hearings in July 2023. Dr Kimmie's third report is attached to this notice, marked Annexure "**A**".

2. The Panel made Dr Kimmie's third report available for comment to Medscheme, GEMS and Discovery Health on 24 November 2023. The Panel asked that Medscheme, GEMS and Discovery submit their comments by Monday, 11 December 2023.

3. Since then, the Panel has received a request for an extension to provide comments from Discovery. The Panel has not received any correspondence from Medscheme or GEMS.

4. In the circumstances and to ensure procedural fairness for all interested parties, the Panel makes Dr Kimmie's third report available for comment to all interested parties.

5. The general closing date for comments (including comments from Medscheme, GEMS and Discovery Health) has been extended to **Friday, 12 January 2024.**

6. In addition to comments which Medscheme, GEMS and Discovery Health may have on the third report, the Panel also wishes to provide these parties with an opportunity to rebut any presumption of unfairness following from the findings in Dr Kimmie's third report, which may be relied upon by the Panel. The Panel requests Medscheme, Discovery Health, and GEMS to provide their written justifications for these outcomes (or arguments regarding fairness) on the basis that they assume that they bear the onus to justify the discrimination as being fair – should

the Panel decide to rely on Dr Kimmie's reports. These written justifications are also to be provided by no later than **Friday, 12 January 2024.**

7. The Panel emphasises that the data on which Dr Kimmie relied in this third report and the previous two reports attached to the Interim Report, is data on the FWA outcomes – it is Medscheme, GEMS and Discovery Health's data relating to providers who were found guilty of FWA by the schemes and administrators themselves. The data is an uncontroversial recordal of the providers whom Medscheme, GEMS and Discovery Health found had committed FWA. The FWA Outcomes Data is not a recordal of providers who were flagged by the FWA systems as possibly having committed FWA. Kindly ensure that any justification of the discriminatory outcomes bear this fact in mind.

8. The Panel intends to complete its Final Report as soon as reasonably possible, after having received the aforementioned comments and written justifications.

The Investigation Panel is completely independent of the Council for Medical Schemes, and all queries related to the Section 59 Investigation should be directed to the Secretariat/briefing attorneys of the Panel, Lawtons Africa as follows:

Contact Person/s: Mr SJ Thema /Mr Sipho Mtsweni
Email: sj.thema@lawtonsafrica.com / sipho.mtsweni@lawtonsafrica.com
Telephone: 011 775 6386 / 011 523 6192

/Ends/

"Annexure D"

From: Shannen Etter
Sent: Tuesday, 09 January 2024 11:14
To: Pieter
Cc: Sj Thema; Sipho Mtsweni; Daphney Nkotswe
Subject: [RE: Section 59 Investigations & Report (Our Ref.: 15570-00016/SJ Thema/S Mtsweni/dn)] [LWTN-LEGALDOCS.FID296143]

Good Day,

We refer to the above matter and to previous correspondence herein.

Please take note that the Panel has agreed to grant your client's request for an extension of the date for submissions to 31st January 2024.

Kindly take note that no further requests for extensions will be entertained by the Panel, in this regard.

We trust the above is in order, and await your client's submissions on or before 31st January 2024.

Kind regards,

Shannen Etter

Candidate Attorney

Shannen.Etter@lawtonsafrica.com

T +27 11 523 6081 M +27 82 329 5573

LAWTONS AFRICA

140 West Street, Sandton, Johannesburg, 2196
T +27 11 286 6900 **F** +27 11 286 6901
www.lawtonsafrica.com

From: Shannen Etter
Sent: Tuesday, 09 January 2024 11:15
To: Pesachya Glixman; Altair Richards; Orita Maharaj
Cc: Sj Thema; Sipho Mtsweni; Daphney Nkotswe
Subject: RE: [Section 59 Investigations & Report (Our Ref.: 15570-00016/SJ Thema/S Mtsweni/dn)] [LWTN-LEGALDOCS.FID296143]

Good Day,

We refer to the above matter and to previous correspondence herein.

Please take note that the Panel has agreed to grant your client's request for an extension of the date for submissions to 31st January 2024.

Kindly take note that no further requests for extensions will be entertained by the Panel, in this regard.

We trust the above is in order, and await your client's submissions on or before 31st January 2024.

Kind regards,

Shannen Etter

Candidate Attorney

Shannen.Etter@lawtonsafrica.com

T +27 11 523 6081 M +27 82 329 5573

LAWTONS AFRICA

140 West Street, Sandton, Johannesburg, 2196
T +27 11 286 6900 **F** +27 11 286 6901
www.lawtonsafrica.com

From: Shannen Etter
Sent: Tuesday, 09 January 2024 11:15
To: Ishmael Mogapi
Cc: Stan Moloabi; Anita du Toit; Evan Theys; Gert Andre Cowley; Yashwin Singh; Sj Thema; Sipho Mtsweni; Daphney Nkotswe
Subject: [RE: Section 59 Investigations & Report (Our Ref.: 15570-00016/SJ Thema/S Mtsweni/dn)] [LWTN-LEGALDOCS.FID296143]

Good Day,

We refer to the above matter and to previous correspondence herein.

Please take note that other Stakeholders have approached the Panel to request an extension of the date for submissions from 12th January 2024 to 31st January 2024. The Panel has agreed to the request; accordingly, and in the interest of procedural fairness, the Panel has also decided to grant GEMS an extension until 31st January 2024, within which to make its submissions.

The Panel will not entertain any requests for further extensions in this regard.

Thank you.

Kind regards,

Shannen Etter

Candidate Attorney

Shannen.Etter@lawtonsafrica.com

T +27 11 523 6081 M +27 82 329 5573

LAWTONS AFRICA

140 West Street, Sandton, Johannesburg, 2196
T +27 11 286 6900 **F** +27 11 286 6901
www.lawtonsafrica.com

"Annexure E"

Racial Discrimination in Identifying Fraud, Waste and Abuse: Additional Tables – Disciplines

Compiled by
Dr. Zaid Kimmie

Thursday 20th June, 2024

Contents

1

Discovery Health

1.1 Diagnostic.Radiology

Year	Base	Base + Visits	Base + Visits2
2012	0.5 [0.03, 2.31]	1.15 [0.06, 6.31]	1.14 [0.06, 8.01]
2013	1.13 [0.17, 3.9]	1.54 [0.23, 5.78]	2.25 [0.3, 11.46]
2014	2.5 [0.51, 9.05]	3.43 [0.63, 14.45]	5.59 [0.9, 31.1]
2015	0.71 [0.11, 2.52]	1.08 [0.16, 4.27]	1.36 [0.19, 6.51]
2016	1.08 [0.31, 2.76]	2.24 [0.58, 6.63]	2.59 [0.61, 9.8]
2017	0.5 [0.08, 1.72]	1.06 [0.16, 4.19]	1.06 [0.15, 4.81]
2018	0.85 [0.25, 2.12]	1.28 [0.36, 3.43]	1.38 [0.35, 4.43]
2019	0.64 [0.15, 1.78]	1.25 [0.28, 3.9]	1.69 [0.34, 6.73]
All Years	1.11 [0.66, 1.69]	2.69 [1.45, 4.5]	3.12 [1.35, 7.46]

Table. 1.1. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Diagnostic.Radiology

Year	Base	Base + Visits	Base + Visits2
2012	0.75 [0.04, 3.91]	3.64 [0.15, 40.02]	2.55 [0.1, 35.01]
2013	1.01 [0.05, 6.42]	1.14 [0.06, 7.75]	1.48 [0.07, 13.17]
2014	6.27 [0.83, 46.5]	18.24 [1.42, 196.98]	15.72 [1.48, 279.41]
2015	0.82 [0.12, 3.32]	1.06 [0.15, 4.7]	1.5 [0.19, 8.84]
2016	1.26 [0.27, 4.3]	6.38 [0.83, 48.14]	2.83 [0.47, 15.52]
2017	0.53 [0.08, 1.97]	1.19 [0.16, 6.1]	1.21 [0.16, 6.6]
2018	0.83 [0.23, 2.18]	1.28 [0.34, 3.77]	1.17 [0.29, 3.98]
2019	1.25 [0.26, 4.26]	1.83 [0.36, 7.14]	2.8 [0.49, 14.23]
All Years	1.75 [0.94, 2.9]	3.79 [1.8, 7.11]	4.29 [1.69, 11.49]

Table. 1.2. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Diagnostic.Radiology

1.2 Dental.Technician

Year	Base	Base + Visits	Base + Visits2
2012	0.26 [0.02, 1.07]	0.3 [0.02, 1.3]	0.29 [0.02, 1.41]
2013	0.7 [0.18, 1.64]	0.87 [0.22, 2.17]	1.09 [0.25, 3.23]
2014	0 [0, 17.35]	0 [NA, 28.61]	0 [NA, 99.2]
2015	0 [NA, 186.5]	0 [NA, 221.91]	0 [NA, 863.82]
2016	1.43 [0.08, 6.33]	1.93 [0.11, 9.26]	2.81 [0.14, 17.45]
2017	2.44 [0.13, 12.5]	3.75 [0.2, 21.52]	9.01 [0.4, 91.97]
2018	1.18 [0.49, 2.19]	1.23 [0.51, 2.31]	1.37 [0.54, 2.7]
2019	0.25 [0.01, 1.09]	0.27 [0.02, 1.16]	0.29 [0.02, 1.3]
All Years	0.6 [0.29, 1.03]	0.77 [0.35, 1.41]	0.99 [0.39, 2.25]

Table. 1.3. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Dental.Technician

Year	Base	Base + Visits	Base + Visits2
2012	0.26 [0.02, 1.07]	0.3 [0.02, 1.3]	0.29 [0.02, 1.43]
2013	0.7 [0.18, 1.64]	0.87 [0.22, 2.17]	1.07 [0.24, 3.16]
2014	0 [0, 17.35]	0 [NA, 28.61]	0 [NA, 89.49]
2015	0 [NA, 186.5]	0 [NA, 221.91]	0 [NA, 753.32]
2016	1.43 [0.08, 6.33]	1.93 [0.11, 9.26]	2.92 [0.15, 18.27]
2017	2.44 [0.13, 12.5]	3.75 [0.2, 21.52]	9.02 [0.4, 91.16]
2018	1.18 [0.49, 2.19]	1.23 [0.51, 2.31]	1.38 [0.54, 2.73]
2019	0.25 [0.01, 1.09]	0.27 [0.02, 1.16]	0.29 [0.02, 1.29]
All Years	0.6 [0.29, 1.03]	0.77 [0.35, 1.41]	1 [0.4, 2.25]

Table. 1.4. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Dental.Technician

1.3 Dental.therapy

Year	Base	Base + Visits	Base + Visits2
2012	0.17 [0.01, 3.87]	0.16 [0.01, 3.83]	0.17 [0.01, 3.83]
2013	0.96 [0.26, 4.93]	1.05 [0.28, 5.73]	1.08 [0.28, 6.71]
2014	1.48 [0.29, 15.97]	1.56 [0.3, 17.97]	1.52 [0.29, 19.34]
2015	12666762.38 [0, NA]	12475706.5 [0, NA]	12699265.69 [0, NA]
2016	0.48 [0.19, 1.32]	0.49 [0.19, 1.42]	0.46 [0.17, 1.41]
2017	0.97 [0.33, 3.44]	1.08 [0.35, 4.18]	0.94 [0.31, 3.71]
2018	0.41 [0.14, 1.37]	0.51 [0.16, 1.89]	0.43 [0.14, 1.58]
2019	0.16 [0.04, 0.65]	0.17 [0.04, 0.71]	0.16 [0.04, 0.65]
All Years	0.78 [0.47, 1.26]	0.77 [0.45, 1.32]	0.68 [0.37, 1.3]

Table. 1.5. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Dental.therapy

Year	Base	Base + Visits	Base + Visits2
2012	0.14 [0.01, 3.25]	0.14 [0.01, 3.25]	0.14 [0.01, 3.23]
2013	0.79 [0.21, 4.1]	0.82 [0.22, 4.48]	0.76 [0.19, 4.88]
2014	4818699.79 [0, NA]	4923344.96 [0, NA]	4838226.99 [0, NA]
2015	12807504.61 [0, NA]	12877569.31 [0, NA]	12758880.97 [0, NA]
2016	0.45 [0.18, 1.26]	0.44 [0.17, 1.28]	0.4 [0.15, 1.25]
2017	2.58 [0.55, 21.35]	3.47 [0.63, 37.09]	2.57 [0.51, 33.43]
2018	0.37 [0.13, 1.24]	0.45 [0.14, 1.67]	0.39 [0.13, 1.42]
2019	0.15 [0.04, 0.59]	0.15 [0.04, 0.63]	0.14 [0.03, 0.57]
All Years	0.77 [0.45, 1.29]	0.74 [0.41, 1.3]	0.66 [0.34, 1.3]

Table. 1.6. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Dental.therapy

1.4 Radiography

Year	Base	Base + Visits	Base + Visits2
2012	3.46 [0.82, 16.53]	3.67 [0.82, 18.86]	4.47 [0.92, 25.6]
2013	0.93 [0.18, 3.84]	0.76 [0.14, 3.24]	0.72 [0.14, 2.94]
2014	0.32 [0.02, 2.07]	0.26 [0.01, 1.75]	0.29 [0.01, 2.05]
2015	58464909.82 [0, NA]	19107423.37 [0, NA]	24003296.32 [0, NA]
2016	4.42 [0.66, 54.31]	6.35 [0.79, 108.17]	8.18 [1.06, 147.95]
2017	2.83 [0.97, 8.69]	5.27 [1.51, 21.65]	3.66 [1.14, 12.68]
2018	1.39 [0.42, 4.39]	2.54 [0.67, 10.34]	2.76 [0.75, 10.6]
2019	1.73 [0.29, 11.52]	1.75 [0.28, 12.34]	2.11 [0.32, 15.92]
All Years	1.71 [1, 2.83]	2.21 [1.24, 3.86]	3.29 [1.68, 6.58]

Table. 1.7. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Radiography

Year	Base	Base + Visits	Base + Visits2
2012	3.42 [0.81, 16.35]	3.63 [0.81, 18.64]	4.7 [0.96, 27.64]
2013	0.92 [0.18, 3.8]	0.76 [0.14, 3.22]	0.74 [0.14, 3.06]
2014	0.32 [0.02, 2.05]	0.25 [0.01, 1.73]	0.3 [0.01, 2.12]
2015	58464909.95 [0, NA]	19257774.61 [0, NA]	23937180.68 [0, NA]
2016	4.35 [0.65, 53.52]	6.26 [0.78, 106.65]	8.21 [1.07, 149.39]
2017	3.73 [1.18, 13.23]	8.91 [2.09, 51.03]	4.99 [1.42, 20.44]
2018	1.36 [0.41, 4.31]	2.5 [0.66, 10.17]	2.68 [0.73, 10.24]
2019	3.4 [0.44, 47.66]	3.95 [0.46, 63.57]	5.87 [0.66, 113.71]
All Years	1.77 [1.03, 2.97]	2.33 [1.29, 4.14]	3.43 [1.73, 6.93]

Table. 1.8. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Radiography

1.5 Chiropractors

Year	Base	Base + Visits	Base + Visits2
2012	2.89 [0.14, 27.06]	3.41 [0.16, 34.64]	5.37 [0.24, 61.44]
2013	0 [NA, 48.78]	0 [NA, 114.65]	0 [NA, 7561.2]
2014	0 [NA, 156.33]	0 [NA, 177.76]	0 [NA, 849.62]
2015	0 [NA, 245]	0 [NA, 625.44]	0 [NA, 121142.97]
2016	0 [NA, 170.33]	0 [NA, 607.71]	0 [NA, 436563.33]
2017	1.34 [0.07, 8.65]	1.58 [0.08, 10.72]	1.63 [0.08, 11.38]
2018	1.71 [0.38, 5.46]	2.19 [0.47, 7.58]	2.38 [0.51, 8.34]
2019	0 [NA, 135.25]	0 [NA, 108.09]	0 [NA, 202.17]
All Years	0.77 [0.27, 1.76]	1.02 [0.34, 2.42]	1.1 [0.36, 2.71]

Table. 1.9. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Chiropractors

Year	Base	Base + Visits	Base + Visits2
2012	2.89 [0.13, 27]	3.4 [0.16, 34.55]	4.97 [0.22, 55.86]
2013	0 [NA, 48.56]	0 [NA, 114.05]	0 [NA, 4246.88]
2014	0 [NA, 156]	0 [NA, 177.41]	0 [NA, 707.59]
2015	0 [NA, 244.5]	0 [NA, 623.72]	0 [NA, 46784.93]
2016	0 [NA, 170]	0 [NA, 605.98]	0 [NA, 1511014.96]
2017	1.34 [0.07, 8.64]	1.58 [0.08, 10.7]	1.73 [0.09, 12.21]
2018	1.7 [0.38, 5.45]	2.19 [0.47, 7.56]	2.31 [0.5, 8.03]
2019	0 [NA, 135]	0 [NA, 108.01]	0 [NA, 230.86]
All Years	0.77 [0.27, 1.76]	1.01 [0.34, 2.42]	1.11 [0.37, 2.73]

Table. 1.10. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Chiropractors

1.6 Homeopaths

Year	Base	Base + Visits	Base + Visits2
2012	225507508.44 [0, NA]	232632875.12 [0, NA]	302973935.03 [0, NA]
2013	9.46 [0.92, 120.71]	10.3 [0.98, 141]	13.11 [1.2, 247.52]
2014	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	0 [NA, 88.67]	0 [NA, 280.34]	0 [NA, 1517.99]
2017	203684201.18 [0, NA]	212937502.45 [0, NA]	253179245.98 [0, NA]
2018	4.56 [0.55, 30.83]	4.68 [0.57, 32.38]	5.71 [0.67, 46.14]
2019	210473674.61 [0, NA]	1581045636.91 [0, NA]	613508977.1 [0, NA]
All Years	4.28 [1.58, 10.81]	5.91 [2.03, 16.86]	9.14 [2.93, 29.69]

Table. 1.11. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Homeopaths

Year	Base	Base + Visits	Base + Visits2
2012	229607644.96 [0, NA]	236995985.23 [0, NA]	297534101.01 [0, NA]
2013	9.59 [0.93, 121.5]	10.44 [0.99, 141.89]	14.28 [1.29, 279.97]
2014	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	0 [NA, 88.33]	0 [NA, 279.2]	0 [NA, 2117.46]
2017	207023286.44 [0, NA]	216466626.78 [0, NA]	262046996.54 [0, NA]
2018	4.62 [0.56, 31.14]	4.74 [0.57, 32.72]	5.62 [0.66, 44.45]
2019	214041024.97 [0, NA]	1576596878.39 [0, NA]	839526332.53 [0, NA]
All Years	4.3 [1.59, 10.85]	5.95 [2.04, 16.96]	9.75 [3.1, 32.14]

Table. 1.12. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Homeopaths

1.7 Psychiatry

Year	Base	Base + Visits	Base + Visits2
2012	2.64 [1, 6.81]	2.98 [1.1, 7.99]	3.49 [1.26, 10.03]
2013	1.6 [0.58, 4.06]	1.82 [0.64, 4.93]	2.32 [0.79, 6.56]
2014	1.58 [0.64, 3.62]	1.86 [0.69, 4.86]	2.36 [0.89, 6.1]
2015	0.72 [0.2, 2.06]	0.74 [0.21, 2.15]	0.8 [0.22, 2.39]
2016	1.02 [0.39, 2.4]	1.05 [0.4, 2.52]	1.15 [0.43, 2.86]
2017	3.49 [1.64, 7.48]	3.69 [1.7, 8.15]	3.83 [1.74, 8.71]
2018	1.45 [0.76, 2.64]	1.47 [0.76, 2.73]	1.5 [0.77, 2.81]
2019	12.35 [4.44, 40.59]	12.91 [4.58, 44.55]	13.33 [4.66, 47.91]
All Years	2 [1.51, 2.58]	2.65 [1.88, 3.67]	3.14 [2.1, 4.7]

Table. 1.13. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Psychiatry

Year	Base	Base + Visits	Base + Visits2
2012	2.6 [0.99, 6.7]	2.87 [1.07, 7.69]	3.4 [1.22, 9.77]
2013	1.57 [0.57, 4]	1.66 [0.57, 4.55]	2.23 [0.76, 6.34]
2014	1.71 [0.69, 4.01]	1.85 [0.68, 4.81]	2.68 [1.01, 7.09]
2015	0.78 [0.22, 2.27]	0.79 [0.22, 2.33]	0.87 [0.24, 2.64]
2016	1 [0.38, 2.35]	1.02 [0.38, 2.45]	1.11 [0.41, 2.74]
2017	3.44 [1.61, 7.35]	3.58 [1.65, 7.92]	3.77 [1.71, 8.59]
2018	1.66 [0.85, 3.1]	1.67 [0.85, 3.13]	1.69 [0.86, 3.2]
2019	12.13 [4.36, 39.83]	12.54 [4.45, 43.28]	13.39 [4.65, 49.64]
All Years	2.05 [1.54, 2.65]	2.66 [1.89, 3.69]	3.16 [2.12, 4.74]

Table. 1.14. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Psychiatry

1.8 Orthopaedics

Year	Base	Base + Visits	Base + Visits2
2012	0.75 [0.35, 1.4]	0.94 [0.42, 1.86]	1.11 [0.48, 2.31]
2013	1.26 [0.57, 2.44]	1.89 [0.78, 4.17]	2.11 [0.88, 4.73]
2014	1.07 [0.49, 2.06]	1.28 [0.57, 2.56]	1.33 [0.58, 2.79]
2015	0.64 [0.31, 1.17]	0.74 [0.35, 1.4]	0.86 [0.4, 1.71]
2016	0.95 [0.35, 2.15]	1.17 [0.42, 2.77]	1.37 [0.49, 3.34]
2017	0.95 [0.27, 2.62]	1.3 [0.36, 3.77]	1.36 [0.37, 4.02]
2018	1.84 [0.86, 3.67]	2.06 [0.94, 4.21]	2.18 [0.97, 4.64]
2019	1.28 [0.41, 3.33]	1.46 [0.46, 3.92]	1.65 [0.51, 4.64]
All Years	0.98 [0.73, 1.26]	1.64 [1.12, 2.36]	1.86 [1.21, 2.87]

Table. 1.15. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Orthopaedics

Year	Base	Base + Visits	Base + Visits2
2012	0.79 [0.37, 1.47]	1.01 [0.45, 1.99]	1.19 [0.51, 2.5]
2013	1.15 [0.5, 2.32]	1.81 [0.71, 4.21]	2.03 [0.8, 4.72]
2014	1.17 [0.53, 2.28]	1.41 [0.62, 2.9]	1.49 [0.64, 3.18]
2015	0.66 [0.32, 1.2]	0.78 [0.37, 1.51]	0.9 [0.41, 1.79]
2016	1.12 [0.41, 2.6]	1.3 [0.46, 3.15]	1.66 [0.57, 4.21]
2017	1.07 [0.3, 3.04]	1.36 [0.37, 4.07]	1.53 [0.41, 4.72]
2018	1.6 [0.72, 3.25]	1.86 [0.82, 3.92]	1.86 [0.8, 4.01]
2019	1.47 [0.46, 3.97]	1.78 [0.54, 5.14]	1.9 [0.57, 5.56]
All Years	0.98 [0.73, 1.27]	1.68 [1.13, 2.42]	1.84 [1.19, 2.84]

Table. 1.16. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Orthopaedics

1.9 Paediatrics

Year	Base	Base + Visits	Base + Visits2
2012	0.81 [0.65, 0.98]	0.8 [0.55, 1.15]	0.6 [0.39, 0.94]
2013	0.81 [0.62, 1.02]	0.98 [0.66, 1.41]	0.78 [0.52, 1.18]
2014	0.86 [0.68, 1.05]	1.07 [0.74, 1.52]	0.92 [0.6, 1.42]
2015	0.93 [0.74, 1.13]	1.15 [0.8, 1.61]	1.01 [0.66, 1.53]
2016	0.93 [0.7, 1.2]	1.07 [0.74, 1.53]	0.93 [0.62, 1.39]
2017	0.83 [0.58, 1.14]	0.94 [0.63, 1.39]	0.84 [0.54, 1.3]
2018	1.3 [0.55, 2.97]	1.51 [0.62, 3.62]	1.29 [0.53, 3.11]
2019	0.86 [0.26, 2.51]	0.96 [0.29, 2.91]	0.9 [0.27, 2.76]
All Years	1.01 [0.88, 1.15]	1.11 [0.77, 1.55]	0.98 [0.66, 1.47]

Table. 1.17. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Paediatrics

Year	Base	Base + Visits	Base + Visits2
2012	0.83 [0.65, 1]	0.81 [0.55, 1.16]	0.62 [0.39, 0.97]
2013	0.86 [0.65, 1.08]	1.02 [0.69, 1.47]	0.83 [0.55, 1.26]
2014	0.9 [0.71, 1.1]	1.11 [0.76, 1.58]	0.98 [0.63, 1.51]
2015	1 [0.79, 1.22]	1.26 [0.87, 1.78]	1.09 [0.71, 1.67]
2016	1 [0.75, 1.29]	1.14 [0.78, 1.64]	1 [0.66, 1.52]
2017	0.87 [0.6, 1.21]	0.96 [0.63, 1.44]	0.86 [0.55, 1.35]
2018	1.47 [0.6, 3.54]	1.64 [0.65, 4.15]	1.45 [0.57, 3.68]
2019	0.8 [0.24, 2.34]	0.9 [0.27, 2.72]	0.81 [0.24, 2.46]
All Years	1.04 [0.89, 1.18]	1.11 [0.78, 1.56]	1.01 [0.67, 1.5]

Table. 1.18. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Paediatrics

1.10 Surgery

Year	Base	Base + Visits	Base + Visits2
2012	0.99 [0.65, 1.43]	1.23 [0.77, 1.88]	1.37 [0.82, 2.24]
2013	0.9 [0.51, 1.46]	1.06 [0.58, 1.8]	1.19 [0.64, 2.15]
2014	0.78 [0.53, 1.09]	0.98 [0.62, 1.5]	1 [0.61, 1.63]
2015	1.22 [0.79, 1.81]	1.53 [0.93, 2.43]	1.75 [1.02, 2.98]
2016	1.2 [0.59, 2.25]	1.22 [0.6, 2.29]	1.31 [0.63, 2.58]
2017	0.6 [0.22, 1.34]	0.62 [0.23, 1.41]	0.64 [0.24, 1.5]
2018	0.5 [0.22, 1]	0.57 [0.24, 1.18]	0.59 [0.25, 1.25]
2019	0.61 [0.14, 1.95]	0.68 [0.15, 2.23]	0.72 [0.16, 2.41]
All Years	0.88 [0.71, 1.06]	1.21 [0.89, 1.62]	1.26 [0.86, 1.83]

Table. 1.19. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Surgery

Year	Base	Base + Visits	Base + Visits2
2012	1.01 [0.66, 1.45]	1.27 [0.79, 1.98]	1.38 [0.82, 2.28]
2013	0.93 [0.53, 1.52]	1.06 [0.58, 1.81]	1.19 [0.64, 2.16]
2014	0.78 [0.53, 1.1]	0.96 [0.6, 1.47]	1.03 [0.62, 1.68]
2015	1.21 [0.77, 1.79]	1.48 [0.89, 2.36]	1.69 [0.98, 2.88]
2016	1.17 [0.57, 2.19]	1.19 [0.58, 2.25]	1.29 [0.61, 2.55]
2017	0.58 [0.22, 1.3]	0.6 [0.22, 1.38]	0.61 [0.22, 1.43]
2018	0.52 [0.23, 1.06]	0.58 [0.24, 1.22]	0.64 [0.27, 1.38]
2019	0.57 [0.13, 1.83]	0.64 [0.14, 2.12]	0.67 [0.15, 2.22]
All Years	0.87 [0.71, 1.05]	1.17 [0.86, 1.57]	1.21 [0.83, 1.77]

Table. 1.20. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Surgery

1.11 Clinical.technology

Year	Base	Base + Visits	Base + Visits2
2012	0.49 [0.19, 1.04]	0.47 [0.17, 1.04]	0.47 [0.18, 1.06]
2013	0.37 [0.06, 1.3]	0.32 [0.03, 1.38]	0.32 [0.05, 1.29]
2014	1.54 [0.64, 3.36]	1.74 [0.71, 3.91]	1.74 [0.68, 4.3]
2015	2.08 [1.06, 3.85]	2.43 [1.21, 4.64]	2.31 [1.07, 4.98]
2016	0.57 [0.19, 1.44]	0.62 [0.2, 1.57]	0.52 [0.16, 1.38]
2017	1.04 [0.48, 2.09]	1.03 [0.47, 2.08]	0.98 [0.44, 2.07]
2018	1.7 [0.69, 4.02]	1.68 [0.69, 3.99]	1.62 [0.64, 4.03]
2019	1.81 [0.48, 6.87]	3.94 [0.83, 25.67]	1.31 [0.31, 5.75]
All Years	0.83 [0.6, 1.12]	0.68 [0.45, 1]	0.72 [0.46, 1.1]

Table. 1.21. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Clinical.technology

Year	Base	Base + Visits	Base + Visits2
2012	0.49 [0.19, 1.06]	0.42 [0.14, 0.97]	0.48 [0.18, 1.08]
2013	0.48 [0.07, 1.79]	0.46 [0.06, 1.9]	0.45 [0.07, 1.82]
2014	1.65 [0.68, 3.67]	1.86 [0.73, 4.5]	1.74 [0.67, 4.33]
2015	2.18 [1.1, 4.09]	2.34 [1.14, 4.64]	2.31 [1.06, 5.03]
2016	0.56 [0.18, 1.41]	0.5 [0.15, 1.35]	0.47 [0.15, 1.27]
2017	1.05 [0.48, 2.14]	1.05 [0.48, 2.14]	0.96 [0.42, 2.06]
2018	1.81 [0.72, 4.44]	1.81 [0.72, 4.43]	1.67 [0.65, 4.36]
2019	2.29 [0.57, 10.26]	2.07 [0.37, 14.67]	1.3 [0.28, 6.89]
All Years	0.84 [0.6, 1.13]	0.68 [0.45, 0.99]	0.69 [0.45, 1.06]

Table. 1.22. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Clinical.technology

1.12 Clinical.services

Year	Base	Base + Visits	Base + Visits2
2012	0 [NA, 16.55]	0 [NA, 23.65]	0 [NA, 176.46]
2013	4.45 [0.26, 14.73]	5.37 [0.27, 23.56]	4.55 [0.13, 61.69]
2014	3.02 [0.18, 11.21]	2.79 [0.09, 22.12]	4.64 [0.07, 186.36]
2015	2.2 [0.13, 8.05]	2.37 [0.13, 9.7]	2.27 [0.09, 18.17]
2016	2 [0.12, 7.59]	2.02 [0.12, 7.68]	2.49 [0.09, 24]
2017	2.67 [0.15, 10.44]	3.21 [0.18, 13.02]	2.28 [0.08, 25.31]
2018	2.81 [0.47, 7.75]	3.61 [0.59, 10.41]	6.43 [0.62, 38.3]
2019	0 [NA, 17]	0 [NA, 17.4]	0 [NA, 335.9]
All Years	1.23 [0.21, 3.41]	1 [0.08, 3.95]	1.62 [0.14, 9.05]

Table. 1.23. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Clinical.services

Year	Base	Base + Visits	Base + Visits2
2012	0 [NA, 16]	0 [NA, 22.83]	0 [NA, 158.67]
2013	4.37 [0.26, 14.48]	5.28 [0.27, 23.13]	4.58 [0.13, 61.49]
2014	3.43 [0.2, 12.09]	3.04 [0.09, 23.87]	4.96 [0.08, 191.62]
2015	2.1 [0.12, 7.66]	2.27 [0.13, 9.24]	1.87 [0.07, 16.55]
2016	2.19 [0.13, 8]	2.21 [0.13, 8.1]	2.15 [0.07, 23.63]
2017	2.95 [0.17, 11.05]	3.52 [0.2, 13.72]	2.42 [0.09, 25.89]
2018	2.98 [0.5, 8]	3.81 [0.62, 10.72]	6.52 [0.63, 38.02]
2019	0 [NA, 16.56]	0 [NA, 16.94]	0 [NA, 266.42]
All Years	1.34 [0.23, 3.63]	1.09 [0.09, 4.23]	1.64 [0.14, 9.28]

Table. 1.24. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Clinical.services

1.13 Obstetrics.and.Gynaecology

Year	Base	Base + Visits	Base + Visits2
2012	1.89 [1.23, 2.84]	2.63 [1.63, 4.22]	2.83 [1.7, 4.72]
2013	1.84 [1.29, 2.56]	2.38 [1.59, 3.49]	2.41 [1.58, 3.69]
2014	1.33 [1.03, 1.69]	1.78 [1.31, 2.39]	1.95 [1.36, 2.78]
2015	1.24 [0.93, 1.62]	1.46 [1.06, 1.97]	1.61 [1.12, 2.3]
2016	1.54 [0.99, 2.34]	1.74 [1.09, 2.74]	1.82 [1.11, 2.97]
2017	1.26 [0.73, 2.14]	1.45 [0.8, 2.58]	1.48 [0.81, 2.67]
2018	1.97 [1.1, 3.49]	2.17 [1.17, 4.05]	2.33 [1.24, 4.45]
2019	1.93 [0.91, 4.1]	2.23 [1.03, 4.99]	2.37 [1.08, 5.35]
All Years	1.33 [1.16, 1.51]	2.15 [1.71, 2.67]	2.7 [1.99, 3.69]

Table. 1.25. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Obstetrics.and.Gynaecology

Year	Base	Base + Visits	Base + Visits2
2012	2.02 [1.29, 3.09]	2.74 [1.66, 4.48]	2.92 [1.73, 4.97]
2013	1.91 [1.33, 2.69]	2.33 [1.56, 3.43]	2.47 [1.6, 3.8]
2014	1.34 [1.03, 1.7]	1.76 [1.29, 2.38]	1.9 [1.33, 2.73]
2015	1.2 [0.9, 1.58]	1.4 [1.01, 1.91]	1.53 [1.06, 2.2]
2016	1.5 [0.96, 2.28]	1.66 [1.03, 2.63]	1.72 [1.05, 2.82]
2017	1.23 [0.7, 2.1]	1.37 [0.75, 2.45]	1.41 [0.77, 2.56]
2018	1.86 [1.02, 3.36]	1.99 [1.06, 3.76]	2.15 [1.13, 4.17]
2019	1.8 [0.85, 3.81]	2.01 [0.92, 4.48]	2.1 [0.96, 4.75]
All Years	1.31 [1.13, 1.49]	2.08 [1.64, 2.6]	2.59 [1.89, 3.56]

Table. 1.26. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Obstetrics.and.Gynaecology

1.14 Anaesthetists

Year	Base	Base + Visits	Base + Visits2
2012	0.96 [0.65, 1.35]	1.11 [0.74, 1.58]	1.38 [0.87, 2.12]
2013	1.02 [0.63, 1.57]	1.19 [0.72, 1.85]	1.33 [0.78, 2.18]
2014	1.36 [0.86, 2.05]	1.78 [1.09, 2.77]	2.14 [1.24, 3.6]
2015	0.84 [0.54, 1.25]	0.97 [0.61, 1.46]	1.21 [0.72, 1.96]
2016	0.82 [0.5, 1.28]	0.96 [0.58, 1.52]	1.17 [0.67, 1.97]
2017	1.67 [0.84, 3.1]	1.9 [0.94, 3.58]	1.98 [0.97, 3.84]
2018	1.32 [0.7, 2.33]	1.36 [0.71, 2.42]	1.77 [0.9, 3.32]
2019	1.45 [0.31, 5.11]	1.61 [0.34, 5.84]	1.53 [0.32, 5.57]
All Years	0.98 [0.81, 1.17]	1.37 [1.06, 1.75]	1.65 [1.2, 2.26]

Table. 1.27. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Anaesthetists

Year	Base	Base + Visits	Base + Visits2
2012	0.99 [0.67, 1.39]	1.16 [0.76, 1.7]	1.41 [0.88, 2.2]
2013	1.13 [0.69, 1.74]	1.26 [0.76, 1.98]	1.41 [0.82, 2.32]
2014	1.57 [0.97, 2.41]	1.91 [1.14, 3.05]	2.23 [1.28, 3.78]
2015	0.87 [0.54, 1.31]	0.95 [0.58, 1.47]	1.16 [0.68, 1.89]
2016	0.87 [0.52, 1.37]	0.99 [0.58, 1.61]	1.14 [0.65, 1.94]
2017	1.9 [0.95, 3.6]	1.96 [0.96, 3.73]	2.14 [1.04, 4.2]
2018	1.3 [0.69, 2.31]	1.43 [0.74, 2.58]	1.72 [0.87, 3.24]
2019	1.39 [0.3, 4.9]	1.71 [0.36, 6.38]	1.51 [0.32, 5.52]
All Years	1.01 [0.83, 1.21]	1.4 [1.07, 1.8]	1.67 [1.21, 2.29]

Table. 1.28. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Anaesthetists

1.15 Specialist.Physician

Year	Base	Base + Visits	Base + Visits2
2012	1.18 [0.86, 1.58]	1.26 [0.89, 1.76]	1.39 [0.94, 2.03]
2013	1.35 [0.96, 1.85]	1.56 [1.04, 2.31]	1.6 [1.06, 2.41]
2014	0.81 [0.6, 1.06]	0.74 [0.52, 1.05]	0.79 [0.54, 1.13]
2015	1.12 [0.9, 1.37]	1.12 [0.86, 1.43]	1.2 [0.88, 1.64]
2016	1.08 [0.8, 1.43]	1.05 [0.75, 1.46]	1.08 [0.75, 1.55]
2017	1.36 [0.86, 2.09]	1.36 [0.85, 2.15]	1.36 [0.84, 2.17]
2018	1.5 [1.03, 2.15]	1.49 [1.01, 2.19]	1.53 [1, 2.32]
2019	1.12 [0.64, 1.89]	1.12 [0.63, 1.94]	1.09 [0.61, 1.91]
All Years	1.05 [0.92, 1.18]	1.13 [0.89, 1.42]	1.22 [0.93, 1.6]

Table. 1.29. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Specialist.Physician

Year	Base	Base + Visits	Base + Visits2
2012	1.17 [0.85, 1.57]	1.23 [0.86, 1.73]	1.39 [0.93, 2.05]
2013	1.38 [0.98, 1.9]	1.57 [1.03, 2.34]	1.64 [1.08, 2.5]
2014	0.86 [0.63, 1.13]	0.79 [0.55, 1.12]	0.87 [0.6, 1.26]
2015	1.13 [0.9, 1.39]	1.12 [0.85, 1.44]	1.24 [0.9, 1.7]
2016	1.1 [0.81, 1.46]	1.04 [0.73, 1.45]	1.09 [0.75, 1.57]
2017	1.46 [0.92, 2.27]	1.42 [0.88, 2.27]	1.47 [0.9, 2.39]
2018	1.52 [1.03, 2.19]	1.47 [0.97, 2.18]	1.56 [1.02, 2.4]
2019	1.15 [0.66, 1.96]	1.11 [0.62, 1.93]	1.13 [0.63, 2]
All Years	1.06 [0.93, 1.19]	1.16 [0.91, 1.46]	1.3 [0.98, 1.71]

Table. 1.30. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Specialist.Physician

1.16 Speech.therapy

Year	Base	Base + Visits	Base + Visits2
2012	2.51 [0.65, 8.41]	3.29 [0.8, 12.14]	4.49 [1.09, 16.81]
2013	0.63 [0.03, 3.64]	0.7 [0.04, 4.11]	0.76 [0.04, 4.72]
2014	1.6 [0.44, 4.78]	1.78 [0.48, 5.48]	2.16 [0.56, 6.93]
2015	2.82 [0.82, 8.96]	3.23 [0.91, 10.87]	3.35 [0.91, 11.54]
2016	7.37 [3.03, 19.04]	14.82 [5.17, 48.83]	9.07 [3.51, 25.13]
2017	14.6 [4.9, 53.8]	12.99 [4.26, 47.75]	10.85 [3.58, 36.75]
2018	3 [1.49, 5.83]	3.56 [1.72, 7.18]	3.79 [1.8, 7.82]
2019	6.29 [2.27, 18.75]	7.99 [2.72, 26.13]	8.79 [2.97, 28.61]
All Years	3.33 [2.35, 4.63]	4.43 [3.04, 6.37]	5.55 [3.67, 8.38]

Table. 1.31. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Speech.therapy

Year	Base	Base + Visits	Base + Visits2
2012	2.5 [0.65, 8.38]	3.26 [0.79, 12.04]	4.38 [1.06, 16.28]
2013	0.63 [0.03, 3.64]	0.7 [0.04, 4.1]	0.77 [0.04, 4.77]
2014	1.59 [0.43, 4.74]	1.77 [0.47, 5.44]	2.12 [0.55, 6.78]
2015	2.8 [0.81, 8.9]	3.21 [0.9, 10.79]	3.33 [0.91, 11.45]
2016	7.3 [3, 18.84]	14.6 [5.1, 48.05]	8.94 [3.45, 24.76]
2017	21.69 [6.25, 106.94]	20.01 [5.63, 98.12]	17.14 [4.82, 76.68]
2018	3.4 [1.66, 6.79]	4.04 [1.92, 8.4]	4.62 [2.14, 9.87]
2019	6.25 [2.25, 18.61]	7.9 [2.69, 25.8]	8.49 [2.89, 27.46]
All Years	3.5 [2.46, 4.89]	4.73 [3.23, 6.85]	6.03 [3.95, 9.21]

Table. 1.32. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Speech.therapy

1.17 Dieticians

Year	Base	Base + Visits	Base + Visits2
2012	3.89 [0.47, 29.32]	4.7 [0.51, 43.49]	7.34 [0.81, 68.17]
2013	8.97 [3.01, 28.47]	12.09 [3.76, 43.83]	15.46 [4.65, 60.52]
2014	3.93 [1.44, 10.44]	4.75 [1.67, 13.39]	6.44 [2.17, 19.61]
2015	6.21 [1.66, 26.6]	6.37 [1.68, 27.69]	7.33 [1.89, 33.54]
2016	3.81 [1.99, 7.12]	4.21 [2.17, 8.04]	4.52 [2.29, 8.91]
2017	7.51 [3.63, 16.07]	8.4 [3.96, 18.61]	7.66 [3.66, 16.6]
2018	7.88 [4.57, 13.58]	8.87 [5.03, 15.71]	9.39 [5.24, 17.13]
2019	5.1 [1.84, 15.16]	7.23 [2.4, 24.95]	5.83 [2.05, 18.13]
All Years	4.59 [3.47, 6]	6.6 [4.79, 9]	10.99 [7.41, 16.47]

Table. 1.33. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Dieticians

Year	Base	Base + Visits	Base + Visits2
2012	3.9 [0.47, 29.35]	4.69 [0.51, 43.43]	7.49 [0.83, 69.22]
2013	11.98 [3.69, 44.29]	17.68 [4.86, 80.39]	21.05 [5.78, 99.86]
2014	3.92 [1.43, 10.4]	4.73 [1.67, 13.33]	6.61 [2.22, 20.25]
2015	6.14 [1.64, 26.29]	6.3 [1.66, 27.37]	7.02 [1.83, 31.83]
2016	4.34 [2.22, 8.35]	4.86 [2.44, 9.61]	5.38 [2.64, 11.06]
2017	7.42 [3.58, 15.86]	8.29 [3.9, 18.37]	7.6 [3.63, 16.47]
2018	8.42 [4.82, 14.75]	9.39 [5.26, 16.91]	9.91 [5.46, 18.35]
2019	5.05 [1.82, 15]	7.15 [2.37, 24.66]	5.84 [2.05, 18.2]
All Years	4.82 [3.62, 6.33]	7.06 [5.08, 9.71]	11.81 [7.89, 17.88]

Table. 1.34. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Dieticians

1.18 Social.workers

Year	Base	Base + Visits	Base + Visits2
2012	4.85 [0.19, 96.37]	7.34 [0.26, 231.31]	7.43 [0.28, 189.42]
2013	2.05 [0.1, 19.76]	3.12 [0.14, 39.68]	3.87 [0.17, 45.76]
2014	4.08 [0.49, 30.18]	7.33 [0.76, 81.44]	9.03 [0.96, 90.69]
2015	1.56 [0.22, 7.63]	1.86 [0.25, 9.69]	2.23 [0.3, 11.89]
2016	6.97 [2.06, 27.48]	7.73 [2.2, 32.51]	10.99 [2.97, 52]
2017	8.82 [5.26, 14.43]	9.28 [5.47, 15.44]	12.49 [6.88, 22.91]
2018	7.27 [3.96, 13.35]	7.47 [4.04, 13.82]	8.92 [4.64, 17.6]
2019	11.75 [3.19, 58.83]	12.9 [3.42, 68.15]	15.02 [3.88, 89.82]
All Years	5.17 [3.75, 7.02]	6.8 [4.77, 9.59]	14.9 [9.27, 24.46]

Table. 1.35. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Social.workers

Year	Base	Base + Visits	Base + Visits2
2012	4.84 [0.19, 96.14]	7.32 [0.26, 230.87]	7.43 [0.28, 189.62]
2013	2.04 [0.1, 19.71]	3.11 [0.14, 39.57]	3.99 [0.17, 49.67]
2014	4.07 [0.49, 30.11]	7.31 [0.76, 81.25]	9.24 [0.98, 92.88]
2015	1.55 [0.22, 7.59]	1.85 [0.25, 9.65]	2.18 [0.29, 11.61]
2016	6.91 [2.04, 27.23]	7.16 [2.04, 29.85]	9.86 [2.71, 45.82]
2017	9.51 [5.59, 15.84]	10.01 [5.8, 16.99]	13.88 [7.48, 26.23]
2018	8.03 [4.28, 15.13]	8.18 [4.34, 15.52]	9.54 [4.88, 19.2]
2019	11.64 [3.16, 58.27]	12.23 [3.27, 64.37]	14.46 [3.75, 86.44]
All Years	5.42 [3.92, 7.41]	7.41 [5.13, 10.61]	16.87 [10.29, 28.34]

Table. 1.36. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Social.workers

1.19 Occupational.Therapy

Year	Base	Base + Visits	Base + Visits2
2012	9.61 [2.79, 34.06]	10.97 [3.1, 41.06]	11.93 [3.34, 45.7]
2013	0 [NA, 164.33]	0 [NA, 219.11]	0 [NA, 1603.82]
2014	0.59 [0.03, 3]	0.6 [0.03, 3.19]	0.71 [0.04, 3.73]
2015	5.1 [1.27, 18.22]	5.46 [1.32, 20.55]	6.55 [1.56, 25.77]
2016	5.64 [2.11, 14.47]	5.65 [2.11, 14.52]	5.86 [2.15, 15.35]
2017	8.26 [3.32, 20.82]	8.47 [3.39, 21.53]	10.49 [4.07, 28.27]
2018	5.46 [2.78, 10.38]	6.89 [3.32, 14.03]	7.26 [3.53, 14.84]
2019	2.7 [0.38, 13.39]	3.53 [0.47, 20.15]	3.59 [0.49, 18.97]
All Years	4.21 [2.89, 6]	5.4 [3.6, 7.97]	9.05 [5.71, 14.4]

Table. 1.37. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Occupational.Therapy

Year	Base	Base + Visits	Base + Visits2
2012	9.56 [2.78, 33.89]	10.9 [3.08, 40.78]	12.11 [3.39, 46.65]
2013	0 [NA, 196]	0 [NA, 205.83]	0 [NA, 632.82]
2014	0.81 [0.04, 4.33]	0.81 [0.04, 4.37]	0.96 [0.05, 5.28]
2015	6.31 [1.51, 24.98]	6.53 [1.54, 26.47]	7.62 [1.76, 32.94]
2016	6.36 [2.32, 17.03]	6.4 [2.33, 17.18]	6.81 [2.44, 18.77]
2017	9.5 [3.69, 25.37]	9.69 [3.75, 26.07]	11.94 [4.48, 34.11]
2018	6.17 [3.08, 12.03]	7.17 [3.43, 14.77]	7.81 [3.75, 16.23]
2019	3.55 [0.47, 20.57]	3.65 [0.48, 21.34]	4.73 [0.61, 29.06]
All Years	4.81 [3.27, 6.94]	5.98 [3.96, 8.92]	10.27 [6.4, 16.56]

Table. 1.38. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Occupational.Therapy

1.20 Optometrists

Year	Base	Base + Visits	Base + Visits2
2012	1.13 [0.61, 2.02]	1.51 [0.79, 2.79]	1.81 [0.9, 3.55]
2013	0.67 [0.41, 1.06]	1.2 [0.71, 1.96]	2.22 [1.25, 3.86]
2014	1.08 [0.66, 1.72]	1.71 [1, 2.86]	2.02 [1.15, 3.5]
2015	1.26 [0.79, 1.98]	1.58 [0.96, 2.55]	1.72 [1.01, 2.9]
2016	2.37 [1.27, 4.49]	3.39 [1.71, 6.92]	3.95 [1.92, 8.27]
2017	1.02 [0.68, 1.5]	1.21 [0.79, 1.82]	1.16 [0.75, 1.79]
2018	1.05 [0.69, 1.57]	1.24 [0.8, 1.9]	1.13 [0.71, 1.77]
2019	1.25 [0.8, 1.93]	1.65 [1.02, 2.65]	1.64 [0.99, 2.71]
All Years	1.16 [0.98, 1.36]	1.66 [1.38, 1.99]	2 [1.62, 2.47]

Table. 1.39. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Optometrists

Year	Base	Base + Visits	Base + Visits2
2012	1.32 [0.7, 2.44]	1.63 [0.84, 3.12]	1.76 [0.86, 3.56]
2013	0.7 [0.43, 1.11]	1.17 [0.69, 1.93]	2.19 [1.23, 3.83]
2014	1.06 [0.65, 1.7]	1.73 [1.01, 2.91]	2.03 [1.15, 3.53]
2015	1.25 [0.78, 1.98]	1.57 [0.95, 2.55]	1.68 [0.99, 2.83]
2016	2.28 [1.2, 4.41]	3.24 [1.61, 6.74]	3.85 [1.84, 8.25]
2017	1.01 [0.67, 1.49]	1.14 [0.74, 1.73]	1.11 [0.71, 1.73]
2018	1.03 [0.68, 1.54]	1.17 [0.75, 1.79]	1.09 [0.69, 1.71]
2019	1.23 [0.78, 1.91]	1.53 [0.95, 2.47]	1.58 [0.95, 2.62]
All Years	1.16 [0.98, 1.37]	1.63 [1.35, 1.95]	1.92 [1.55, 2.38]

Table. 1.40. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Optometrists

1.21 General.Dental.Practice

Year	Base	Base + Visits	Base + Visits2
2012	0.61 [0.36, 0.97]	0.82 [0.48, 1.34]	1.03 [0.6, 1.71]
2013	0.64 [0.42, 0.95]	0.83 [0.53, 1.27]	0.97 [0.61, 1.5]
2014	1.03 [0.69, 1.53]	1.39 [0.9, 2.11]	1.66 [1.06, 2.57]
2015	1.27 [0.74, 2.15]	1.65 [0.93, 2.88]	1.9 [1.06, 3.36]
2016	0.98 [0.62, 1.51]	1.32 [0.82, 2.09]	1.68 [1.03, 2.7]
2017	1.65 [1.14, 2.38]	1.94 [1.31, 2.85]	1.88 [1.26, 2.78]
2018	1.04 [0.72, 1.49]	1.27 [0.86, 1.85]	1.41 [0.94, 2.08]
2019	0.74 [0.5, 1.09]	0.87 [0.57, 1.29]	1 [0.65, 1.51]
All Years	0.9 [0.77, 1.04]	1.22 [1.03, 1.45]	1.38 [1.14, 1.67]

Table. 1.41. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, General.Dental.Practice

Year	Base	Base + Visits	Base + Visits2
2012	0.64 [0.38, 1.02]	0.84 [0.49, 1.39]	1.02 [0.59, 1.72]
2013	0.67 [0.44, 1.01]	0.87 [0.55, 1.32]	0.99 [0.62, 1.54]
2014	1.12 [0.74, 1.68]	1.5 [0.96, 2.32]	1.77 [1.12, 2.76]
2015	1.2 [0.69, 2.03]	1.56 [0.88, 2.72]	1.8 [1.01, 3.19]
2016	1.02 [0.64, 1.59]	1.38 [0.85, 2.23]	1.77 [1.08, 2.88]
2017	1.75 [1.19, 2.57]	2.02 [1.35, 3.01]	1.98 [1.31, 2.98]
2018	1.06 [0.73, 1.54]	1.28 [0.86, 1.89]	1.42 [0.94, 2.12]
2019	0.75 [0.5, 1.1]	0.88 [0.58, 1.31]	0.97 [0.63, 1.47]
All Years	0.93 [0.79, 1.08]	1.27 [1.07, 1.51]	1.41 [1.16, 1.72]

Table. 1.42. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, General.Dental.Practice

1.22 Pharmacies

Year	Base	Base + Visits	Base + Visits2
2012	1.08 [0.6, 1.77]	1.23 [0.68, 2.04]	1.19 [0.64, 2.03]
2013	1.31 [0.79, 2.02]	1.58 [0.94, 2.47]	1.5 [0.86, 2.44]
2014	0.86 [0.51, 1.33]	1.04 [0.6, 1.64]	0.95 [0.54, 1.58]
2015	0.75 [0.42, 1.21]	0.96 [0.53, 1.57]	1 [0.54, 1.7]
2016	0.52 [0.31, 0.79]	0.68 [0.41, 1.06]	0.76 [0.44, 1.21]
2017	0.69 [0.52, 0.9]	1.04 [0.76, 1.37]	0.94 [0.68, 1.28]
2018	0.82 [0.67, 1]	1.27 [1.01, 1.56]	1.12 [0.87, 1.44]
2019	0.85 [0.66, 1.06]	1.27 [0.98, 1.62]	1.19 [0.89, 1.57]
All Years	0.8 [0.7, 0.9]	1.19 [1.03, 1.36]	1.22 [1, 1.48]

Table. 1.43. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Pharmacies

Year	Base	Base + Visits	Base + Visits2
2012	1.28 [0.7, 2.09]	1.44 [0.79, 2.39]	1.4 [0.75, 2.4]
2013	1.3 [0.73, 2.08]	1.54 [0.86, 2.51]	1.44 [0.78, 2.44]
2014	0.86 [0.48, 1.41]	1.02 [0.56, 1.7]	0.94 [0.5, 1.62]
2015	0.9 [0.5, 1.49]	1.15 [0.62, 1.92]	1.17 [0.62, 2.03]
2016	0.5 [0.28, 0.83]	0.66 [0.36, 1.11]	0.68 [0.36, 1.18]
2017	0.79 [0.57, 1.05]	1.15 [0.82, 1.57]	0.97 [0.68, 1.35]
2018	0.95 [0.74, 1.18]	1.4 [1.08, 1.77]	1.21 [0.92, 1.58]
2019	0.95 [0.71, 1.24]	1.47 [1.08, 1.96]	1.26 [0.91, 1.72]
All Years	0.84 [0.73, 0.95]	1.17 [1, 1.36]	1.25 [1.01, 1.54]

Table. 1.44. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Pharmacies

1.23 Physiotherapists

Year	Base	Base + Visits	Base + Visits2
2012	1.59 [0.75, 3.11]	1.97 [0.92, 3.95]	2.34 [1.09, 4.75]
2013	2.45 [1.48, 3.94]	3.03 [1.8, 5.01]	3.99 [2.33, 6.76]
2014	2.25 [1.27, 3.88]	2.8 [1.55, 4.95]	2.87 [1.58, 5.08]
2015	1.8 [1.04, 3.02]	2.12 [1.21, 3.62]	2.58 [1.44, 4.47]
2016	2.5 [1.56, 3.93]	3.05 [1.87, 4.9]	3.15 [1.92, 5.1]
2017	2.79 [2.01, 3.84]	3.58 [2.52, 5.05]	3.69 [2.57, 5.26]
2018	0.99 [0.76, 1.27]	1.46 [1.08, 1.96]	1.63 [1.18, 2.23]
2019	1.81 [1.17, 2.72]	2.19 [1.4, 3.37]	2.38 [1.5, 3.7]
All Years	1.64 [1.42, 1.88]	3.18 [2.63, 3.82]	3.96 [3.18, 4.94]

Table. 1.45. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Physiotherapists

Year	Base	Base + Visits	Base + Visits2
2012	1.77 [0.83, 3.53]	2.35 [1.07, 4.87]	2.53 [1.16, 5.22]
2013	2.53 [1.52, 4.1]	3.23 [1.9, 5.4]	4.01 [2.33, 6.82]
2014	2.45 [1.37, 4.28]	2.83 [1.56, 5.02]	3.09 [1.69, 5.54]
2015	1.81 [1.04, 3.04]	2.16 [1.22, 3.71]	2.51 [1.41, 4.36]
2016	2.7 [1.67, 4.29]	3.33 [2.02, 5.44]	3.41 [2.06, 5.59]
2017	2.84 [2.03, 3.92]	3.67 [2.56, 5.21]	3.69 [2.57, 5.28]
2018	1.05 [0.81, 1.36]	1.5 [1.1, 2]	1.68 [1.22, 2.3]
2019	2.04 [1.31, 3.12]	2.55 [1.6, 3.99]	2.63 [1.65, 4.14]
All Years	1.74 [1.5, 2]	3.33 [2.75, 4.01]	4.2 [3.37, 5.25]

Table. 1.46. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Physiotherapists

1.24 Psychologists

Year	Base	Base + Visits	Base + Visits2
2012	2.28 [1.08, 4.49]	2.82 [1.31, 5.69]	3.37 [1.55, 6.87]
2013	2.54 [1.14, 5.29]	3.21 [1.41, 6.89]	3.7 [1.62, 7.99]
2014	2.17 [0.94, 4.62]	2.59 [1.11, 5.63]	3.39 [1.43, 7.48]
2015	3.29 [1.98, 5.34]	3.69 [2.2, 6.07]	4.12 [2.43, 6.89]
2016	1.19 [0.65, 2.03]	1.27 [0.69, 2.19]	1.36 [0.74, 2.36]
2017	4.09 [2.91, 5.68]	4.43 [3.13, 6.2]	4.68 [3.28, 6.64]
2018	5.56 [3.75, 8.22]	6.09 [4.07, 9.12]	6.3 [4.18, 9.52]
2019	4.35 [2.66, 7.07]	5.13 [3.08, 8.53]	5 [3, 8.3]
All Years	2.99 [2.53, 3.51]	3.87 [3.22, 4.62]	4.89 [3.96, 6.02]

Table. 1.47. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Psychologists

Year	Base	Base + Visits	Base + Visits2
2012	2.28 [1.08, 4.48]	2.85 [1.32, 5.75]	3.48 [1.6, 7.13]
2013	2.54 [1.14, 5.28]	3.24 [1.42, 6.97]	3.73 [1.63, 8.06]
2014	2.17 [0.94, 4.61]	2.61 [1.11, 5.67]	3.34 [1.41, 7.38]
2015	3.38 [2.03, 5.51]	3.83 [2.27, 6.33]	4.34 [2.55, 7.3]
2016	1.18 [0.65, 2.03]	1.27 [0.69, 2.19]	1.37 [0.74, 2.39]
2017	4.15 [2.95, 5.76]	4.47 [3.16, 6.27]	4.73 [3.31, 6.71]
2018	5.84 [3.92, 8.69]	6.49 [4.3, 9.79]	6.68 [4.4, 10.15]
2019	4.68 [2.84, 7.68]	5.36 [3.2, 8.97]	5.32 [3.17, 8.92]
All Years	3.05 [2.58, 3.58]	3.98 [3.3, 4.75]	5.12 [4.14, 6.33]

Table. 1.48. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Psychologists

1.25 Registered.nurses

Year	Base	Base + Visits	Base + Visits2
2012	2.12 [0.89, 4.45]	2.45 [1.01, 5.29]	3.96 [1.51, 9.74]
2013	3.1 [0.8, 10.28]	3.5 [0.88, 12.07]	4.96 [1.19, 18.82]
2014	5.67 [1.26, 26.36]	6.28 [1.36, 31]	8.52 [1.77, 45.12]
2015	1.25 [0.06, 9.46]	1.3 [0.06, 10.08]	1.6 [0.08, 13.15]
2016	2.88 [1.27, 6.29]	4.07 [1.66, 9.93]	5.25 [2.12, 13.12]
2017	1.48 [0.69, 2.98]	1.77 [0.79, 3.74]	2.76 [1.19, 6.2]
2018	1.32 [0.53, 2.97]	1.34 [0.53, 3.08]	1.84 [0.72, 4.38]
2019	1.48 [0.62, 3.29]	1.56 [0.65, 3.53]	2.19 [0.88, 5.19]
All Years	1.41 [0.99, 1.98]	2.11 [1.41, 3.1]	3.17 [2.04, 4.92]

Table. 1.49. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, Registered.nurses

Year	Base	Base + Visits	Base + Visits2
2012	2.1 [0.88, 4.41]	2.43 [1, 5.24]	4.05 [1.54, 10.07]
2013	3.08 [0.8, 10.22]	3.48 [0.88, 12]	4.95 [1.19, 18.83]
2014	5.61 [1.25, 26.09]	6.22 [1.35, 30.71]	8.69 [1.79, 46.39]
2015	1.24 [0.06, 9.41]	1.29 [0.06, 10.02]	1.56 [0.08, 12.8]
2016	2.86 [1.26, 6.25]	4.01 [1.64, 9.78]	5.02 [2.03, 12.42]
2017	1.47 [0.68, 2.96]	1.75 [0.78, 3.7]	2.79 [1.2, 6.29]
2018	1.31 [0.53, 2.94]	1.33 [0.52, 3.06]	1.87 [0.73, 4.45]
2019	1.47 [0.62, 3.27]	1.55 [0.64, 3.5]	2.22 [0.89, 5.31]
All Years	1.4 [0.98, 1.96]	2.1 [1.4, 3.09]	3.16 [2.03, 4.92]

Table. 1.50. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, Registered.nurses

1.26 General.Medical.Practice

Year	Base	Base + Visits	Base + Visits2
2012	1.19 [0.97, 1.46]	1.45 [1.17, 1.8]	1.61 [1.29, 2.01]
2013	1 [0.83, 1.2]	1.17 [0.96, 1.42]	1.23 [1.01, 1.51]
2014	0.87 [0.74, 1.02]	1.1 [0.93, 1.31]	1.1 [0.92, 1.31]
2015	1.44 [1.2, 1.74]	1.72 [1.41, 2.09]	1.68 [1.38, 2.05]
2016	1.38 [1.16, 1.63]	1.52 [1.28, 1.8]	1.6 [1.33, 1.91]
2017	1.51 [1.3, 1.75]	2.02 [1.71, 2.37]	1.88 [1.6, 2.22]
2018	1.29 [1.1, 1.5]	1.66 [1.4, 1.97]	1.56 [1.31, 1.85]
2019	1.23 [0.98, 1.54]	1.56 [1.23, 1.99]	1.46 [1.15, 1.86]
All Years	1.43 [1.34, 1.52]	1.93 [1.79, 2.07]	2.14 [1.95, 2.35]

Table. 1.51. Race and FWA outcomes, 2012-2019, Discovery, All PCNS, General.Medical.Practice

Year	Base	Base + Visits	Base + Visits2
2012	1.25 [1.01, 1.56]	1.55 [1.23, 1.95]	1.59 [1.26, 2.01]
2013	1.1 [0.9, 1.34]	1.28 [1.04, 1.57]	1.32 [1.07, 1.63]
2014	1 [0.85, 1.19]	1.21 [1.01, 1.44]	1.22 [1.02, 1.47]
2015	1.56 [1.28, 1.89]	1.76 [1.44, 2.16]	1.77 [1.44, 2.19]
2016	1.48 [1.24, 1.77]	1.63 [1.36, 1.96]	1.68 [1.39, 2.03]
2017	1.71 [1.46, 2]	2.12 [1.78, 2.51]	2.06 [1.73, 2.46]
2018	1.4 [1.19, 1.65]	1.73 [1.45, 2.06]	1.65 [1.38, 1.97]
2019	1.36 [1.07, 1.74]	1.65 [1.28, 2.13]	1.55 [1.21, 2]
All Years	1.54 [1.45, 1.64]	1.99 [1.85, 2.15]	2.26 [2.05, 2.49]

Table. 1.52. Race and FWA outcomes, 2012-2019, Discovery, Reduced PCNS, General.Medical.Practice

2

GEMS

2.1 Diagnostic.Radiology

Year	Base	Base + Visits	Base + Visits2
2012	0.56 [0.03, 2.65]	0.9 [0.05, 4.8]	1.63 [0.08, 13]
2013	0.26 [0.01, 1.17]	0.48 [0.03, 2.41]	0.52 [0.03, 3.22]
2014	0.52 [0.03, 2.78]	0.63 [0.03, 3.7]	1.29 [0.06, 9.3]
2015	4.28 [0.73, 22.31]	4.68 [0.72, 27.78]	9.34 [1.31, 75.8]
2016	3.05 [0.37, 18.84]	3.87 [0.42, 29.17]	10.33 [1.09, 100.37]
2017	1.54 [0.07, 13.25]	0.85 [0.04, 6.65]	1.42 [0.06, 12.51]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	0 [NA, 61]	0 [NA, 29.22]	0 [NA, 44.22]
All Years	0.69 [0.29, 1.37]	1.17 [0.46, 2.5]	1.01 [0.36, 2.56]

Table. 2.1. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Diagnostic.Radiology

Year	Base	Base + Visits	Base + Visits2
2012	0 [NA, 10]	0 [NA, 11.76]	0 [NA, 1168158.27]
2013	0 [NA, 6.89]	0 [NA, 12.77]	0 [NA, 368.58]
2014	0.63 [0.03, 4.18]	0.86 [0.04, 6.9]	1.99 [0.09, 20.76]
2015	5.29 [0.7, 42.8]	8.03 [0.85, 83.45]	12.42 [1.31, 244.69]
2016	129048229.6 [0, NA]	4.92148416479025e+29 [0, NA]	23750638340.63 [0, NA]
2017	166163427.28 [0, NA]	78235854.61 [0, NA]	164336003.74 [0, NA]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	0 [NA, 36.5]	0 [NA, 22.7]	0 [NA, 207.31]
All Years	0.77 [0.28, 1.68]	1.32 [0.45, 3.26]	0.94 [0.3, 2.71]

Table. 2.2. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Diagnostic.Radiology

2.2 Dental.Technician

Year	Base	Base + Visits	Base + Visits2
2012	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2013	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2014	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	1009635467.53 [0, NA]	72327223308893.9 [0, NA]	1.22135919802754e+25 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	780172861.26 [0, NA]	1167827699.1 [0, NA]	1025933799.3 [0, NA]
All Years	13 [1.61, 75.66]	14.81 [1.76, 96.25]	16.31 [1.85, 137.67]

Table. 2.3. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Dental.Technician

Year	Base	Base + Visits	Base + Visits2
2012	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2013	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2014	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	1009635467.53 [0, NA]	72327223308893.9 [0, NA]	176361676237169600 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	780172861.26 [0, NA]	1167827699.1 [0, NA]	1225578198.1 [0, NA]
All Years	13 [1.61, 75.66]	14.81 [1.76, 96.25]	15.86 [1.81, 130.42]

Table. 2.4. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Dental.Technician

2.3 Dental.therapy

Year	Base	Base + Visits	Base + Visits2
2012	0.62 [0.19, 2.41]	0.62 [0.19, 2.47]	0.62 [0.19, 2.7]
2013	0.69 [0.28, 1.84]	0.66 [0.26, 1.85]	0.7 [0.26, 2.23]
2014	3.04 [0.65, 24.31]	3.04 [0.64, 25.72]	3.62 [0.72, 58.42]
2015	0.55 [0.23, 1.39]	0.55 [0.14, 2.45]	0.35 [0.1, 1.28]
2016	2 [0.4, 19.85]	2.05 [0.41, 21.96]	2.25 [0.43, 37.86]
2017	0.24 [0.08, 0.77]	0.16 [0.04, 0.57]	0.16 [0.05, 0.59]
2018	0.89 [0.16, 12.22]	0.69 [0.11, 11.81]	0.88 [0.15, 16.62]
2019	7147286.69 [0, NA]	6291245.61 [0, NA]	4833841.92 [0, NA]
All Years	0.67 [0.4, 1.1]	0.57 [0.31, 1.05]	0.54 [0.29, 1.07]

Table. 2.5. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Dental.therapy

Year	Base	Base + Visits	Base + Visits2
2012	0.53 [0.16, 2.09]	0.54 [0.16, 2.15]	0.52 [0.16, 2.3]
2013	0.98 [0.33, 3.37]	0.95 [0.32, 3.48]	1.07 [0.33, 4.76]
2014	2.7 [0.57, 21.46]	2.7 [0.57, 22.75]	3.27 [0.65, 53]
2015	0.57 [0.23, 1.55]	0.77 [0.17, 4.19]	0.49 [0.12, 2.19]
2016	1.81 [0.37, 17.98]	1.88 [0.37, 20.03]	2.1 [0.4, 34.79]
2017	0.22 [0.07, 0.71]	0.15 [0.04, 0.53]	0.14 [0.04, 0.54]
2018	0.81 [0.14, 11.12]	0.63 [0.1, 10.93]	0.82 [0.14, 15.66]
2019	7191542.12 [0, NA]	6330814.71 [0, NA]	4932642.56 [0, NA]
All Years	0.67 [0.39, 1.12]	0.57 [0.3, 1.09]	0.56 [0.28, 1.13]

Table. 2.6. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Dental.therapy

2.4 Radiography

Year	Base	Base + Visits	Base + Visits2
2012	4.24 [0.64, 43.82]	2.89 [0.35, 39.4]	2.79 [0.36, 54.36]
2013	1.62 [0.27, 10.21]	0.54 [0.04, 5.13]	0.53 [0.07, 4.67]
2014	106553584.08 [0, NA]	26553453.68 [0, NA]	32374102.74 [0, NA]
2015	1.91 [0.37, 11.69]	1.14 [0.18, 8.42]	1.14 [0.19, 8.79]
2016	6.33 [1.8, 27.23]	5.66 [1.53, 28.16]	5.32 [1.38, 32.45]
2017	2.06 [0.2, 34.59]	1.67 [0.13, 31.1]	2.05 [0.19, 35.12]
2018	2.42 [0.8, 7.77]	0.74 [0.15, 3.55]	0.72 [0.16, 3.48]
2019	1.98 [0.49, 8.53]	1.79 [0.43, 8.13]	1.68 [0.4, 8.14]
All Years	2.5 [1.37, 4.52]	1.61 [0.78, 3.37]	1.96 [0.94, 4.28]

Table. 2.7. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Radiography

Year	Base	Base + Visits	Base + Visits2
2012	4.2 [0.63, 43.32]	2.86 [0.34, 38.92]	2.78 [0.35, 53.88]
2013	1.6 [0.27, 10.11]	0.54 [0.04, 5.08]	0.47 [0.06, 4.26]
2014	106553584.07 [0, NA]	26564889.96 [0, NA]	18117987.04 [0, NA]
2015	1.88 [0.37, 11.51]	1.1 [0.18, 8.15]	1.11 [0.19, 8.66]
2016	6.14 [1.75, 26.43]	4.62 [1.19, 23.79]	5.07 [1.31, 30.94]
2017	32262057.55 [0, NA]	67318964.55 [0, NA]	46592194.87 [0, NA]
2018	3.12 [0.95, 11.71]	0.83 [0.16, 4.53]	0.95 [0.21, 5.11]
2019	1.91 [0.47, 8.26]	1.74 [0.42, 7.88]	1.68 [0.4, 8.06]
All Years	2.89 [1.53, 5.45]	1.89 [0.89, 4.13]	2.23 [1.04, 5.1]

Table. 2.8. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Radiography

2.5 Chiropractors

Year	Base	Base + Visits	Base + Visits2
2012	528117013.8 [0, NA]	1.50319815874113e+36 [0, NaN]	24155581277695340 [0, NaN]
2013	19.83 [3.02, 190.36]	8.28 [0.94, 159.81]	6.75 [0.8, 144.29]
2014	457701405.18 [0, NA]	244745829.91 [0, NA]	184368502.59 [0, NA]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	209314673.79 [0, NA]	195583639.68 [0, NA]	154813660.96 [0, NA]
2017	0 [NA, 428]	0 [0, NaN]	0 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	10 [1.98, 60.24]	6.15 [0.99, 44.86]	3.31 [0.52, 26.98]

Table. 2.9. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Chiropractors

Year	Base	Base + Visits	Base + Visits2
2012	528117013.79 [0, NA]	1.52207121804415e+36 [0, NaN]	789429882.73 [0, NA]
2013	19.72 [3.01, 189.28]	8.21 [0.93, 158.48]	4.71 [0.47, 105.59]
2014	457701407.76 [0, NA]	244779961.84 [0, NA]	193614596.54 [0, NA]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	209314674.04 [0, NA]	195592117.92 [0, NA]	119317921.91 [0, NA]
2017	0 [NA, 427]	0 [0, NaN]	0 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	9.97 [1.98, 60.04]	6.13 [0.99, 44.75]	3.74 [0.61, 30.47]

Table. 2.10. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Chiropractors

2.6 Homeopaths

Year	Base	Base + Visits	Base + Visits2
2012	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2013	0 [NA, 46.5]	0 [NA, 75.01]	0 [NA, 341.71]
2014	131546046.6 [0, NA]	300783.56 [NA, NaN]	601062317.03 [0, NaN]
2015	143504778.11 [0, NA]	2242.94 [0, NaN]	644102178.47 [NA, NaN]
2016	7.08 [0.69, 82.72]	1.32 [0.03, 38.23]	0.65 [0.02, 21.17]
2017	119136042.2 [0, NA]	0 [0, NaN]	6 [NA, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	2.47 [0.49, 10.17]	0.48 [0.03, 3.93]	0.54 [0.07, 3.28]

Table. 2.11. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Homeopaths

Year	Base	Base + Visits	Base + Visits2
2012	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2013	0 [NA, 46.25]	0 [NA, 74.59]	0 [NA, 413]
2014	134344898.65 [0, NA]	301049.02 [NA, NaN]	589968057.2 [NA, NaN]
2015	146842098.53 [0, NA]	2238.49 [0, NaN]	490337980.27 [0, NaN]
2016	7.19 [0.7, 83.18]	1.35 [0.03, 38.93]	0.66 [0.02, 22.13]
2017	123808043.86 [0, NA]	0 [NA, NaN]	3.84 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	2.52 [0.5, 10.34]	0.5 [0.03, 4.04]	0.59 [0.08, 3.55]

Table. 2.12. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Homeopaths

2.7 Psychiatry

Year	Base	Base + Visits	Base + Visits2
2012	3.2 [0.79, 13.99]	2.52 [0.57, 11.91]	2.19 [0.49, 11.31]
2013	1.45 [0.48, 3.97]	0.63 [0.15, 2.13]	0.68 [0.21, 2.14]
2014	4.83 [1.42, 19.12]	2.7 [0.64, 13.17]	2.28 [0.6, 11.01]
2015	0.63 [0.03, 4.75]	0.25 [0.01, 2.39]	0.22 [0.01, 1.82]
2016	3.74 [0.74, 23.9]	1.35 [0.19, 10.94]	0.94 [0.16, 7.42]
2017	5.23 [1.87, 16.34]	1.81 [0.47, 7.54]	1.96 [0.61, 7.51]
2018	1.41 [0.35, 5.1]	0.95 [0.21, 3.84]	0.79 [0.18, 3.23]
2019	1.7 [0.07, 38.84]	1.25 [0.05, 30.96]	0.73 [0.03, 19.7]
All Years	2.63 [1.61, 4.18]	1.27 [0.66, 2.37]	1.38 [0.75, 2.54]

Table. 2.13. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Psychiatry

Year	Base	Base + Visits	Base + Visits2
2012	3.15 [0.78, 13.8]	2.48 [0.56, 11.73]	2.17 [0.49, 11.18]
2013	1.43 [0.48, 3.9]	0.62 [0.15, 2.1]	0.67 [0.2, 2.09]
2014	4.16 [1.17, 16.97]	2.15 [0.47, 11.12]	1.61 [0.4, 8.11]
2015	0.61 [0.03, 4.65]	0.25 [0.01, 2.34]	0.18 [0.01, 1.59]
2016	3.66 [0.72, 23.39]	1.29 [0.18, 10.52]	0.84 [0.13, 6.74]
2017	5.14 [1.83, 16.03]	1.69 [0.43, 7.11]	1.47 [0.43, 5.8]
2018	1.38 [0.34, 5]	0.93 [0.2, 3.75]	0.76 [0.17, 3.15]
2019	1.67 [0.07, 38.06]	1.22 [0.05, 30.25]	0.71 [0.03, 19.91]
All Years	2.5 [1.53, 4]	1.15 [0.59, 2.18]	1.3 [0.71, 2.39]

Table. 2.14. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Psychiatry

2.8 Orthopaedics

Year	Base	Base + Visits	Base + Visits2
2012	0.65 [0.03, 3.7]	0.32 [0.01, 2.58]	0.41 [0.02, 2.58]
2013	2.26 [0.6, 7.03]	0.97 [0.18, 4.11]	0.88 [0.2, 3.31]
2014	3.54 [0.66, 17.52]	2.71 [0.44, 16.64]	1.36 [0.23, 8.01]
2015	1.66 [0.08, 16.37]	1.47 [0.07, 14.89]	0.97 [0.04, 10.96]
2016	230386616.76 [0, NA]	530656949.04 [0, NA]	210658321.7 [0, NA]
2017	213214943.46 [0, NA]	4.09799623269874e+160 [0, NaN]	32540641541799512 [NaN, NaN]
2018	2.82 [0.11, 62.95]	2.57 [0.1, 59.59]	1.88 [0.07, 49.85]
2019	2.95 [0.12, 65.38]	2.43 [0.09, 57.71]	2.28 [0.08, 59.72]
All Years	1.94 [0.89, 3.92]	1.4 [0.58, 3.14]	1.39 [0.59, 3.1]

Table. 2.15. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Orthopaedics

Year	Base	Base + Visits	Base + Visits2
2012	0.94 [0.05, 6.12]	0.29 [0.01, 3.16]	0.63 [0.03, 4.62]
2013	3.02 [0.76, 10.54]	0.95 [0.16, 4.59]	1.22 [0.27, 5.16]
2014	10.12 [1.31, 141.58]	7.53 [0.85, 125.48]	4.88 [0.55, 104.88]
2015	1.58 [0.07, 15.58]	1.01 [0.03, 12.24]	0.83 [0.04, 9.78]
2016	233521128.55 [0, NA]	89687092.9 [0, NA]	156387341.02 [0, NA]
2017	215896892.42 [0, NA]	9.93582440971237e+46 [0, NaN]	1017146999.24 [0, NA]
2018	2.69 [0.11, 59.91]	2.04 [0.07, 51.19]	1.74 [0.06, 46.81]
2019	2.81 [0.11, 62.06]	1.68 [0.05, 45.19]	2.15 [0.08, 57.14]
All Years	2.42 [1.08, 5.16]	1.48 [0.58, 3.53]	1.7 [0.7, 4.02]

Table. 2.16. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Orthopaedics

2.9 Paediatrics

Year	Base	Base + Visits	Base + Visits2
2012	1.68 [0.2, 13.01]	1.41 [0.16, 11.53]	0.88 [0.1, 7.84]
2013	2.33 [0.67, 8.4]	1.88 [0.51, 7.4]	1.29 [0.34, 5.3]
2014	4.67 [0.6, 73]	3.9 [0.49, 67.18]	2.29 [0.27, 48.16]
2015	82123459.08 [0, NA]	91804202.05 [0, NA]	73541099.32 [0, NA]
2016	2.35 [0.79, 7.23]	2.07 [0.65, 7.04]	1.29 [0.41, 4.49]
2017	71815075.54 [0, NA]	51908022.38 [0, NA]	292906895.53 [0, NA]
2018	0 [NA, 170.5]	0 [NA, 198.55]	0 [NA, 11254.91]
2019	1.36 [0.05, 31.46]	2.03 [0.08, 37.58]	1.73 [0.07, 31.71]
All Years	1.91 [0.99, 3.65]	1.52 [0.72, 3.17]	1.25 [0.61, 2.62]

Table. 2.17. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Paediatrics

Year	Base	Base + Visits	Base + Visits2
2012	1.56 [0.19, 12.05]	1.25 [0.14, 10.42]	0.81 [0.09, 7.31]
2013	4.32 [1.01, 24.88]	3.47 [0.77, 22.06]	2.43 [0.52, 17.31]
2014	4.29 [0.55, 66.99]	3.45 [0.42, 60.03]	2.2 [0.26, 46.13]
2015	82518283.4 [0, NA]	93396255.27 [0, NA]	54151469.2 [0, NA]
2016	2.16 [0.73, 6.65]	1.69 [0.52, 5.81]	1.01 [0.31, 3.54]
2017	72116820.13 [0, NA]	48215193.46 [0, NA]	265384056.06 [0, NA]
2018	0 [NA, 157.5]	0 [NA, 188.51]	0 [NA, 89800.73]
2019	1.27 [0.05, 29.22]	1.9 [0.08, 35.35]	1.66 [0.06, 29.87]
All Years	2.06 [1.04, 4.05]	1.53 [0.71, 3.3]	1.29 [0.61, 2.8]

Table. 2.18. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Paediatrics

2.10 Surgery

Year	Base	Base + Visits	Base + Visits2
2012	1.61 [0.33, 6.22]	1.35 [0.27, 5.52]	1.23 [0.24, 5.2]
2013	1.47 [0.51, 3.78]	1.12 [0.36, 3.09]	1.03 [0.33, 2.94]
2014	110734212.56 [0, NA]	99548038.74 [0, NA]	56648724.27 [0, NA]
2015	5.81 [1.65, 23.43]	4.44 [1.09, 21.8]	3.47 [0.91, 16.82]
2016	7.16 [2.19, 27.31]	6.06 [1.76, 25.7]	5.43 [1.55, 25.13]
2017	2.46 [0.1, 54.39]	2.56 [0.1, 57.29]	2.45 [0.09, 56.51]
2018	1.06 [0.05, 10.65]	1.14 [0.05, 13.75]	0.7 [0.03, 7.46]
2019	0 [NA, NaN]	0 [NA, 947.18]	0 [NA, NaN]
All Years	2.56 [1.47, 4.34]	2.39 [1.27, 4.46]	2.26 [1.18, 4.36]

Table. 2.19. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Surgery

Year	Base	Base + Visits	Base + Visits2
2012	2.52 [0.47, 12.57]	2.49 [0.45, 12.74]	2.1 [0.37, 11.58]
2013	1.55 [0.52, 4.08]	1.15 [0.37, 3.28]	1 [0.32, 2.96]
2014	110734212.56 [0, NA]	98531180.43 [0, NA]	55357938.65 [0, NA]
2015	5.46 [1.55, 22.01]	4.01 [0.98, 19.77]	2.97 [0.77, 14.46]
2016	6.65 [2.03, 25.38]	5.58 [1.61, 23.67]	4.89 [1.39, 22.71]
2017	2.28 [0.09, 50.54]	2.38 [0.09, 53.46]	2.09 [0.08, 51.73]
2018	0.99 [0.05, 9.92]	1.03 [0.05, 12.51]	0.61 [0.03, 6.64]
2019	0 [NA, NaN]	0 [NA, 863.14]	0 [NA, NaN]
All Years	2.66 [1.51, 4.58]	2.38 [1.24, 4.52]	2.21 [1.14, 4.34]

Table. 2.20. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Surgery

2.11 Clinical.technology

Year	Base	Base + Visits	Base + Visits2
2012	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2013	1.49 [0.45, 4.32]	2.11 [0.59, 6.98]	0.78 [0.19, 2.85]
2014	1.31 [0.27, 4.99]	4.61 [0.49, 70.17]	0.58 [0.1, 2.84]
2015	1.92 [0.08, 40.78]	1.91 [0.08, 40.8]	1.63 [0.06, 40.03]
2016	0 [NA, NaN]	3308048940665.61 [0, NaN]	0 [NA, NaN]
2017	5.99 [1.53, 31.9]	8.71 [1.91, 64.61]	18.8 [1.9, 495.5]
2018	2.67 [1.53, 4.52]	2.66 [1.53, 4.5]	2.12 [1.1, 4.12]
2019	65094950.89 [0, NA]	30391714772852836 [0, NA]	30177168.24 [0, NA]
All Years	2.59 [1.7, 3.83]	2.4 [1.44, 3.94]	2.06 [1.18, 3.61]

Table. 2.21. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Clinical.technology

Year	Base	Base + Visits	Base + Visits2
2012	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2013	1.71 [0.5, 5.18]	1.56 [0.38, 5.51]	0.69 [0.16, 2.76]
2014	3.21 [0.54, 20.73]	4.6 [0.49, 70.89]	1.46 [0.2, 12.42]
2015	1.88 [0.07, 39.92]	1.88 [0.07, 40.37]	1.4 [0.05, 36.43]
2016	0 [NA, NaN]	0.81 [0, NaN]	0 [NA, NaN]
2017	11.4 [2.14, 118.77]	15.32 [2.45, 220.31]	13.33 [1.41, 321.63]
2018	2.69 [1.53, 4.61]	2.69 [1.53, 4.62]	2 [1.02, 4]
2019	65094950.89 [0, NA]	34619915453902572 [0, NA]	21691979.53 [0, NA]
All Years	2.88 [1.86, 4.35]	2.44 [1.45, 4.02]	2.34 [1.33, 4.18]

Table. 2.22. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Clinical.technology

2.12 Clinical.services

Year	Base	Base + Visits	Base + Visits2
2012	0 [NA, NaN]	5.07205736930798e+20 [NA, NaN]	4359766.79 [0, NA]
2013	0 [NA, 24.17]	0 [NA, 29.46]	0 [NA, 178.43]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	0 [NA, NaN]	0 [NA, NaN]	1040528.2 [0, NA]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	0 [NA, NaN]	5.61733470105301e+242 [0, NaN]	716777.31 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	0 [NA, 29.13]	0 [NA, 58.16]	0 [NA, 978.32]

Table. 2.23. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Clinical.services

Year	Base	Base + Visits	Base + Visits2
2012	0 [NA, NaN]	5.50549349075231e+20 [NA, NaN]	7170546.45 [0, NA]
2013	0 [NA, 23.83]	0 [NA, 29.05]	0 [NA, 181.55]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	0 [NA, NaN]	0 [NA, NaN]	406475.71 [0, NA]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	0 [NA, NaN]	1.03471979932228e+243 [0, NaN]	295010.09 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	0 [NA, 28.13]	0 [NA, 56.18]	0 [NA, 969.09]

Table. 2.24. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Clinical.services

2.13 Obstetrics.and.Gynaecology

Year	Base	Base + Visits	Base + Visits2
2012	2.59 [0.74, 9.57]	1.49 [0.35, 6.29]	1.38 [0.37, 5.71]
2013	6.92 [2.28, 26.41]	3.34 [0.95, 14.88]	2.94 [0.89, 13.25]
2014	2.69 [1.17, 6.37]	0.9 [0.31, 2.6]	1.15 [0.46, 3.06]
2015	4.45 [1.03, 27.52]	4.16 [0.92, 26.57]	3.71 [0.81, 25.38]
2016	130767667.62 [0, NA]	107645876.16 [0, NA]	68188909.07 [0, NA]
2017	1.92 [0.62, 6.23]	0.49 [0.09, 2.31]	0.48 [0.12, 1.91]
2018	70549835.05 [0, NA]	58467368.84 [0, NA]	36201913.8 [0, NA]
2019	3.83 [0.49, 66.7]	5.63 [0.72, 79.73]	4.98 [0.65, 54.59]
All Years	3.62 [2.26, 5.81]	2.35 [1.33, 4.17]	2.31 [1.33, 4.14]

Table. 2.25. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Obstetrics.and.Gynaecology

Year	Base	Base + Visits	Base + Visits2
2012	2.44 [0.7, 9.01]	1.4 [0.33, 5.91]	1.33 [0.36, 5.52]
2013	6.49 [2.13, 24.72]	3.12 [0.88, 13.89]	3.09 [0.95, 13.87]
2014	2.34 [1, 5.6]	0.8 [0.27, 2.33]	0.93 [0.36, 2.49]
2015	4.18 [0.97, 25.77]	3.89 [0.86, 24.79]	3.48 [0.75, 23.79]
2016	48976135.33 [0, NA]	40039432.82 [0, NA]	60259215.74 [0, NA]
2017	1.8 [0.58, 5.83]	0.16 [0.02, 0.95]	0.46 [0.12, 1.83]
2018	71752389.06 [0, NA]	58383269.37 [0, NA]	32787726.97 [0, NA]
2019	54121802.03 [0, NA]	73410183.31 [0, NA]	65717821.63 [0, NA]
All Years	3.5 [2.16, 5.67]	2.21 [1.24, 3.99]	2.25 [1.28, 4.09]

Table. 2.26. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Obstetrics.and.Gynaecology

2.14 Anaesthetists

Year	Base	Base + Visits	Base + Visits2
2012	1.46 [0.21, 6.59]	1.9 [0.26, 9.74]	1.29 [0.18, 6.14]
2013	1.49 [0.41, 4.33]	1.71 [0.46, 5.2]	1.27 [0.33, 4.03]
2014	1.94 [0.09, 19.36]	1.99 [0.09, 20.56]	1.47 [0.07, 15.64]
2015	0 [NA, 390]	0 [NA, 444.15]	0 [NA, 9887.49]
2016	0 [NA, 797]	0 [NA, 823.88]	0 [NA, 4955.91]
2017	6.79 [2.17, 23.46]	10.74 [2.96, 50.48]	7.56 [2.06, 34.17]
2018	6.68 [0.64, 123.92]	6.76 [0.65, 128.42]	5.63 [0.53, 120.27]
2019	1.74 [0.08, 17.52]	1.74 [0.08, 17.58]	1.42 [0.07, 14.97]
All Years	2.28 [1.25, 3.99]	2.72 [1.43, 5]	1.96 [0.99, 3.77]

Table. 2.27. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Anaesthetists

Year	Base	Base + Visits	Base + Visits2
2012	1.76 [0.24, 8.69]	1.75 [0.24, 8.92]	1.33 [0.18, 7.12]
2013	2.05 [0.54, 6.55]	1.98 [0.5, 6.74]	1.24 [0.3, 4.37]
2014	1.87 [0.09, 18.7]	1.84 [0.09, 19.01]	1.06 [0.05, 11.51]
2015	0 [NA, 372.5]	0 [NA, 439.63]	0 [NA, 582346.57]
2016	0 [NA, 760]	0 [NA, 812.67]	0 [NA, NaN]
2017	5.72 [1.75, 20.3]	6.76 [1.83, 30.19]	3.72 [0.96, 16.76]
2018	6.44 [0.62, 119.29]	6.33 [0.61, 119.62]	4.96 [0.45, 108.23]
2019	3.34 [0.13, 76.64]	3.27 [0.13, 76.07]	2.2 [0.08, 58.52]
All Years	2.55 [1.35, 4.62]	2.24 [1.11, 4.37]	1.7 [0.83, 3.41]

Table. 2.28. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Anaesthetists

2.15 Specialist.Physician

Year	Base	Base + Visits	Base + Visits2
2012	1.06 [0.33, 3]	0.9 [0.27, 2.62]	0.79 [0.23, 2.37]
2013	1.71 [0.83, 3.43]	0.97 [0.41, 2.22]	0.86 [0.39, 1.89]
2014	2.19 [0.87, 5.51]	1.57 [0.58, 4.21]	1.25 [0.47, 3.42]
2015	2.75 [1.03, 7.72]	2.07 [0.73, 6.11]	2.05 [0.73, 6.19]
2016	5.2 [2.52, 11.34]	3.6 [1.6, 8.7]	2.59 [1.16, 6.37]
2017	2.08 [0.46, 10.2]	1.13 [0.21, 6.17]	1.01 [0.21, 5.31]
2018	2.6 [0.64, 12.21]	1.48 [0.32, 7.58]	1.13 [0.26, 5.76]
2019	38570343.7 [0, NA]	46161308.62 [0, NA]	35292301.69 [0, NA]
All Years	2.02 [1.39, 2.91]	1.1 [0.68, 1.76]	1.22 [0.78, 1.91]

Table. 2.29. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Specialist.Physician

Year	Base	Base + Visits	Base + Visits2
2012	0.82 [0.22, 2.46]	0.58 [0.14, 1.91]	0.62 [0.16, 1.96]
2013	1.76 [0.84, 3.58]	0.93 [0.38, 2.13]	0.92 [0.41, 2.05]
2014	2.11 [0.84, 5.3]	1.21 [0.42, 3.37]	1.16 [0.44, 3.19]
2015	3.18 [1.14, 9.68]	1.96 [0.62, 6.53]	2.44 [0.84, 8.04]
2016	4.8 [2.32, 10.52]	2.68 [1.17, 6.49]	2.13 [0.94, 5.27]
2017	2.01 [0.44, 9.86]	0.69 [0.1, 4.28]	0.93 [0.19, 5.01]
2018	2.52 [0.62, 11.82]	1.02 [0.18, 5.7]	1.1 [0.25, 5.65]
2019	39276436.95 [0, NA]	47501596.98 [0, NA]	26654105.73 [0, NA]
All Years	1.95 [1.33, 2.83]	0.97 [0.58, 1.57]	1.16 [0.73, 1.83]

Table. 2.30. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Specialist.Physician

2.16 Speech.therapy

Year	Base	Base + Visits	Base + Visits2
2012	7.17 [2.12, 27.96]	6.85 [1.85, 30.66]	5.5 [1.49, 26]
2013	6.9 [2.04, 27.19]	6.34 [1.79, 26.69]	6.24 [1.75, 28.3]
2014	280631566.09 [0, NA]	126366912497.78 [0, NA]	182005619.18 [0, NA]
2015	2.48 [0.69, 8.44]	1.2 [0.22, 5.39]	1.25 [0.3, 4.95]
2016	9.87 [2.59, 53.31]	7.58 [1.87, 45.09]	6.98 [1.71, 46.32]
2017	14.73 [2.66, 181.73]	12.45 [2.18, 172.91]	10.97 [1.88, 195.32]
2018	8.41 [2.14, 47.5]	8.83 [2.09, 57.17]	5.97 [1.44, 39.96]
2019	125281949.15 [0, NA]	117996593.45 [0, NA]	96665177.19 [0, NA]
All Years	6.71 [3.88, 11.81]	7.28 [3.91, 14.09]	6.05 [3.22, 11.96]

Table. 2.31. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Speech.therapy

Year	Base	Base + Visits	Base + Visits2
2012	7.12 [2.11, 27.72]	6.8 [1.84, 30.4]	5.84 [1.59, 27.67]
2013	6.9 [2.04, 27.14]	6.33 [1.79, 26.63]	6.26 [1.76, 28.33]
2014	282199340.21 [0, NA]	125075842035.98 [0, NA]	206524751.73 [0, NA]
2015	2.46 [0.69, 8.37]	1.19 [0.22, 5.36]	1.27 [0.31, 5.02]
2016	9.77 [2.57, 52.75]	7.51 [1.85, 44.67]	7.14 [1.76, 47.18]
2017	14.35 [2.6, 176.8]	12.18 [2.13, 168.89]	10.85 [1.87, 193.04]
2018	16.38 [3.06, 195.5]	20.36 [3.26, 325.21]	11.45 [2.03, 211.82]
2019	125781080.42 [0, NA]	117938636.59 [0, NA]	97045284.27 [0, NA]
All Years	7.1 [4.05, 12.71]	7.9 [4.16, 15.69]	6.61 [3.46, 13.42]

Table. 2.32. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Speech.therapy

2.17 Dieticians

Year	Base	Base + Visits	Base + Visits2
2012	5.83 [1.27, 34.49]	3.58 [0.66, 24.84]	3.86 [0.77, 27.82]
2013	4.67 [1.55, 15.38]	3.48 [1.07, 12.62]	3.38 [1.04, 12.9]
2014	13.24 [2.4, 158.63]	9.71 [1.63, 141.24]	10.25 [1.77, 180.46]
2015	9.09 [1.48, 126.24]	5.62 [0.79, 94.73]	4.88 [0.74, 95.66]
2016	7.25 [2.35, 27.52]	6.2 [1.95, 24.85]	4.92 [1.5, 21.93]
2017	2.8 [0.85, 10.1]	1.91 [0.51, 7.83]	1.78 [0.51, 7.1]
2018	6.36 [0.95, 100.68]	3.13 [0.37, 61.11]	3.24 [0.45, 64.82]
2019	1.37 [0.05, 32.23]	0.9 [0.03, 23.97]	0.58 [0.02, 15.39]
All Years	4 [2.33, 6.98]	3.57 [2, 6.52]	3.22 [1.76, 6.15]

Table. 2.33. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Dieticians

Year	Base	Base + Visits	Base + Visits2
2012	5.83 [1.27, 34.49]	3.59 [0.66, 24.85]	4.14 [0.84, 29.47]
2013	4.66 [1.55, 15.34]	3.47 [1.07, 12.58]	3.39 [1.04, 12.95]
2014	13.17 [2.39, 157.57]	9.63 [1.62, 139.92]	9.71 [1.67, 174.06]
2015	8.97 [1.46, 124.48]	5.48 [0.77, 92.5]	4.55 [0.68, 89.46]
2016	10.63 [2.97, 54.43]	9.16 [2.48, 50.14]	6.92 [1.81, 44.95]
2017	11 [1.98, 145.7]	7.71 [1.27, 128.97]	6.71 [1.14, 127.3]
2018	6.25 [0.93, 98.91]	3.02 [0.35, 59.02]	3.22 [0.45, 64.3]
2019	1.34 [0.05, 31.66]	0.85 [0.03, 22.66]	0.72 [0.03, 18.99]
All Years	5.24 [2.91, 9.79]	4.71 [2.52, 9.23]	4.28 [2.22, 8.8]

Table. 2.34. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Dieticians

2.18 Social.workers

Year	Base	Base + Visits	Base + Visits2
2012	5.05 [0.65, 72.44]	3.85 [0.42, 62.18]	1.65 [0.17, 36.03]
2013	8.13 [2.26, 38.08]	5.86 [1.5, 31.64]	3.8 [0.86, 26.62]
2014	6.07 [1.56, 31.7]	3.33 [0.71, 21.2]	2.96 [0.67, 20.37]
2015	2.98 [1.15, 8.35]	1.96 [0.68, 6.08]	1.36 [0.46, 4.51]
2016	3.68 [1.17, 14.27]	3.27 [1.01, 13.12]	2.64 [0.76, 12.21]
2017	5.82 [1, 78.88]	6.88 [0.99, 120.34]	5.81 [0.95, 107.76]
2018	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2019	27453087.99 [0, NA]	26438825.87 [0, NA]	55571297.95 [0, NA]
All Years	3.15 [1.78, 5.77]	3.87 [1.83, 8.85]	2.6 [1.28, 5.58]

Table. 2.35. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Social.workers

Year	Base	Base + Visits	Base + Visits2
2012	5.01 [0.65, 71.82]	3.75 [0.4, 60.84]	1.47 [0.15, 32.75]
2013	8.02 [2.23, 37.58]	5.78 [1.48, 31.25]	3.57 [0.81, 25.03]
2014	6.02 [1.54, 31.44]	3.31 [0.71, 21.06]	3.02 [0.69, 20.72]
2015	2.94 [1.13, 8.21]	1.91 [0.66, 5.94]	1.23 [0.42, 4.11]
2016	3.56 [1.13, 13.82]	3.05 [0.93, 12.31]	2.15 [0.62, 9.93]
2017	5.69 [0.98, 77.08]	5.42 [0.82, 90.63]	5.05 [0.83, 93.15]
2018	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2019	27453087.99 [0, NA]	25922153.63 [0, NA]	53695665.28 [0, NA]
All Years	3.09 [1.74, 5.67]	3.47 [1.64, 7.89]	2.35 [1.16, 5.06]

Table. 2.36. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Social.workers

2.19 Occupational.Therapy

Year	Base	Base + Visits	Base + Visits2
2012	5.49 [0.92, 37.4]	6.78 [1, 64.07]	2.95 [0.45, 23.56]
2013	9.24 [3.18, 29.29]	9.78 [3.06, 36.65]	5.57 [1.72, 21.35]
2014	5.26 [1.71, 16.35]	5.65 [1.74, 19.52]	2.7 [0.79, 9.76]
2015	9.99 [2.18, 59.43]	11.22 [2.18, 86.83]	4.74 [0.96, 34.22]
2016	4.07 [0.97, 16.12]	4.39 [0.98, 20.28]	1.78 [0.4, 7.93]
2017	8.81 [1.92, 53.7]	10.59 [1.65, 125.43]	3.96 [0.71, 31.71]
2018	2.41 [0.32, 13.94]	2.47 [0.32, 14.94]	1.59 [0.2, 9.91]
2019	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
All Years	4.28 [2.38, 7.64]	4.11 [2.17, 7.75]	3.18 [1.63, 6.25]

Table. 2.37. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Occupational.Therapy

Year	Base	Base + Visits	Base + Visits2
2012	5.48 [0.91, 37.28]	5.53 [0.79, 50.55]	2.97 [0.46, 23.77]
2013	12.22 [3.85, 45.37]	14.09 [3.88, 68.15]	6.88 [1.93, 32.23]
2014	6.52 [2, 22.48]	6.94 [2.03, 26.53]	3.37 [0.93, 13.65]
2015	9.88 [2.16, 58.81]	11.12 [2.16, 86.07]	4.55 [0.91, 33.14]
2016	4.01 [0.96, 15.86]	3.74 [0.81, 17.42]	1.69 [0.38, 7.56]
2017	17.24 [2.82, 227.24]	13.23 [1.37, 335.61]	7.6 [1.05, 156.04]
2018	3.54 [0.43, 27.55]	2.92 [0.34, 23.9]	2.28 [0.26, 19.81]
2019	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
All Years	5.34 [2.86, 9.97]	4.97 [2.52, 9.92]	3.76 [1.86, 7.74]

Table. 2.38. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Occupational.Therapy

2.20 Optometrists

Year	Base	Base + Visits	Base + Visits2
2012	1.69 [1.03, 2.74]	1.5 [0.9, 2.47]	1.38 [0.82, 2.3]
2013	2.02 [1.36, 2.97]	1.83 [1.21, 2.75]	1.75 [1.16, 2.67]
2014	2.79 [1.71, 4.6]	2.45 [1.47, 4.11]	2.36 [1.41, 4.01]
2015	3.08 [1.75, 5.54]	2.84 [1.6, 5.18]	2.78 [1.55, 5.14]
2016	1.52 [1.08, 2.13]	1.4 [0.97, 2]	1.38 [0.95, 1.99]
2017	3.53 [1.81, 7.28]	3.4 [1.71, 7.16]	3.22 [1.62, 6.85]
2018	2.53 [1.55, 4.2]	2.38 [1.42, 4.06]	2.34 [1.39, 4.02]
2019	33166768.98 [0, NA]	81926662.08 [0, NA]	73790369.38 [0, NA]
All Years	1.84 [1.54, 2.19]	1.87 [1.52, 2.29]	1.79 [1.44, 2.24]

Table. 2.39. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Optometrists

Year	Base	Base + Visits	Base + Visits2
2012	1.73 [1.03, 2.87]	1.54 [0.91, 2.6]	1.39 [0.81, 2.37]
2013	1.93 [1.3, 2.85]	1.74 [1.15, 2.62]	1.64 [1.08, 2.5]
2014	2.75 [1.67, 4.56]	2.4 [1.44, 4.06]	2.28 [1.35, 3.9]
2015	3.09 [1.74, 5.64]	2.84 [1.58, 5.25]	2.76 [1.52, 5.18]
2016	1.51 [1.07, 2.12]	1.36 [0.94, 1.96]	1.33 [0.91, 1.93]
2017	3.67 [1.84, 7.78]	3.5 [1.73, 7.59]	3.27 [1.61, 7.18]
2018	2.5 [1.52, 4.18]	2.31 [1.37, 3.96]	2.28 [1.35, 3.96]
2019	33198845.16 [0, NA]	81173692.46 [0, NA]	67995599.82 [0, NA]
All Years	1.83 [1.53, 2.19]	1.83 [1.48, 2.25]	1.76 [1.4, 2.2]

Table. 2.40. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Optometrists

2.21 General.Dental.Practice

Year	Base	Base + Visits	Base + Visits2
2012	2.17 [1.05, 4.52]	1.96 [0.94, 4.12]	1.74 [0.82, 3.73]
2013	1.85 [1.09, 3.12]	1.66 [0.97, 2.84]	1.45 [0.83, 2.52]
2014	1.77 [0.89, 3.48]	1.6 [0.8, 3.19]	1.27 [0.63, 2.57]
2015	3.15 [1.56, 6.64]	2.97 [1.45, 6.38]	2.55 [1.24, 5.53]
2016	1.2 [0.64, 2.22]	1.11 [0.58, 2.09]	0.9 [0.47, 1.71]
2017	4.9 [1.47, 21.46]	4.67 [1.39, 20.65]	4 [1.18, 18.13]
2018	2.7 [0.82, 10.13]	2.8 [0.83, 10.91]	2.06 [0.61, 7.91]
2019	2.97 [0.28, 61.66]	3 [0.28, 63.9]	2.26 [0.22, 48.92]
All Years	1.89 [1.44, 2.49]	1.78 [1.33, 2.38]	1.62 [1.2, 2.2]

Table. 2.41. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, General.Dental.Practice

Year	Base	Base + Visits	Base + Visits2
2012	2.96 [1.34, 6.87]	2.66 [1.19, 6.22]	2.26 [1, 5.44]
2013	1.9 [1.11, 3.25]	1.68 [0.97, 2.91]	1.44 [0.82, 2.54]
2014	1.91 [0.95, 3.89]	1.71 [0.84, 3.52]	1.3 [0.63, 2.73]
2015	3.27 [1.59, 7.09]	3.03 [1.45, 6.7]	2.59 [1.23, 5.81]
2016	1.3 [0.68, 2.46]	1.18 [0.6, 2.27]	0.94 [0.48, 1.82]
2017	4.59 [1.38, 20.13]	4.31 [1.29, 19.06]	3.73 [1.09, 16.93]
2018	3.37 [0.94, 15.3]	3.52 [0.95, 16.95]	2.31 [0.63, 10.82]
2019	85843705.46 [0, NA]	81843146.1 [0, NA]	60724113.59 [0, NA]
All Years	2.07 [1.55, 2.76]	1.92 [1.41, 2.6]	1.72 [1.26, 2.37]

Table. 2.42. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, General.Dental.Practice

2.22 Pharmacies

Year	Base	Base + Visits	Base + Visits2
2012	1.53 [0.88, 2.42]	1.57 [0.89, 2.57]	1.48 [0.82, 2.51]
2013	1.01 [0.61, 1.54]	1.04 [0.59, 1.69]	0.94 [0.54, 1.54]
2014	1.37 [0.83, 2.09]	1.37 [0.84, 2.09]	1.38 [0.8, 2.25]
2015	0.93 [0.48, 1.61]	0.93 [0.48, 1.61]	1.16 [0.58, 2.09]
2016	1.3 [0.7, 2.2]	1.6 [0.85, 2.76]	1.58 [0.83, 2.77]
2017	4.99 [2.99, 8.11]	5 [2.99, 8.13]	6.65 [3.84, 11.39]
2018	1.61 [0.97, 2.55]	1.62 [0.97, 2.56]	1.94 [1.14, 3.17]
2019	3.67 [0.73, 16.39]	3.69 [0.73, 16.49]	4.74 [0.91, 22.04]
All Years	0.73 [0.6, 0.88]	1.09 [0.87, 1.35]	1.1 [0.86, 1.4]

Table. 2.43. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Pharmacies

Year	Base	Base + Visits	Base + Visits2
2012	1.41 [0.77, 2.3]	1.43 [0.77, 2.41]	1.34 [0.7, 2.34]
2013	1.09 [0.66, 1.66]	1.12 [0.64, 1.84]	1.01 [0.57, 1.67]
2014	1.47 [0.9, 2.24]	1.48 [0.9, 2.25]	1.49 [0.86, 2.45]
2015	0.83 [0.4, 1.52]	0.83 [0.4, 1.52]	1.01 [0.47, 1.93]
2016	1.34 [0.72, 2.28]	1.65 [0.87, 2.86]	1.56 [0.82, 2.77]
2017	4.97 [2.91, 8.28]	4.98 [2.91, 8.3]	6.43 [3.63, 11.31]
2018	1.79 [1.07, 2.86]	1.8 [1.07, 2.87]	2.1 [1.22, 3.47]
2019	3.39 [0.67, 15.07]	3.4 [0.67, 15.16]	4.93 [0.96, 22.71]
All Years	0.77 [0.62, 0.93]	1.1 [0.88, 1.37]	1.1 [0.85, 1.42]

Table. 2.44. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Pharmacies

2.23 Physiotherapists

Year	Base	Base + Visits	Base + Visits2
2012	1.97 [0.66, 5.39]	1.23 [0.36, 3.69]	0.9 [0.29, 2.6]
2013	5.49 [2.91, 10.64]	4.01 [2.04, 8.09]	3.17 [1.61, 6.53]
2014	10.62 [4.68, 27.19]	7.59 [3.2, 20.36]	6.73 [2.85, 18.52]
2015	7.97 [3.35, 21.2]	6.68 [2.73, 18.23]	5.28 [2.13, 14.91]
2016	10.49 [3.84, 34.94]	7.8 [2.75, 27.19]	5.2 [1.83, 18.56]
2017	4.96 [1.9, 14.02]	3.33 [1.14, 10.56]	2.58 [0.96, 7.65]
2018	2.27 [0.73, 6.75]	1.87 [0.59, 5.67]	1.55 [0.49, 4.77]
2019	0 [NA, 1849]	0 [NA, 1909.77]	0 [NA, 18948.98]
All Years	4.44 [3.17, 6.2]	3.71 [2.55, 5.4]	3.02 [2.07, 4.44]

Table. 2.45. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Physiotherapists

Year	Base	Base + Visits	Base + Visits2
2012	2.16 [0.71, 6.12]	1.38 [0.4, 4.25]	0.95 [0.3, 2.84]
2013	5.35 [2.84, 10.37]	3.89 [1.98, 7.85]	2.97 [1.51, 6.11]
2014	10.34 [4.56, 26.49]	7.35 [3.1, 19.73]	6.42 [2.72, 17.67]
2015	7.73 [3.25, 20.56]	6.44 [2.63, 17.59]	4.97 [2, 14.04]
2016	10.12 [3.71, 33.73]	7.44 [2.62, 25.93]	4.65 [1.64, 16.61]
2017	4.79 [1.83, 13.54]	3.16 [1.08, 10.04]	2.49 [0.93, 7.38]
2018	7.64 [1.77, 49.92]	6.39 [1.45, 43.13]	5.16 [1.15, 35.88]
2019	0 [NA, 1775]	0 [NA, 1847.34]	0 [NA, 15845.98]
All Years	4.79 [3.39, 6.78]	3.99 [2.72, 5.89]	3.19 [2.16, 4.75]

Table. 2.46. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Physiotherapists

2.24 Psychologists

Year	Base	Base + Visits	Base + Visits2
2012	2.09 [0.77, 5.23]	1.27 [0.39, 3.53]	0.71 [0.24, 2.01]
2013	4.89 [2.04, 12.15]	2.19 [0.72, 6.56]	1.23 [0.47, 3.4]
2014	4.03 [1.9, 8.58]	2.37 [0.97, 5.72]	0.96 [0.41, 2.25]
2015	8.01 [3.7, 18.57]	7.46 [3.28, 18.55]	2.14 [0.91, 5.44]
2016	3.55 [1.6, 7.92]	3.48 [1.44, 8.65]	0.93 [0.39, 2.24]
2017	2.38 [1.1, 5]	1.37 [0.58, 3.11]	0.5 [0.21, 1.17]
2018	3 [1.29, 6.88]	1.82 [0.71, 4.55]	1.15 [0.46, 2.85]
2019	2.04 [0.4, 9.13]	1.48 [0.28, 6.84]	1.08 [0.2, 5.37]
All Years	3.87 [2.85, 5.23]	2 [1.37, 2.89]	1.47 [1.01, 2.13]

Table. 2.47. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Psychologists

Year	Base	Base + Visits	Base + Visits2
2012	2.08 [0.77, 5.22]	1.27 [0.39, 3.52]	0.72 [0.24, 2.02]
2013	5.58 [2.26, 14.54]	2.18 [0.72, 6.56]	1.45 [0.53, 4.25]
2014	4.38 [2.04, 9.53]	1.98 [0.77, 4.91]	0.98 [0.41, 2.37]
2015	10.62 [4.58, 27.62]	8.17 [3.38, 22.23]	2.96 [1.17, 8.56]
2016	4.84 [2.06, 11.93]	4.17 [1.65, 11.1]	1.1 [0.42, 3.01]
2017	3.24 [1.37, 7.62]	1.94 [0.74, 4.9]	0.62 [0.23, 1.66]
2018	5.94 [2.13, 18.49]	4.5 [1.55, 14.48]	3.07 [1, 10.48]
2019	2.03 [0.4, 9.07]	1.45 [0.28, 6.72]	1.03 [0.18, 5.18]
All Years	4.79 [3.45, 6.62]	2.45 [1.65, 3.62]	1.9 [1.29, 2.83]

Table. 2.48. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Psychologists

2.25 Registered.nurses

Year	Base	Base + Visits	Base + Visits2
2012	1.82 [0.08, 17.68]	1.91 [0.09, 20.36]	1.13 [0.05, 12.35]
2013	2.26 [0.45, 9.6]	2.43 [0.47, 10.82]	1.78 [0.33, 8.62]
2014	0.92 [0.05, 6.92]	0.55 [0.02, 5.21]	0.52 [0.02, 4.45]
2015	5.18 [1.02, 32.94]	4.14 [0.65, 33.16]	3.16 [0.58, 23.73]
2016	1.51 [0.2, 8.73]	2.26 [0.27, 18.15]	1.01 [0.13, 6.32]
2017	0.83 [0.11, 4.13]	0.78 [0.08, 6.02]	0.65 [0.08, 3.93]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	1.39 [0.06, 32.54]	1.13 [0.04, 28.16]	0.87 [0.03, 22.54]
All Years	1.31 [0.63, 2.62]	1.43 [0.62, 3.21]	1 [0.45, 2.16]

Table. 2.49. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, Registered.nurses

Year	Base	Base + Visits	Base + Visits2
2012	1.8 [0.08, 17.51]	1.9 [0.09, 20.18]	1.09 [0.05, 11.93]
2013	2.23 [0.44, 9.5]	2.4 [0.47, 10.72]	1.71 [0.32, 8.21]
2014	0.9 [0.04, 6.82]	0.54 [0.02, 5.15]	0.54 [0.03, 4.64]
2015	5.11 [1.01, 32.5]	2.7 [0.4, 20.83]	3.06 [0.55, 23]
2016	2.24 [0.27, 17.48]	2.19 [0.26, 17.55]	1.48 [0.17, 12.61]
2017	3.26 [0.31, 60.68]	2.05 [0.17, 45.53]	1.98 [0.18, 43.69]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	58982140.71 [0, NA]	55716725.72 [0, NA]	35467450.16 [0, NA]
All Years	1.66 [0.78, 3.5]	1.73 [0.73, 4.04]	1.21 [0.53, 2.74]

Table. 2.50. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, Registered.nurses

2.26 General.Medical.Practice

Year	Base	Base + Visits	Base + Visits2
2012	2.24 [1.63, 3.09]	2.14 [1.54, 3]	1.74 [1.25, 2.44]
2013	1.83 [1.46, 2.31]	1.73 [1.36, 2.21]	1.42 [1.12, 1.82]
2014	1.89 [1.44, 2.48]	1.82 [1.37, 2.42]	1.49 [1.12, 1.98]
2015	2.42 [1.76, 3.35]	2.32 [1.68, 3.25]	1.84 [1.32, 2.59]
2016	3.14 [2.15, 4.66]	2.96 [2.01, 4.47]	2.5 [1.69, 3.77]
2017	1.86 [1.19, 2.97]	1.82 [1.15, 2.94]	1.44 [0.91, 2.32]
2018	1.38 [0.85, 2.28]	1.38 [0.84, 2.28]	1.27 [0.77, 2.11]
2019	1.7 [0.51, 6.45]	1.7 [0.51, 6.51]	1.62 [0.48, 6.23]
All Years	2.1 [1.86, 2.38]	1.95 [1.7, 2.24]	1.62 [1.4, 1.87]

Table. 2.51. Race and FWA outcomes, 2012-2019, GEMS, All PCNS, General.Medical.Practice

Year	Base	Base + Visits	Base + Visits2
2012	2.47 [1.76, 3.51]	2.1 [1.48, 3.02]	1.82 [1.28, 2.63]
2013	2.03 [1.6, 2.6]	1.71 [1.32, 2.22]	1.49 [1.15, 1.94]
2014	2.12 [1.59, 2.85]	1.79 [1.33, 2.44]	1.55 [1.15, 2.13]
2015	2.86 [2.02, 4.1]	2.42 [1.7, 3.51]	2.03 [1.42, 2.97]
2016	3.71 [2.45, 5.81]	3.07 [2.01, 4.86]	2.81 [1.83, 4.47]
2017	2.72 [1.61, 4.82]	2.21 [1.29, 3.96]	1.99 [1.16, 3.57]
2018	1.57 [0.93, 2.73]	1.4 [0.82, 2.45]	1.41 [0.83, 2.47]
2019	31886045.83 [0, NA]	29057887.57 [0, NA]	31988432.68 [0, NA]
All Years	2.41 [2.11, 2.76]	2.06 [1.78, 2.39]	1.76 [1.51, 2.06]

Table. 2.52. Race and FWA outcomes, 2012-2019, GEMS, Reduced PCNS, General.Medical.Practice

3

MedScheme

3.1 Diagnostic.Radiology

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	180406006.76 [0, NA]	88152215.06 [0, NA]	79436307.39 [0, NA]
2017	0 [NA, 58.5]	0 [NA, 25.07]	0 [NA, 34.17]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	3.29 [0.13, 51.24]	2.77 [0.1, 43.08]	3.33 [0.12, 56.56]
All Years	1.9 [0.25, 9.77]	1.47 [0.19, 7.94]	1.92 [0.23, 11]

Table. 3.1. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Diagnostic.Radiology

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	72589628.85 [0, NA]	48977506.69 [0, NA]	105394189.92 [0, NA]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	2.03 [0.08, 30.97]	1.92 [0.07, 29.03]	2.14 [0.08, 37.31]
All Years	3.62 [0.35, 42.39]	3.56 [0.34, 41.64]	3.98 [0.34, 54.3]

Table. 3.2. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Diagnostic.Radiology

3.2 Dental.Technician

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]

Table. 3.3. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Dental.Technician

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]

Table. 3.4. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Dental.Technician

3.3 Dental.therapy

Year	Base	Base + Visits	Base + Visits2
2013	0.77 [0.12, 11.2]	0.7 [0.11, 10.91]	0.7 [0.1, 13.65]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	5873095.75 [0, NA]	5665753.84 [0, NA]	5176910.99 [0, NA]
2016	5005828.29 [0, NA]	4851528.03 [0, NA]	5068167.11 [0, NA]
2017	8138432.73 [0, NA]	8089901.24 [0, NA]	8036045.19 [0, NA]
2018	9965427.83 [0, NA]	9876133.92 [0, NA]	10354753.66 [0, NA]
2019	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
All Years	1.32 [0.38, 6.82]	1.3 [0.38, 6.79]	1.49 [0.41, 9.63]

Table. 3.5. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Dental.therapy

Year	Base	Base + Visits	Base + Visits2
2013	5821592.91 [0, NA]	5416619.8 [0, NA]	14076412.97 [0, NA]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	5913740.08 [0, NA]	5744473.5 [0, NA]	6040600.97 [0, NA]
2016	5021821.37 [0, NA]	4881911.64 [0, NA]	5055625.68 [0, NA]
2017	8164351.2 [0, NA]	8142854.1 [0, NA]	8327624.15 [0, NA]
2018	9994566.34 [0, NA]	9920126.52 [0, NA]	10700979.66 [0, NA]
2019	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
All Years	2.39 [0.5, 24.67]	2.36 [0.49, 24.9]	2.83 [0.55, 50.23]

Table. 3.6. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Dental.therapy

3.4 Radiography

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	61904021.93 [0, NA]	1.54990313221192e+27 [0, NA]	94681031.1 [0, NA]
2015	38079805.73 [0, NA]	1.11036178707572e+96 [0, NA]	3.16762702170321e+26 [NaN, NaN]
2016	108884444.85 [0, NA]	1.44234563913161e+32 [0, NA]	170733480.53 [0, NA]
2017	86032152.57 [0, NA]	774283366.17 [0, NA]	97985161.86 [0, NA]
2018	2.68 [0.58, 15.53]	2.56 [0.56, 14.35]	2.89 [0.61, 18.23]
2019	43848682.5 [0, NA]	65530405.72 [0, NA]	32716221.25 [0, NA]
All Years	19.09 [4.26, 126.56]	21.17 [4.46, 151.37]	27.13 [5.44, 452.7]

Table. 3.7. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Radiography

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	61904021.93 [0, NA]	1.56445673442805e+27 [0, NA]	570313016.37 [0, NA]
2015	38079805.69 [0, NA]	1.12453591403761e+96 [0, NA]	2.30201046981082e+25 [0, NaN]
2016	108884443.29 [0, NA]	1.46905140306798e+32 [0, NA]	304601910.43 [0, NA]
2017	86032153.27 [0, NA]	787874953.92 [0, NA]	93183935.93 [0, NA]
2018	2.55 [0.56, 14.8]	2.42 [0.53, 13.61]	2.7 [0.57, 16.72]
2019	43848682.59 [0, NA]	24547858.48 [0, NA]	32685416.06 [0, NA]
All Years	18.48 [4.12, 122.55]	20.5 [4.31, 146.55]	26.7 [5.36, 440.5]

Table. 3.8. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Radiography

3.5 Chiropractors

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	0 [NA, 462]	0 [NA, 498.89]	0 [NA, 6306.68]
2017	2.87 [0.13, 27.09]	2.86 [0.13, 27.34]	2.28 [0.1, 24.32]
2018	180671612.29 [0, NA]	178760590881.73 [0, NA]	22685305989747508 [0, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	5.19 [0.63, 38.65]	5.4 [0.65, 41.93]	4.16 [0.48, 35.62]

Table. 3.9. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Chiropractors

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	0 [NA, 462]	0 [NA, 498.89]	0 [NA, NaN]
2017	2.87 [0.13, 27.09]	2.86 [0.13, 27.34]	2.31 [0.11, 24.61]
2018	180671612.29 [0, NA]	178760590881.73 [0, NA]	638874392.73 [0, NA]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	5.17 [0.63, 38.52]	5.39 [0.64, 41.79]	4.13 [0.48, 35.53]

Table. 3.10. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Chiropractors

3.6 Homeopaths

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	390086430.63 [0, NA]	424313721.68 [0, NA]	430467243.83 [0, NA]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
All Years	3.69 [0.15, 70.97]	3.72 [0.15, 72.61]	3.73 [0.14, 106.09]

Table. 3.11. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Homeopaths

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	390086430.62 [0, NA]	424006566.08 [0, NA]	433772091.35 [0, NA]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2019	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
All Years	3.72 [0.15, 71.18]	3.74 [0.15, 72.81]	3.81 [0.14, 107.92]

Table. 3.12. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Homeopaths

3.7 Psychiatry

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1.22 [0.16, 7.02]	0.81 [0.09, 5.35]	0.79 [0.1, 5.05]
2017	1.76 [0.21, 13.69]	1.39 [0.15, 11.81]	1.26 [0.14, 10.87]
2018	3.28 [1.15, 9.83]	2.41 [0.78, 7.86]	2.17 [0.71, 7.33]
2019	5.39 [0.69, 86.47]	2.69 [0.24, 55.91]	1.73 [0.15, 39.33]
All Years	2.61 [1.25, 5.43]	1.99 [0.89, 4.46]	2.03 [0.91, 4.69]

Table. 3.13. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Psychiatry

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1.79 [0.22, 13.9]	1.24 [0.12, 10.93]	1.17 [0.13, 10.18]
2017	1.73 [0.21, 13.47]	1.32 [0.14, 11.4]	1.23 [0.14, 10.73]
2018	4.03 [1.34, 13.45]	2.88 [0.87, 10.57]	2.39 [0.73, 9.22]
2019	5.31 [0.68, 85.02]	2.59 [0.22, 54.07]	1.71 [0.16, 38.11]
All Years	3.14 [1.44, 6.88]	2.36 [1.01, 5.61]	2.4 [1.04, 5.89]

Table. 3.14. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Psychiatry

3.8 Orthopaedics

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2017	224363437.23 [0, NA]	1396075333846.36 [0, NA]	233132248.33 [0, NA]
2018	4.16 [0.92, 19.33]	4.3 [0.94, 21.12]	5.8 [1.2, 32.09]
2019	0 [NA, 259]	0 [NA, 157.23]	0 [NA, 178.49]
All Years	3.11 [0.98, 9.37]	3.11 [0.98, 9.36]	3.18 [0.99, 9.97]

Table. 3.15. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Orthopaedics

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2017	227335138.39 [0, NA]	1398883650297.52 [0, NA]	237687500.59 [0, NA]
2018	3.98 [0.88, 18.47]	4.11 [0.89, 20.13]	5.18 [1.08, 28.3]
2019	0 [NA, 244.5]	0 [NA, 153.02]	0 [NA, 291.47]
All Years	2.98 [0.94, 8.97]	2.98 [0.94, 8.96]	3.05 [0.95, 9.68]

Table. 3.16. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Orthopaedics

3.9 Paediatrics

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	83319431.78 [0, NA]	83952957.45 [0, NA]	58527552.13 [0, NA]
2016	3.27 [1.43, 7.71]	3.22 [1.24, 8.88]	3.05 [1.25, 8.23]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	1.37 [0.05, 31.55]	1.33 [0.05, 31.07]	0.96 [0.04, 24.66]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	1.76 [0.7, 4.41]	1.68 [0.65, 4.34]	1.54 [0.59, 4.13]

Table. 3.17. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Paediatrics

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	83725868.03 [0, NA]	84519465.79 [0, NA]	58263705.45 [0, NA]
2016	2.99 [1.31, 7.04]	2.84 [1.09, 7.86]	2.48 [1.01, 6.71]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	1.26 [0.05, 29.04]	1.22 [0.05, 28.56]	0.87 [0.03, 22.41]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	1.64 [0.65, 4.09]	1.55 [0.6, 4.02]	1.37 [0.53, 3.69]

Table. 3.18. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Paediatrics

3.10 Surgery

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	3.8 [1.4, 10.3]	3.91 [1.41, 11.02]	3.77 [1.33, 11.4]
2017	4.15 [1.03, 18.21]	4.7 [1.11, 23.44]	3.81 [0.91, 18.87]
2018	3.33 [0.56, 22.93]	5.42 [0.77, 55.7]	3.42 [0.55, 26.58]
2019	0 [NA, NaN]	0 [NA, 1594.08]	0 [NA, NaN]
All Years	2.98 [1.47, 5.98]	3.82 [1.77, 8.37]	3.93 [1.81, 8.85]

Table. 3.19. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Surgery

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	3.53 [1.3, 9.56]	3.57 [1.29, 10.08]	3.52 [1.24, 10.65]
2017	3.86 [0.96, 16.95]	4.14 [0.98, 20.49]	3.5 [0.84, 17.36]
2018	6.18 [0.8, 95.06]	7.09 [0.87, 131.61]	6.15 [0.78, 124.07]
2019	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
All Years	3.04 [1.47, 6.22]	3.8 [1.73, 8.56]	4.04 [1.82, 9.32]

Table. 3.20. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Surgery

3.11 Clinical.technology

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	3.82 [1.08, 15.56]	3.85 [1.08, 15.85]	3.79 [1.03, 17.65]
2018	134344898.66 [0, NA]	3.72145493132823e+85 [0, NA]	319923144.2 [0, NA]
2019	5.71 [0.85, 82.32]	6.15 [0.88, 98.67]	9.39 [1.17, 201.93]
All Years	5.59 [2.09, 16.98]	5.75 [2.12, 17.74]	4.61 [1.57, 16.83]

Table. 3.21. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Clinical.technology

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	5.46 [1.34, 29.92]	5.56 [1.36, 30.97]	5.26 [1.24, 34.96]
2018	134344898.66 [0, NA]	1.6015967632883e+85 [0, NA]	269418709.53 [0, NA]
2019	5.4 [0.8, 77.85]	5.77 [0.83, 92.1]	7.55 [0.95, 160.52]
All Years	7.06 [2.4, 25.19]	7.31 [2.46, 26.71]	5.59 [1.71, 25.25]

Table. 3.22. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Clinical.technology

3.12 Clinical.services

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]

Table. 3.23. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Clinical.services

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2017	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2018	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]
2019	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
All Years	0 [NA, NaN]	0 [NA, NaN]	0 [NA, NaN]

Table. 3.24. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Clinical.services

3.13 Obstetrics.and.Gynaecology

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1.59 [0.06, 37.4]	1.62 [0.06, 40.24]	1.2 [0.05, 30.49]
2016	1.53 [0.36, 6.24]	1.52 [0.36, 6.24]	1.32 [0.31, 5.66]
2017	1.17 [0.29, 4.3]	1.2 [0.29, 4.48]	0.89 [0.21, 3.45]
2018	4.37 [0.56, 75.37]	4.35 [0.56, 75]	3.71 [0.46, 74.55]
2019	0.91 [0.12, 5.37]	0.92 [0.12, 5.45]	0.75 [0.1, 4.58]
All Years	1.54 [0.73, 3.23]	1.55 [0.73, 3.24]	1.14 [0.52, 2.54]

Table. 3.25. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Obstetrics.and.Gynaecology

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1.45 [0.06, 34.01]	1.06 [0.04, 27.86]	0.98 [0.04, 25.25]
2016	1.39 [0.33, 5.69]	1.24 [0.29, 5.2]	1.11 [0.26, 4.79]
2017	1.01 [0.2, 4.45]	0.74 [0.14, 3.46]	0.61 [0.12, 2.87]
2018	4.01 [0.52, 69.07]	3.89 [0.48, 68.56]	3.14 [0.39, 64.13]
2019	0.83 [0.11, 4.89]	0.7 [0.09, 4.27]	0.57 [0.07, 3.54]
All Years	1.44 [0.66, 3.12]	1.35 [0.61, 2.96]	1.11 [0.49, 2.53]

Table. 3.26. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Obstetrics.and.Gynaecology

3.14 Anaesthetists

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	0.58 [0.03, 3.35]	1.11 [0.06, 8.08]	1.03 [0.05, 7.06]
2017	290911914.39 [0, NA]	290455783.21 [0, NA]	316770334.62 [0, NA]
2018	6.61 [0.64, 122.16]	6.62 [0.64, 122.1]	7.01 [0.67, 145.29]
2019	3.31 [0.13, 76.59]	3.03 [0.12, 61.88]	3.1 [0.12, 63.5]
All Years	3.26 [1.21, 8.53]	3.13 [1.14, 8.34]	4.2 [1.5, 11.8]

Table. 3.27. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Anaesthetists

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	1.68 [0.08, 16.87]	1.67 [0.08, 16.77]	1.74 [0.08, 18.01]
2017	293398341.02 [0, NA]	292177769.9 [0, NA]	299896630.37 [0, 821370189665.25]
2018	6.39 [0.61, 117.87]	6.4 [0.61, 117.98]	6.78 [0.64, 145.07]
2019	3.19 [0.13, 73.73]	2.97 [0.12, 60.68]	3.02 [0.12, 60.41]
All Years	6.29 [2, 22.06]	6.28 [2, 22.06]	7.13 [2.22, 26.82]

Table. 3.28. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Anaesthetists

3.15 Specialist.Physician

Year	Base	Base + Visits	Base + Visits2
2013	58780147.08 [0, NA]	58882383.7 [0, NA]	44052307.8 [0, NA]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	51854389.57 [0, NA]	155035304.93 [0, NA]	257506483.6 [0, NA]
2016	2.09 [1.28, 3.37]	1.82 [1.05, 3.12]	1.79 [1.04, 3.13]
2017	1.63 [0.39, 6.71]	1.51 [0.35, 6.3]	1.36 [0.31, 5.86]
2018	142069730.34 [0, NA]	125922410.13 [0, NA]	88813322.19 [0, NA]
2019	39915820.81 [0, NA]	36092603.54 [0, NA]	80699140.63 [0, NA]
All Years	2.54 [1.65, 3.88]	2.41 [1.48, 3.93]	1.97 [1.2, 3.27]

Table. 3.29. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Specialist.Physician

Year	Base	Base + Visits	Base + Visits2
2013	60649480.38 [0, NA]	50841923.91 [0, NA]	426278880.31 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	53303735.86 [0, NA]	34795001.68 [0, NA]	299863316.54 [0, NA]
2016	2.21 [1.33, 3.63]	1.82 [1.03, 3.19]	1.88 [1.06, 3.35]
2017	1.58 [0.37, 6.49]	1.4 [0.32, 5.91]	1.36 [0.31, 5.83]
2018	145339877.57 [0, NA]	102095476.62 [0, NA]	91622788.78 [0, NA]
2019	40672518.83 [0, NA]	36291992.93 [0, NA]	31960960.75 [0, NA]
All Years	2.66 [1.71, 4.13]	2.41 [1.46, 4]	2.13 [1.28, 3.6]

Table. 3.30. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Specialist.Physician

3.16 Speech.therapy

Year	Base	Base + Visits	Base + Visits2
2013	110024377.87 [0, NA]	107679127.62 [0, NA]	113092205.81 [0, NA]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	98659534.95 [0, NA]	254588574.77 [0, NA]	98705235.13 [0, NA]
2016	290977430.27 [0, NA]	1127185467.61 [0, NA]	305410934.2 [0, NA]
2017	42.24 [9.06, 345.04]	41.14 [8.94, 296.84]	41.26 [8.98, 295.91]
2018	6.87 [2.02, 28.27]	6.85 [2.01, 28.22]	7.03 [2.04, 30.05]
2019	175394728.8 [0, NA]	174322491.33 [0, NA]	171476688.81 [0, NA]
All Years	27.81 [12.05, 72.15]	27.85 [12.06, 72.33]	33.67 [13.52, 107.73]

Table. 3.31. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Speech.therapy

Year	Base	Base + Visits	Base + Visits2
2013	110734212.56 [0, NA]	108322948.2 [0, NA]	112901523.07 [0, NA]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	98659534.95 [0, NA]	254504099.37 [0, NA]	98520642.24 [0, NA]
2016	292324548.03 [0, NA]	1080077450.44 [0, NA]	306801168.18 [0, NA]
2017	165919152.34 [0, NA]	156653524.18 [0, NA]	165418884.29 [0, NA]
2018	10.17 [2.59, 57.16]	10 [2.55, 55.76]	10.24 [2.6, 58.83]
2019	176093512.59 [0, NA]	174971256.86 [0, NA]	172576143.09 [0, NA]
All Years	54.88 [18.39, 206.25]	55.07 [18.42, 207.48]	66.89 [20.54, 374.3]

Table. 3.32. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Speech.therapy

3.17 Dieticians

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	2.36 [0.09, 52.88]	1.95 [0.06, 47.29]	1.68 [0.06, 43.36]
2015	166638863.58 [0, NA]	507541516.4 [0, NA]	127923755.68 [0, NA]
2016	6.59 [2, 26.04]	6.85 [2.05, 28.08]	5.94 [1.72, 26.97]
2017	6.93 [2.2, 26.95]	7.18 [2.25, 28.84]	6.61 [2.05, 28.3]
2018	13.01 [3.78, 65.09]	14.04 [3.93, 75.42]	11.85 [3.29, 73.8]
2019	11.1 [2, 152.1]	11.18 [2, 154.82]	10.83 [1.93, 165.47]
All Years	8.2 [4.35, 16.27]	8.29 [4.39, 16.49]	9.9 [4.86, 22.35]

Table. 3.33. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Dieticians

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	2.34 [0.09, 52.39]	1.93 [0.06, 46.84]	1.63 [0.06, 42.36]
2015	167451736.09 [0, NA]	507829503.05 [0, NA]	118187991.47 [0, NA]
2016	9.72 [2.56, 51.85]	10.25 [2.63, 58.01]	8.68 [2.19, 56.33]
2017	20.32 [4.06, 215.62]	20.22 [4.03, 214.31]	19.45 [3.79, 272.01]
2018	118918163.8 [0, NA]	3998208291.25 [0, NA]	98806257.43 [0, NA]
2019	10.95 [1.97, 149.87]	11.02 [1.97, 152.49]	10.61 [1.89, 162.25]
All Years	14.5 [6.61, 35.72]	14.74 [6.69, 36.6]	17.44 [7.35, 51.19]

Table. 3.34. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Dieticians

3.18 Social.workers

Year	Base	Base + Visits	Base + Visits2
2013	135148054.7 [0, NA]	680626100.07 [0, NA]	98808547.59 [0, NA]
2014	127139281.1 [0, NA]	158585053.72 [0, NA]	154480794.98 [0, NA]
2015	1.34 [0.05, 30.16]	1.31 [0.05, 30.51]	0.51 [0.02, 13.64]
2016	10.9 [3.25, 50.23]	13.95 [3.65, 80.7]	5.37 [1.44, 34.5]
2017	18.83 [4.04, 168.86]	18.98 [3.95, 187.93]	11.75 [2.33, 179.25]
2018	6.02 [3.49, 10.45]	5.88 [3.22, 11.06]	3.51 [1.78, 7.46]
2019	3.48 [1.12, 13.8]	3.59 [1.14, 14.87]	2.34 [0.72, 10.33]
All Years	6.51 [4.28, 9.94]	6.68 [4.28, 10.55]	5.27 [3.02, 9.67]

Table. 3.35. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Social.workers

Year	Base	Base + Visits	Base + Visits2
2013	135148054.71 [0, NA]	684529495.01 [0, NA]	98865625.04 [0, NA]
2014	127139281.09 [0, NA]	159640326.15 [0, NA]	155526101.28 [0, NA]
2015	1.31 [0.05, 29.71]	1.3 [0.05, 30.06]	0.56 [0.02, 14.82]
2016	10.65 [3.17, 49.1]	13.56 [3.54, 78.53]	4.61 [1.22, 29.89]
2017	18.36 [3.94, 164.6]	18.38 [3.83, 182.03]	11 [2.15, 167.78]
2018	6.54 [3.71, 11.65]	6.23 [3.31, 12.16]	3.55 [1.75, 7.89]
2019	5.12 [1.42, 27.96]	5.47 [1.46, 32.79]	3.23 [0.85, 20.6]
All Years	7.22 [4.65, 11.3]	7.4 [4.63, 12.03]	5.59 [3.12, 10.63]

Table. 3.36. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Social.workers

3.19 Occupational.Therapy

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	171638029.49 [0, NA]	198481557.19 [0, NA]	162209683.08 [0, NA]
2016	8.38 [0.81, 149.53]	8.21 [0.68, 151.5]	6.37 [0.53, 135.59]
2017	5.2 [1.15, 24.67]	5.46 [1.15, 26.37]	2.61 [0.51, 14.64]
2018	9.4 [3.2, 30.9]	9.84 [3.31, 32.38]	6.96 [2.21, 25.57]
2019	14.11 [2.11, 210.98]	17.43 [2.6, 227.68]	15.86 [2.37, 195.02]
All Years	9.2 [4.45, 19.75]	9.21 [4.45, 19.76]	9.03 [4.13, 21.23]

Table. 3.37. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Occupational.Therapy

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	171638029.48 [0, NA]	198479103.54 [0, NA]	163433812.03 [0, NA]
2016	8.24 [0.79, 147.17]	8.08 [0.67, 149.1]	6.4 [0.52, 135.43]
2017	5.12 [1.14, 24.31]	5.39 [1.13, 26]	2.48 [0.48, 14.01]
2018	18.46 [4.98, 97.12]	19.4 [5.18, 101.14]	13.92 [3.5, 86.91]
2019	13.87 [2.07, 207.48]	17.19 [2.57, 224.69]	15.45 [2.3, 195.38]
All Years	11.65 [5.33, 27.2]	11.66 [5.33, 27.22]	11.6 [5.02, 30.04]

Table. 3.38. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Occupational.Therapy

3.20 Optometrists

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1.71 [0.21, 14.07]	3.21 [0.32, 55.07]	4.36 [0.47, 42.4]
2016	58713122.97 [0, NA]	16504691775556.5 [0, NA]	84315756.62 [0, NA]
2017	4.79 [1.11, 31.56]	7.66 [1.47, 84.22]	8.69 [1.93, 60.66]
2018	4.66 [0.6, 88.86]	2.94 [0.36, 54.92]	3.09 [0.37, 55.21]
2019	0.37 [0.02, 2.5]	0.44 [0.02, 3.22]	0.75 [0.04, 5.33]
All Years	2.6 [1.16, 6.09]	2.65 [1.18, 6.27]	4.98 [2.14, 12.27]

Table. 3.39. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Optometrists

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1.62 [0.19, 13.3]	3.03 [0.3, 52.05]	3.93 [0.43, 37.92]
2016	58847324.4 [0, NA]	17892747294728 [0, NA]	84041430.67 [0, NA]
2017	4.52 [1.04, 29.76]	7.21 [1.38, 79.45]	7.96 [1.77, 55.41]
2018	4.39 [0.56, 83.73]	2.83 [0.35, 52.68]	2.94 [0.36, 52.2]
2019	0.47 [0.02, 3.63]	0.57 [0.03, 5.01]	0.85 [0.04, 6.92]
All Years	2.75 [1.2, 6.73]	2.81 [1.22, 6.94]	4.94 [2.08, 12.61]

Table. 3.40. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Optometrists

3.21 General.Dental.Practice

Year	Base	Base + Visits	Base + Visits2
2013	4.45 [0.96, 30.19]	5.76 [1.18, 41.78]	7.44 [1.52, 54.51]
2014	94349951.77 [0, NA]	128738340.92 [0, NA]	99956669.1 [0, NA]
2015	100963543.46 [0, NA]	45303096205.98 [0, NA]	121888861.63 [0, NA]
2016	50333732.99 [0, NA]	76019828.88 [0, NA]	54594072.03 [0, NA]
2017	2.25 [0.5, 11.24]	2.35 [0.51, 12.09]	2.58 [0.56, 13.23]
2018	2.14 [0.47, 10.74]	2.24 [0.49, 11.4]	2.41 [0.53, 12.34]
2019	0.77 [0.04, 8.03]	0.67 [0.03, 6.61]	0.7 [0.03, 6.26]
All Years	3.76 [1.86, 8.08]	4.46 [2.15, 9.99]	4.73 [2.3, 10.48]

Table. 3.41. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, General.Dental.Practice

Year	Base	Base + Visits	Base + Visits2
2013	4.23 [0.91, 28.64]	5.17 [1.08, 36.86]	6.03 [1.25, 43.53]
2014	95119372.12 [0, NA]	118778216 [0, NA]	97160791.95 [0, NA]
2015	101761675.22 [0, NA]	24797342593.83 [0, NA]	114643695.18 [0, NA]
2016	50730452.05 [0, NA]	75323159.56 [0, NA]	53311867.99 [0, NA]
2017	3.17 [0.62, 22.35]	3.35 [0.64, 24.51]	3.58 [0.69, 25.9]
2018	3.02 [0.59, 21.33]	3.14 [0.61, 22.49]	3.32 [0.64, 24.01]
2019	1.46 [0.06, 36.08]	1.28 [0.05, 29.34]	1.31 [0.05, 26.82]
All Years	5.05 [2.31, 12.4]	6.24 [2.73, 16.26]	6.34 [2.85, 16.1]

Table. 3.42. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, General.Dental.Practice

3.22 Pharmacies

Year	Base	Base + Visits	Base + Visits2
2013	0 [NA, 891.67]	0 [NA, 389.4]	0 [NA, 680.15]
2014	2.33 [0.37, 8.29]	2.38 [0.37, 8.47]	2.35 [0.37, 8.42]
2015	0 [NA, 445.17]	0 [NA, 322.7]	0 [NA, 112.47]
2016	1.28 [0.3, 3.67]	1.23 [0.29, 3.58]	1.33 [0.31, 3.95]
2017	3.03 [1.97, 4.5]	2.38 [1.54, 3.56]	2.43 [1.59, 3.54]
2018	2.69 [1.97, 3.6]	2.08 [1.51, 2.8]	2.53 [1.83, 3.42]
2019	3.59 [2.5, 5.06]	3.11 [2.15, 4.43]	3.9 [2.65, 5.67]
All Years	2.46 [2.05, 2.93]	2.44 [2.02, 2.91]	3.47 [2.75, 4.36]

Table. 3.43. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Pharmacies

Year	Base	Base + Visits	Base + Visits2
2013	0 [NA, 758.33]	0 [NA, 365.07]	0 [NA, 565.61]
2014	2.34 [0.37, 8.4]	2.39 [0.37, 8.6]	2.35 [0.37, 8.44]
2015	0 [NA, 372.83]	0 [NA, 302.83]	0 [NA, 89.16]
2016	1.14 [0.27, 3.28]	1.13 [0.27, 3.26]	1.2 [0.28, 3.56]
2017	2.74 [1.78, 4.07]	2.33 [1.5, 3.48]	2.38 [1.55, 3.5]
2018	2.55 [1.86, 3.42]	2.06 [1.5, 2.77]	2.56 [1.84, 3.49]
2019	3.37 [2.35, 4.73]	3.18 [2.19, 4.53]	4.01 [2.7, 5.91]
All Years	2.34 [1.95, 2.77]	2.34 [1.95, 2.77]	3.68 [2.88, 4.68]

Table. 3.44. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Pharmacies

3.23 Physiotherapists

Year	Base	Base + Visits	Base + Visits2
2013	4.46 [2.13, 9.57]	4.13 [1.94, 8.97]	4.08 [1.91, 9.06]
2014	10.09 [3.66, 33.91]	9.72 [3.49, 32.89]	8.66 [3.07, 30.73]
2015	40.7 [8.3, 545.76]	41.78 [8.51, 544.82]	39.87 [8.06, 567.4]
2016	14.07 [6.38, 35.21]	12.03 [5.34, 30.83]	11.39 [5.01, 30.62]
2017	5.63 [3.18, 10.19]	5.37 [3.01, 9.8]	4.97 [2.74, 9.35]
2018	11.59 [5.46, 27.32]	11.43 [5.37, 27.03]	10.66 [4.93, 26.21]
2019	4.83 [1.46, 18.03]	5.01 [1.51, 18.69]	4.59 [1.38, 17.43]
All Years	8.15 [6, 11.1]	8.33 [6.09, 11.44]	9 [6.33, 13.04]

Table. 3.45. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Physiotherapists

Year	Base	Base + Visits	Base + Visits2
2013	4.36 [2.08, 9.34]	4.02 [1.89, 8.74]	3.96 [1.85, 8.79]
2014	9.85 [3.57, 33.07]	9.47 [3.4, 32.06]	8.32 [2.95, 29.51]
2015	39.54 [8.06, 529.55]	40.66 [8.28, 529.47]	37.94 [7.64, 561.34]
2016	16.29 [7.02, 44.41]	13.89 [5.86, 38.83]	12.98 [5.42, 38.37]
2017	7.92 [4.18, 15.78]	7.61 [3.99, 15.26]	7.07 [3.65, 14.75]
2018	13.03 [5.9, 32.77]	12.88 [5.82, 32.48]	11.96 [5.31, 31.49]
2019	4.66 [1.41, 17.4]	4.85 [1.46, 18.11]	4.46 [1.34, 16.92]
All Years	8.72 [6.36, 12.01]	8.88 [6.43, 12.33]	9.38 [6.52, 13.77]

Table. 3.46. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Physiotherapists

3.24 Psychologists

Year	Base	Base + Visits	Base + Visits2
2013	3.9 [0.15, 94.68]	1.17 [0.01, 44.1]	2.68 [0.1, 71.8]
2014	231352332.19 [0, NA]	127507264.44 [0, NA]	62909731.08 [0, NA]
2015	200989386.47 [0, NA]	NaN [NaN, NaN]	6630172770.62 [0, NA]
2016	14.54 [5.39, 47.98]	15.28 [5.51, 53.2]	16.12 [5.72, 57.65]
2017	10.16 [5.01, 22.01]	10.1 [4.94, 22.14]	10.56 [5.1, 23.85]
2018	2.58 [1.24, 5.16]	2.51 [1.21, 5.04]	2.54 [1.21, 5.19]
2019	10.19 [3.06, 44.16]	13.57 [3.66, 74.29]	15.95 [4.29, 79.12]
All Years	6.62 [4.5, 9.77]	6.62 [4.5, 9.78]	4.83 [3.14, 7.54]

Table. 3.47. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Psychologists

Year	Base	Base + Visits	Base + Visits2
2013	3.88 [0.15, 94.35]	1.17 [0.01, 43.99]	2.81 [0.11, 74.21]
2014	232505250.8 [0, NA]	128057068.27 [0, NA]	65344708.77 [0, NA]
2015	202271615.41 [0, NA]	NaN [NaN, NaN]	2449633788.72 [0, NA]
2016	19.3 [6.51, 76.95]	20.81 [6.74, 90.18]	21.06 [6.81, 92.25]
2017	13.05 [6.08, 31]	12.97 [5.99, 31.24]	13.35 [6.08, 33.23]
2018	2.72 [1.3, 5.49]	2.65 [1.27, 5.36]	2.65 [1.25, 5.48]
2019	10.15 [3.04, 43.96]	13.51 [3.65, 73.96]	14.24 [3.92, 68.99]
All Years	7.43 [4.98, 11.16]	7.43 [4.99, 11.17]	5.31 [3.4, 8.45]

Table. 3.48. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Psychologists

3.25 Registered.nurses

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	5.5 [0.53, 97.28]	5.33 [0.5, 95.74]	7.14 [0.63, 164.84]
2017	3.46 [1.17, 10.76]	3.75 [1.24, 12.08]	4.22 [1.33, 14.83]
2018	3.5 [0.93, 15.51]	3.6 [0.95, 16.29]	5.51 [1.35, 28.09]
2019	3.31 [0.32, 63.47]	3.25 [0.31, 61.98]	3.33 [0.32, 65.48]
All Years	3.5 [1.67, 7.6]	3.73 [1.75, 8.25]	4.84 [2.13, 11.74]

Table. 3.49. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, Registered.nurses

Year	Base	Base + Visits	Base + Visits2
2013	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2014	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2015	1 [0, NaN]	1 [0, NaN]	1 [0, NaN]
2016	5.42 [0.52, 95.96]	5.26 [0.49, 94.43]	6.92 [0.61, 159.34]
2017	4.28 [1.37, 14.84]	4.69 [1.46, 17.08]	5.32 [1.58, 21.07]
2018	3.47 [0.92, 15.36]	3.57 [0.94, 16.13]	5.48 [1.33, 28.04]
2019	3.26 [0.31, 62.54]	3.2 [0.31, 61.05]	3.31 [0.32, 66.12]
All Years	3.84 [1.79, 8.61]	4.1 [1.89, 9.41]	5.43 [2.33, 13.66]

Table. 3.50. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, Registered.nurses

3.26 General.Medical.Practice

Year	Base	Base + Visits	Base + Visits2
2013	1.59 [0.57, 4.71]	1.98 [0.68, 6.4]	1.62 [0.58, 4.86]
2014	5.17 [0.83, 96.54]	6.33 [0.93, 162.47]	5.32 [0.85, 102.19]
2015	7.24 [2.03, 45.17]	7.57 [2.09, 48.78]	6.97 [1.94, 44.39]
2016	2.57 [1.54, 4.44]	2.81 [1.67, 4.94]	2.58 [1.54, 4.5]
2017	2.56 [1.7, 3.94]	2.61 [1.73, 4.03]	2.42 [1.6, 3.76]
2018	1.53 [1.07, 2.2]	1.65 [1.14, 2.41]	1.43 [0.99, 2.08]
2019	4.66 [2.38, 10.13]	4.77 [2.43, 10.42]	4.57 [2.33, 9.97]
All Years	2.45 [1.98, 3.05]	2.68 [2.15, 3.36]	2.26 [1.8, 2.85]

Table. 3.51. Race and FWA outcomes, 2012-2019, Medscheme, All PCNS, General.Medical.Practice

Year	Base	Base + Visits	Base + Visits2
2013	1.92 [0.61, 7.17]	2.84 [0.82, 12.22]	1.79 [0.56, 6.73]
2014	4.71 [0.76, 87.98]	5.6 [0.85, 111.43]	4.22 [0.68, 80.96]
2015	6.56 [1.84, 40.89]	6.61 [1.85, 41.42]	5.96 [1.66, 37.98]
2016	2.44 [1.45, 4.28]	2.81 [1.64, 5.05]	2.3 [1.36, 4.07]
2017	3.32 [2.09, 5.46]	3.35 [2.11, 5.54]	3.04 [1.9, 5.06]
2018	1.73 [1.18, 2.58]	1.87 [1.26, 2.82]	1.56 [1.05, 2.34]
2019	6.41 [2.95, 16.54]	6.5 [2.98, 16.87]	6.09 [2.79, 15.9]
All Years	2.85 [2.26, 3.61]	3.02 [2.37, 3.87]	2.48 [1.94, 3.21]

Table. 3.52. Race and FWA outcomes, 2012-2019, Medscheme, Reduced PCNS, General.Medical.Practice