

6 Universal Health Coverage – the service coverage index at district level

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Only a decade remains to meet the global Sustainable Development Goals (SDGs) set for 2030, which include the delivery of Universal Health Coverage (UHC). The essence of UHC is that all people should receive quality, effective health services without significant financial strain.^a At a high level, the monitoring of progress towards the specific UHC goal (SDG 3.8) relies on two indicators:^b

- ◆ Indicator 3.8.1: Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health (RMNCH); infectious diseases; non-communicable diseases; and service capacity and access; among the general and the most disadvantaged population).
- ◆ Indicator 3.8.2: Proportion of population with large household expenditure on health as a share of total household expenditure or income.

The first of these indicators is the basis for the UHC service coverage index (SCI) developed by Hogan et al.^c The UHC SCI includes 16 tracer measures, which are combined to deliver a single numerical value to depict the extent of the coverage of essential health and health-related services. The chosen tracer measures are intended to cover the main health areas listed in SDG 3.8.1, and the full spectrum of essential health interventions (prevention, promotion, treatment, rehabilitation and palliative care). Where possible, the authors have relied on measures of effective service coverage, defined as the proportion of people in need of services who receive services of sufficient quality to obtain potential health gains (Box 1). Finally, the index is intended to enable disaggregation by key dimensions of inequality.^d

This chapter does not report on the financial risk protection component of UHC (3.8.2). This element is also not measurable at district level at present.

Box 1: Key measurement concepts for effective service coverage

- ◆ **Tracer indicators** are a subset of indicators chosen to represent overall coverage. They are not necessarily fully representative of a recommended basket of services but enable the breadth of health services to be captured in a measurable way.
- ◆ **Proxy indicators** are used where data on indicators of effective service coverage or service coverage are unavailable. However, they are not direct measures of service coverage, effective or otherwise, e.g. the prevalence of non-smoking of tobacco is a proxy for effective coverage measures to reduce tobacco use.
- ◆ **Service coverage** refers to the proportion of people in need of a service who receive it, regardless of the quality of that service.
- ◆ **Effective service coverage** is defined as the proportion of people in need of services who receive services of sufficient quality to obtain potential health gains.

Source: World Health Organization (WHO)/World Bank^d

Data sources and methods

The 2019/20 editions of the *District Health Barometer* (DHB) and *South African Health Review* (SAHR) described the adaptation of the UHC SCI to the South African context, including greater reliance on routine health services data and regular surveys

a World Health Organization. Primary Health Care on the Road to Universal Health Coverage: 2019 Global Monitoring Report. Geneva: WHO; 2019.

b Boerma JT, Evans D, Kiemy M-P, Eozenou P, Evans T, Wagstaff A. Monitoring progress towards universal health coverage at country and global levels. Framework, measures and targets. Geneva: World Health Organization and The World Bank; 2014.

c Hogan DR, Stevens GA, Hosseinpour AR, Boerma T. Monitoring universal health coverage within the Sustainable Development Goals: development and baseline data for an index of essential health services. *Lancet Glob Health*, 2018; 6(2):e152–e68.

d World Health Organization, International Bank for Reconstruction and Development/World Bank. Tracking Universal Health Coverage: 2017 Global Monitoring Report. Geneva: WHO and International Bank for Reconstruction and Development/World Bank; 2017.

Section A: Universal Health Coverage

available at district level, in order that the index could be computed annually to monitor progress over time and enable comparison between districts.^{e,f}

Table 1 shows the 15 indicators incorporated into the South African UHC service coverage index. The malaria service coverage indicator (UHC7) was excluded, as bed-nets are not provided in South Africa, so no measure of service coverage can be calculated. The geometric mean of the indicators is calculated for each of the four categories (RMNCH; infectious diseases; non-communicable diseases (NCDs); and service capacity and access). The final UHC service coverage index is the geometric mean of the values for each category score. Each indicator and the resulting index is presented on a scale of 0–100, with 100 being the optimal value.^g

Table 1: Calculating the South African UHC service coverage index

Service area category	Tracer area	Tracer indicator	Type	Index calculation
RMNCH	UHC1: Family planning (FP)	Couple year protection rate (index)	Proxy	$RMNCH = (FP * ANC * Imm * Pneum)^{1/4}$
	UHC2: Pregnancy and delivery care (ANC)	Antenatal 1st visit coverage before 20 weeks (index)	Effective service coverage	
	UHC3: Child immunisation (Imm)	Immunisation under 1 year coverage (index)	Service coverage	
	UHC4: Child treatment (Pneum)	Pneumonia case survival under 5 years rate (rescaled)	Proxy	
Infectious	UHC5: Tuberculosis (TB) treatment	TB effective treatment coverage	Effective service coverage	$Infectious = (TB * HIV * WASH)^{1/3}$
	UHC6: Human Immunodeficiency Virus (HIV) treatment	Antiretroviral effective coverage	Effective service coverage	
	UHC7: Malaria	Excluded	-	
	UHC8: Water and sanitation (WASH)	Percentage of households with access to improved sanitation (index)	Service coverage	
NCDs	UHC9: Prevention of cardiovascular disease - blood pressure (BP)	Age-standardised prevalence of non-raised blood pressure (index)	Proxy	$NCD = (BP * Diab * CervCA * Tobacco)^{1/4}$
	UHC10: Management of diabetes (Diab)	Diabetes treatment coverage	Service coverage	
	UHC11: Cancer detection - cervical cancer (CervCA)	Cervical cancer screening coverage (index)	Service coverage	
	UHC12: Tobacco control (Tobacco)	Tobacco non-smoking prevalence (index)	Proxy	
Capacity	UHC13: Facility access (Beds)	Hospital beds per 10 000 target population (rescaled)	Proxy	$Capacity = (Beds * HWD * Meds * IHR)^{1/4}$
	UHC14: Health worker density (HWD)	Health worker density (rescaled)	Proxy	
	UHC15: Access to essential medicines (Meds)	Proportion of health facilities with essential medicines	Proxy	
	UHC16: Health security - International Health Regulations (IHR)	Environmental health services compliance rate	Proxy	
Index	UHC service coverage index	-	-	$UHC\ index = (RMNCH * Infectious * NCDs * Capacity)^{1/4}$

Source: Adapted from Hogan et al.,^c * = multiply, ¼ is the exponent - i.e. the four indicators multiplied together, raised to the power of a quarter (or 0.25), where there are three indicators in a category 1/3 is the exponent - i.e. the three indicators multiplied together, raised to the power of a third (or 0.33).

Building on the formative work done in 2019, this chapter has sought to provide an update and short time series of trends, using a consistent set of indicators. The database of indicators used to generate the sub-national UHC SCI for South Africa for 2017, 2018 and 2019 was updated from multiple sources, primarily routine health facility data from District Health Information Software (DHIS). Although no major surveys were updated in the time period, new time series estimates were modelled from previously available survey data in order to refine the methods used as well as forecast data beyond the last survey measurements. This process enabled the UHC SCI to be updated across all 15 of the component indicators. Although most tracer indicators could be used directly in their natural scale, some indicators required that the data be transformed before the index could be calculated.

^e Ndlovu N, Day C, Gray A, Cois A. Universal health coverage – the service coverage index at district level. In: Massyn N, Barron P, Day C, Ndlovu N, Padarath A, editors. District Health Barometer 2018/19. Durban: Health Systems Trust; 2020.

^f Day C, Gray A, Ndlovu N, Cois A. Health and related indicators: interrogating the UHC service coverage index. In: Moeti T, Padarath A, editors. South African Health Review 2019. Durban: Health Systems Trust; 2019.

^g The Lancet. Ensuring and measuring universality in UHC. Lancet. 2019;393(10166):1.

The following sources were relied upon:

- ◆ Statistics South Africa Census, Community survey (CS) and General Household Survey (GHS)
- ◆ District Health Information Software
- ◆ Three Interlinked Electronic Registers for HIV & TB (TIER.Net), as exported into DHIS
- ◆ National Department of Health (NDoH) records on environmental health services (EHS), although no updates have been made since 2018/19
- ◆ National Income Dynamics Study (NiDS)
- ◆ NiDS, modelled using predictor-outcome variables from the South African Demographic and Health Survey (SADHS)
- ◆ Population time series (2000–2030) from Statistics SA / NDoH
- ◆ Public sector personnel and salary (PERSAL) system
- ◆ WHO Global TB report (solely for the TB case notification rate).

Table 2 describes the sources used per indicator and the rescaling or adjustment methods applied. This chapter reports on the UHC SCI at district level for 2017, 2018 and 2019, as this was the only time period for which data were available across the whole basket of indicators. Although more recent data are available for some indicators, they could not be included in the index calculation. Some major changes from the previous edition of the DHB included reliance on the new population time series (for the human resource and bed density calculations), and revised modelling for the pneumonia survival rates, sanitation, non-raised blood pressure, diabetes and non-smoking indicators. The revised indicator definition for the cervical cancer screening coverage was also applied, reflecting the change in practice which had already been implemented. In each case, the new methods were applied across all three years reported.

Table 2: Indicator and data source options for a sub-national South African UHC index

Indicator	Source	Transformations and methods
1: Couple year protection rate (index)	DHIS	Values capped at 100, and zero values set to 1 (in order to calculate the geometric mean) as per the WHO guidance. ^h Calculated as: sum of (oral contraceptive pill cycles /15), (medroxyprogesterone injection /4), (norethisterone enanthate injection /6), (intrauterine contraceptive device x 4.5), (sub-dermal implant x 2.5), (male condoms distributed /120), (female condoms distributed /120), (male sterilisation x 10) and (female sterilisation x 10).
2: Antenatal 1st visit coverage before 20 weeks (index)	DHIS	Calculated as the product of 2 DHIS indicators 'ANC 1st visit coverage' and 'ANC 1st visit before 20 weeks rate' to estimate the proportion of pregnant women who attend ANC clinics before 20 weeks gestation.
3: Immunisation under 1 year coverage (index)	DHIS	Values capped at 100, and zero values set to 1 (in order to calculate the geometric mean) as per the WHO guidance.
4: Pneumonia case survival under 5 years rate (rescaled)	DHIS, smoothed	After removing major outlier values, a smoothed estimate of the pneumonia case fatality rate (CFR) under 5-years from DHIS was computed over the entire time series available, using a generalised additive model with thin-plate splines. The reciprocal of the smoothed CFR (the case survival rate) was then rescaled to range from 0 to 100: Index = (maximum CFR – CFR)/(100 - minimum CFR)*100.
5: Tuberculosis effective treatment coverage	TIER.Net as exported to DHIS, WHO Global TB Report	The percentage of incident TB cases that are detected and successfully treated in a year. Combination of the case notification rate (national figure available from WHO) and the successful treatment rate. Currently calculated using drug-sensitive TB outcomes. DR TB should ideally also be included in the calculation, although these treatment outcomes have relatively little effect on the overall result. Since TB treatment outcomes are reported according to the cohort treatment start date, results lag other health indicators by one or more years. For the purpose of aligning indicators for the UHC index, the results were instead recorded under the reporting year.
6: Antiretroviral effective coverage	TIER.Net as reported in DHIS	Antiretroviral effective coverage (people living with HIV (PLHIV), on treatment and virally suppressed) calculated using these two data elements: Total number living with HIV, on treatment, with viral load suppressed at 12 months (TIER.Net) Total PLHIV Estimates for PLHIV were derived by a modelling and triangulation methodology described in DHB 2017/18. ⁹
8: Percentage of households with access to improved sanitation (index)	Statistics SA Census, Community Survey and General Household Survey (metro results)	Percentage of households using improved sanitation facilities (including flush to piped sewer system, flush to septic tank, flush/pour flush to pit, flush/pour flush to elsewhere). A linear model with the logit-transformed estimates from the individual surveys as outcome and year of data collection as predictor was then fitted to obtain a smooth time series for the index and to project the values beyond the last available data point (2016).

^h World Health Organization. SDG Indicators: Metadata repository 3.8.1. United Nations; 2019 [updated May 2018, accessed 2019]. URL: <https://unstats.un.org/sdgs/metadata/>.

Section A: Universal Health Coverage

Indicator	Source	Transformations and methods
9: Age-standardised prevalence of non-raised blood pressure (index)	NiDS	Percentage of population 15 years and older with non-raised blood pressure, regardless of treatment status, age-standardised (Census 2011 population).
10: Diabetes treatment coverage	NiDS, using predictor information of diabetes prevalence from SADHS	Percentage of people with diabetes receiving treatment. Estimates were generated using a machine learning model that was trained with SADHS 2016 data to predict individual probability of being diabetic using demographic data (age, gender, race), bio-behavioural characteristics (body mass index, waist circumference, current smoking), self-reported previous diagnosis, and use of medication. The model was then applied to data from each NiDS 'wave' to estimate the prevalence at sub-national level by averaging the predicted probabilities of being diabetic for the individuals in each district and adjusting for the imperfect sensitivity and specificity of the predictive model. The sampling design of the survey was taken into account in the procedure. The proportion of patients with diabetes receiving treatment was directly estimated from self-reported data, and treatment coverage was calculated as the ratio between the population proportion of treated cases and diabetes prevalence. A smooth variation over time was assumed for both prevalence of diabetes and treatment coverage within each district, and final yearly estimates were generated by fitting a series of generalised linear models.
11: Cervical cancer screening coverage (index)	DHIS	Cervical smears in women 30 years and older as a proportion of the female population 30 years and older. 80% of these women should be screened for cervical cancer every 10 years and 20% must be screened every 3 years which should be included in the denominator because it is estimated that 20% of women 20 years and older are HIV positive. The retrospective time series using this revised definition was extracted back to 2010. Values capped at 100, and zero values set to 1 (in order to calculate the geometric mean) as per the WHO guidance.
12: Tobacco non-smoking prevalence (index)	NiDS	Percentage of adults 15+ years who are non-smokers, or who have not smoked tobacco in the previous 30 days. Calculated as (100 - smoking prevalence). A linear model with the logit-transformed estimates from the individual surveys as outcome and year of data collection as predictor was then fitted to obtain a smooth time series for the index and to project the values beyond the last available data point (2017).
13: Hospital beds per 10 000 target population (rescaled)	DHIS, uninsured population estimates]	Number of inpatient beds per 10 000 target population. The total number of public sector hospital beds (all levels of care) per district was used. Uninsured population estimates were generated using a small area model based on the 2011 Census and 2016 Community Survey, and scaled using the 2018 General Household Survey and the Council for Medical Schemes data. ⁱ Rescaled using the WHO proposed target of 18 beds per 10 000 population, as $x/18 \times 100$, >18 per 10 000 = 100. ⁱ
14: Health worker density (rescaled)	PERSAL, uninsured population estimates	An indicator based on SDG indicator 3.c.1 with a modified scaling approach as described by Lozano et al. 2018. ^j Medical Practitioners, Professional Nurses and Pharmacists per uninsured population were rescaled from 0-100 against thresholds of 30, 100 and 5 per 10 000. The index was calculated as the geometric mean of the 3 scaled scores.
15: Proportion of health facilities with essential medicines	DHIS	Proportion of health facilities with availability of the WHO-recommended core list of essential medicines. Calculated as (100 - tracer items stock-out rate) after implausible values (>100) capped at 100, zero or missing values set to 1. The tracer items stock-out rate in fixed clinics/community health centres (CHCs) or community day centres (CDCs) was included in DHIS until March 2020.
16: Environmental health services compliance rate	NDoH	The compliance of a municipality with National Environmental health norms and standards in rendering Environmental Health Services. The compliance is determined by assessing the municipality against elements in the audit tool and providing a subsequent score. Since no updates could be obtained from NDoH for 2019/20, the values from 2018/19 were carried forward.

Reflecting the pandemic

The COVID-19 pandemic, which has ravaged the world since early 2020, has underscored the need for access to health information in its broadest meaning. Health information encompasses not only the routine and administrative information necessary for management and governance of the health system, but also the information needed to guide health professionals and the public in order to attain desirable health outcomes.^k Health information systems should be sensitive indicators of the impact of pandemic-related disruptions across the health system, and should be able to deliver timely warnings of such disruptions. As this chapter covers routine data reported up to the end of the 2019/20 financial year (March 2020, at the latest), the UHC SCI cannot reflect the disruption to many UHC component indicators due to COVID-19.

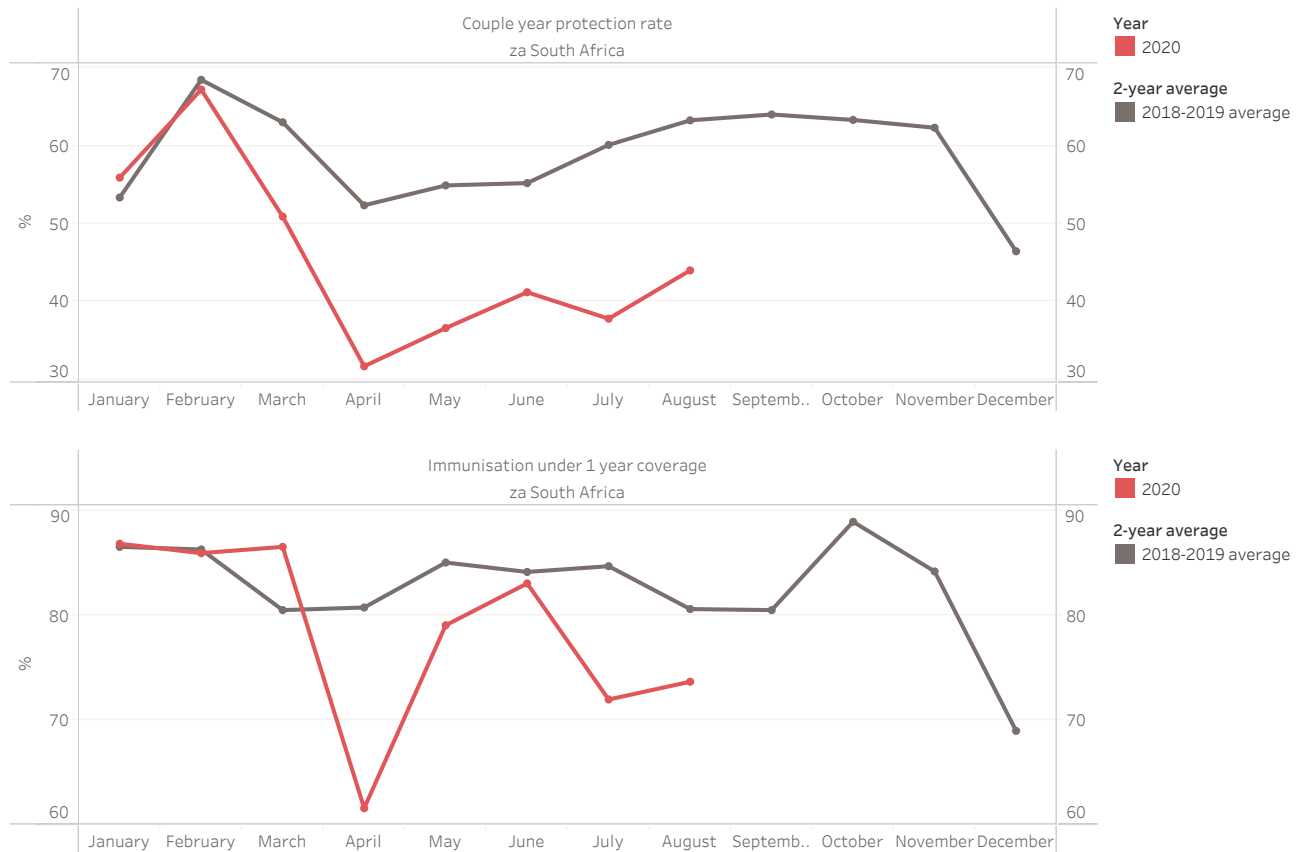
ⁱ Modelling done by Daniel Shapiro, Insight Actuaries.

^j Lozano R, Fullman N, Abate D, et al. Measuring progress from 1990 to 2017 and projecting attainment to 2030 of the health-related Sustainable Development Goals for 195 countries and territories: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2018;392(10159):2091-138.

^k Royston G, Pakenham-Walsh N, Zielinski C. Universal access to essential health information: accelerating progress towards universal health coverage and other SDG health targets. *BMJ Glob Health*. 2020;5(5). Epub 2020/05/20.

Nonetheless, data on two selected indicators (the couple-year protection rate and the immunisation coverage rate) are shown here to illustrate the impact at a national level, as detected in DHIS (Figure 1). In each case, the average of 2018 and 2019 values per month are compared with the 2020 values from January to August. The dramatic curtailment of in-service coverage by April 2020 is immediately evident, as is some measure of recovery thereafter. Future reports of the UHC SCI should reflect the net impact across the entire year, and beyond.

Figure 1: Time series comparing 2018–2019 average with 2020 by month, South Africa, couple year protection rate and immunisation under 1 year coverage



The district and provincial league tables for each category and the overall UHC SCI are shown below. The league tables for each individual indicator in the UHC SCI are available electronically.

Reproductive, maternal, newborn and child health indicators

Universal Health Coverage 1: Family planning

Universal Health Coverage 1 relies on the couple year protection rate (CYPR) reported in DHIS. Although the CYPR includes condom provision, it cannot distinguish between single-method and dual-method use, and may be an over-estimation of the proportion of couples actually protected against unwanted pregnancy.

At a provincial level, the CYPR varied in 2019/20 from a low of 43.7 (Gauteng) to a high of 78.9 (Free State). The national value was 54.5. Values at the district level also varied widely, from 32.8 in Johannesburg (Gauteng) to 100 in Xhariep (Free State). Three of the top five district values were calculated for the Western Cape districts of Central Karoo (92.8), Overberg (88.9) and Garden Route (86.4).

Universal Health Coverage 2: Pregnancy and delivery care

Universal Health Coverage 2 is calculated from two DHIS indicators to estimate the proportion of pregnant women who attend antenatal care (ANC) before 20 weeks' gestation. This index therefore incorporates a measure of quality of care, as well as coverage.

In 2019/20, four provinces (Eastern Cape, Free State, North West and KwaZulu-Natal) were below the national value of 57.9. Five of the 10 worst-performing districts were in the Eastern Cape, and four in KwaZulu-Natal.

Universal Health Coverage 3: Child immunisation

Universal Health Coverage 3 is based on the DHIS-reported immunisation coverage under 1 year with the full Expanded Programme on Immunisation regimen in place at a point in time. Coverage varies widely across districts within several provinces, including the Eastern Cape, Northern Cape and Western Cape. Four provinces (Free State, Eastern Cape, Limpopo and North West) had values below the national figure (83.5). The lowest value of 63.0, for North West Province, is of concern. Calibration of this coverage measure will be possible once the results of the 2019 National Immunisation Coverage Survey are reported, which is expected before the end of 2020.

Universal Health Coverage 4: Child treatment

Universal Health Coverage 4 is based on a rescaled and smoothed estimate of the pneumonia case fatality under 5 years rate, as a proxy for pneumonia treatment access in children that can be obtained from routine data. The index therefore represents the case survival rate, rather than the case fatality rate. As with the index reported in the previous DHB, there was little variation between provinces in 2019/20. The lowest index value per district (88.4, in Capricorn, Limpopo) was, however, somewhat lower than the national value (97.5).

Universal Health Coverage service coverage index for the reproductive, maternal, newborn and child health category

The service coverage index for the RMNCH category, computed from UHC1 to 4, shows a range from 57.2 (Alfred Nzo, Eastern Cape) to 88.5 (Xhariep, Free State) (Figure 2). At a provincial level, the highest value was computed for the Western Cape (77.3) and the lowest for the Eastern Cape (64.6) (Figure 3). In the 2017–2019 time series, consistent improvement was, nonetheless, seen across Eastern Cape and Free State districts (Figure 4). By contrast, some declines were noted in Mpumalanga.

At a global level, the Effective Coverage Think Tank Group has expanded the cascade of elements that can be used to define effective service coverage, specifically in the area of maternal, newborn, child, and adolescent health and nutrition.¹ They have proposed the following cascade of measures, each a subset of the previous level:

- ◆ Target population for a particular intervention
- ◆ Service contact coverage
- ◆ Input-adjusted coverage
- ◆ Intervention coverage
- ◆ Quality-adjusted coverage
- ◆ User adherence-adjusted coverage
- ◆ Outcome-adjusted coverage.

While outcome-adjusted coverage may be the desired measure of effective coverage, it is not applicable in relation to every intervention. A range of services and interventions are offered during antenatal care, for example, which cannot easily be linked to a single outcome. In addition, mortality may not be the most appropriate measure for a particular intervention. Mortality can, however, be a sensitive measure, for example of intrapartum service delivery as measured by intrapartum stillbirths.

¹ Marsh AD, Muzigaba M, Diaz T, Requejo J, Jackson D, Chou D, et al. Effective coverage measurement in maternal, newborn, child, and adolescent health and nutrition: progress, future prospects, and implications for quality health systems. *Lancet Glob Health*, 2020; 8(5):e730–e6.

Figure 2: Universal Health Coverage service coverage index for the reproductive, maternal, newborn and child health category by district, 2019

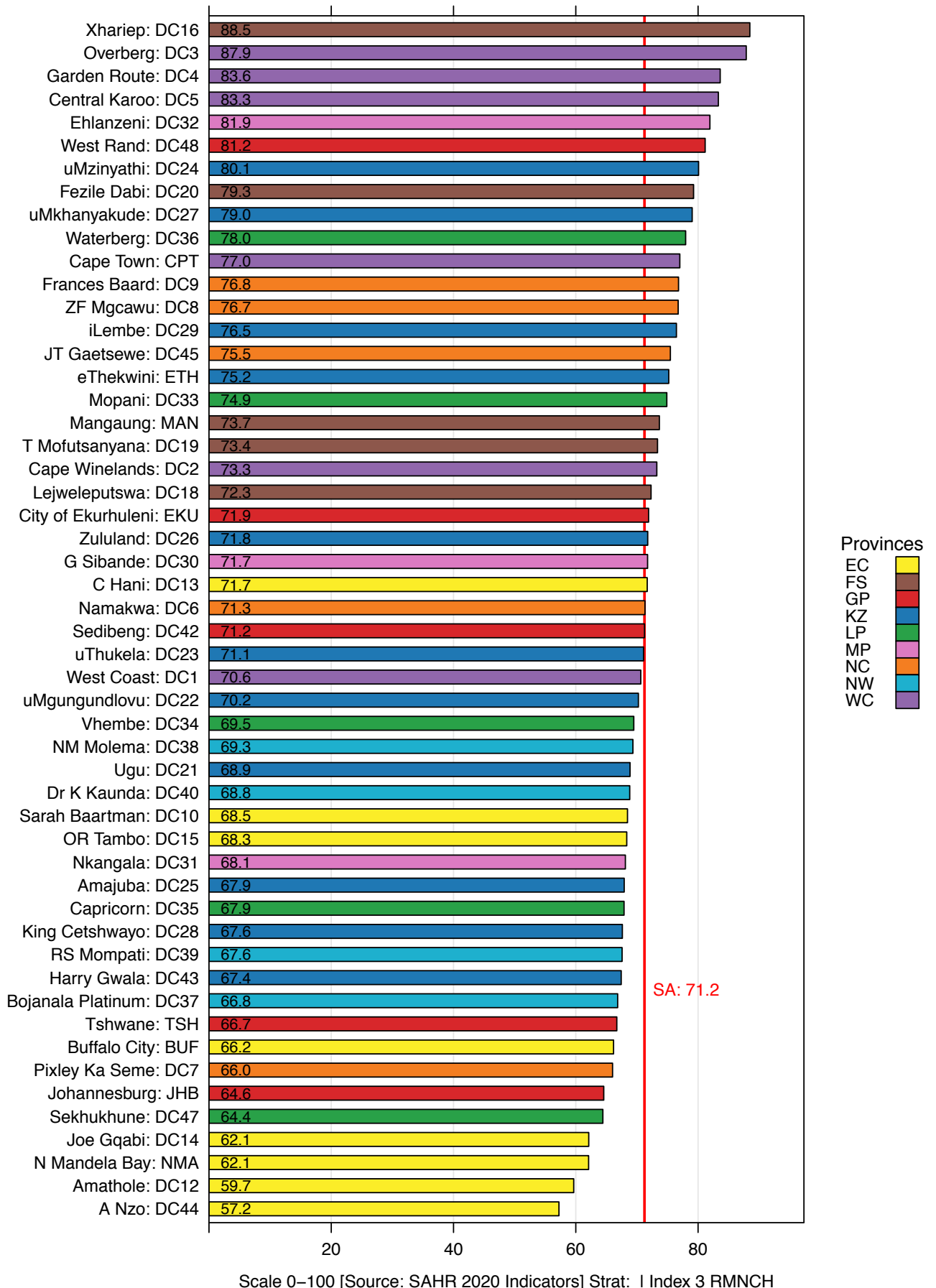


Figure 3: Universal Health Coverage service coverage index for the reproductive, maternal, newborn and child health category by province, 2019

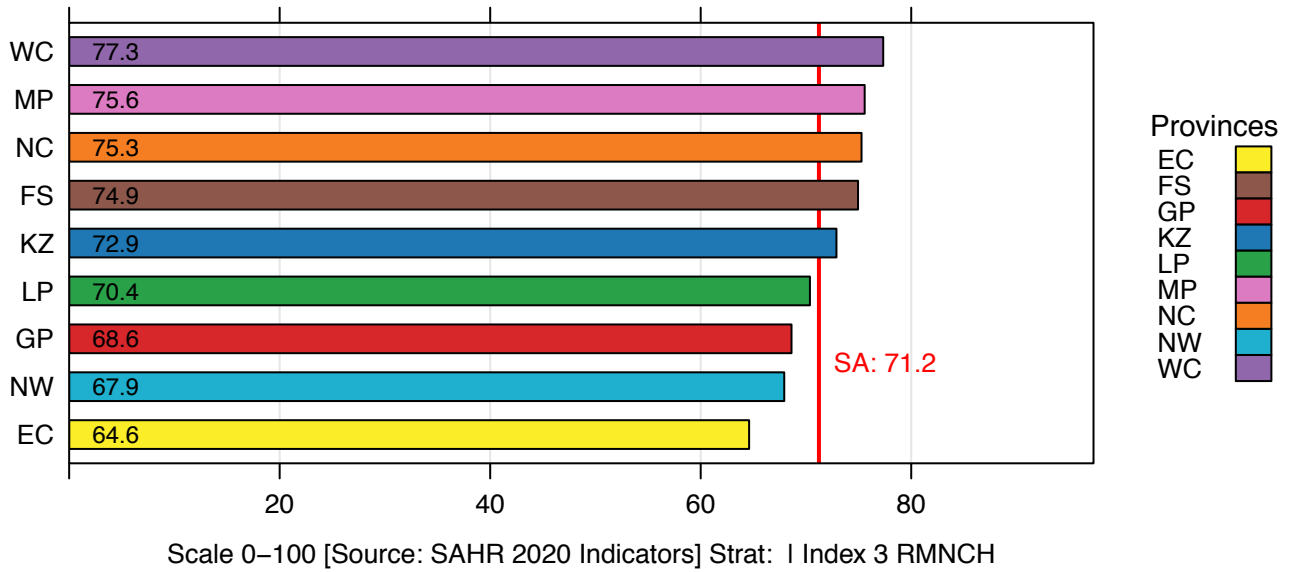
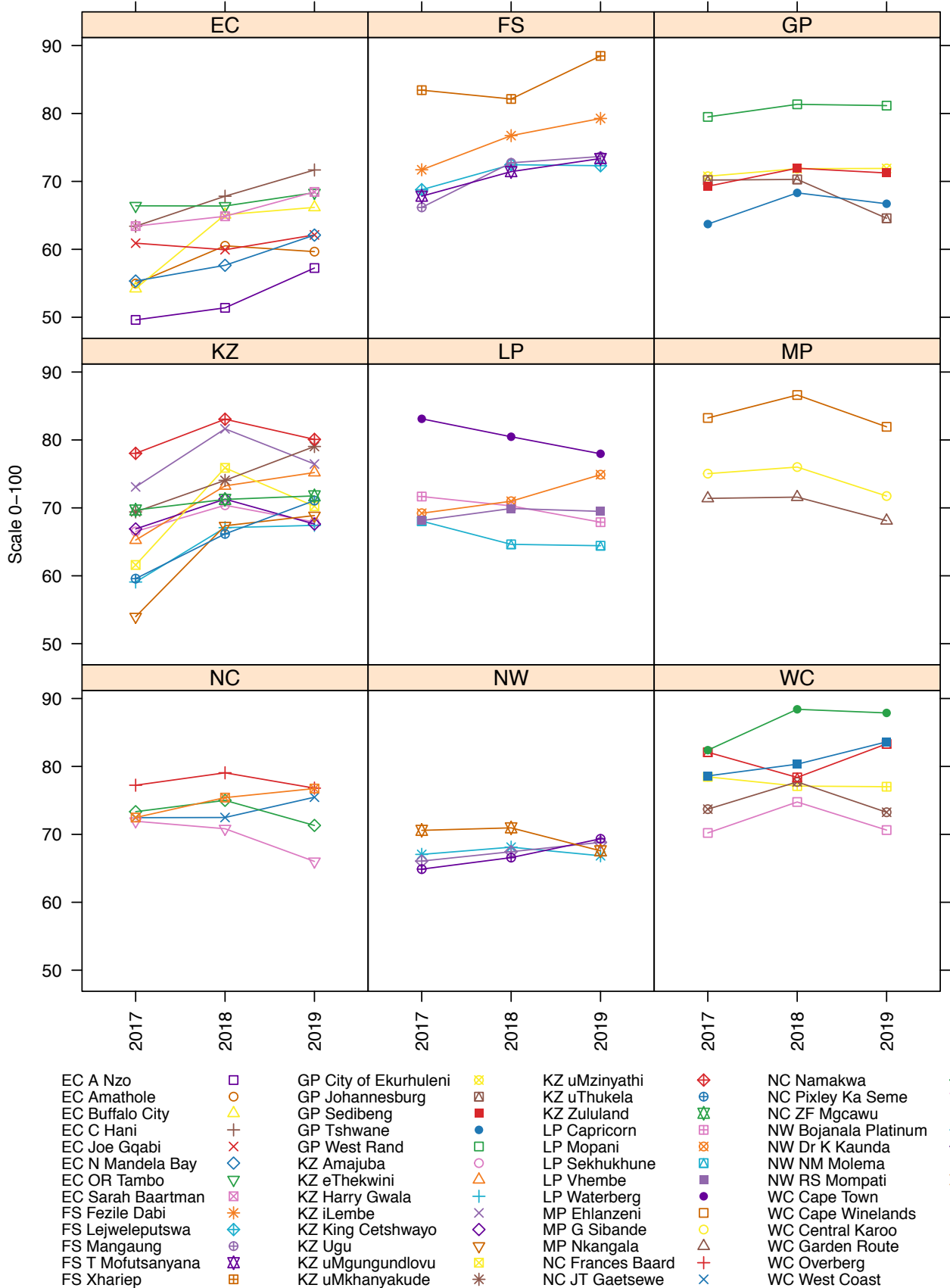


Figure 4: Annual trends – UHC index for the reproductive, maternal, newborn and child health category by district, 2017–2019



Infectious diseases

Universal Health Coverage 5: Tuberculosis treatment

Universal Health Coverage 5 measures TB effective treatment coverage by combining the case detection rate and the treatment success rate to estimate the proportion of TB cases that are detected and successfully treated. The national estimates of the case detection rate was used, as reported in the latest WHO Global Tuberculosis Report.^m Tuberculosis treatment outcomes are traditionally reported according to the cohort treatment start date, so the results lag other health indicators by one or more years. For UHC5, results were recorded according to the reporting year. The index reflects only the treatment success rate for drug-sensitive TB. Including drug-resistant cases would not be expected to markedly alter the results. The Global Tuberculosis Report 2020 recorded 13 005 drug-resistant TB cases in 2019, out of 209 545 new and relapsed cases notified.

Universal Health Coverage 5 values at a provincial level were in a narrow range in 2019, ranging from 58.1 (Northern Cape) to 62.3 (Gauteng). The national value was 60.2. District values were somewhat more spread, from 54.1 (Buffalo City, Eastern Cape) to 67.6 (West Rand, Gauteng).

Universal Health Coverage 6: HIV treatment

Universal Health Coverage 6 is an index of antiretroviral therapy (ART) effective coverage, combining the total number reported from TIER.Net as being on treatment and virally suppressed with a modelled estimate of the total number of people living with HIV.

For 2019, the provincial index values range from a high of 52.2 in Limpopo to a low of 24.0 in the Western Cape, with the national value being 42.5. This national value may be an artefact of data transfer processes in the Western Cape, which result in a lower reported number of treated and suppressed patients than is actually the case. This problem is also reflected in the district values, where the Cape Winelands shows the lowest index value (13.6). No Western Cape ART coverage data are as yet reported in DHIS for 2020, and the 2019 values represent a steep decline compared with previous years. The veracity of these data are therefore questionable. With the exception of the Northern Cape, all other provinces showed improvement in ART effective coverage in all districts across the time series 2017–2019. The highest index value, however, was reported in a Northern Cape district in 2019 (Namakwa, 65.5).

Universal Health Coverage 8: Water and sanitation

Universal Health Coverage 8 is calculated from the percentage of households using improved sanitation facilities (including flush to piped sewer systems, flush to septic tanks, flush/pour flush to pits, and flush/pour flush to elsewhere). The values reported for the time series were obtained from a smoothed model, which allowed projection beyond the last survey conducted by Statistics South Africa. The last intercensal Community Survey was conducted in 2016.

As expected, and consistent with previous years, the more affluent or urbanised provinces showed the highest index values in 2019 (Western Cape, 93.9; Gauteng, 90.2). The lowest index value continues to be reported in Limpopo (52.8). Over time, some of the most marked improvements have been shown in Eastern Cape districts, and the province's estimated index value (79.0) in 2019 was above the national figure (76.7).

The highest index values were recorded in Western Cape districts (Central Karoo, Cape Winelands, Overberg; all exceeding 95) and the lowest in Limpopo (Sekukhune, 29.3)

Universal Health Coverage service coverage index for the infectious diseases category

The UHC service coverage index for the infectious disease category was based on only three indicators (TB, HIV and sanitation), as the malaria indicator (UHC7) is excluded. The impact of the low index values ascribed to the Western Cape, as a result of ART treatment and suppression rate data issues, is possibly the reason for the poor ranking of that province in 2019 (49.0). Despite this, the lowest index value (47.7) was reported for the Northern Cape (Figure 6). The highest index value per district, however, was in the Northern Cape (Namakwa, 68.8), also largely driven by the ART effective coverage value. Three of the top five districts were from Gauteng (West Rand, Ekurhuleni, Johannesburg). Two of these are metropolitan municipalities (Figure 5).

Despite the gains in access to improved sanitation reported in periodic surveys, there are serious concerns about the quality of both potable water supplies and wastewater treatment in South Africa. The Water Institute of South Africa (WISA) has called for the revival of the incentive-based Blue Drop and Green Drop programmes, which have not been operational since 2014.ⁿ Currently, 44% of municipal water treatment works and 56% of wastewater treatment works are

m World Health Organization. Global tuberculosis report 2020. Geneva: World Health Organization; 2020.

n Pombo-van Zyl N. WISA calls for green, blue and no drop certification reinstatement. Online: ESI Africa; 2020 [updated 14 Aug 2020]. Available from: <https://www.esi-africa.com/industry-sectors/water/wisa-calls-for-green-blue-and-no-drop-certification-reinstatement/>.

considered to be in poor or critical condition. Investment in South Africa's water infrastructure is crucial if health-related goals are to be met. Disaggregation of data that accurately reflect access to safe drinking water and sanitation will be needed to ensure that persistent inequities are not obscured and ignored.^o

o Deshpande A, Miller-Petrie MK, Lindstedt PA, Baumann MM, Johnson KB, Blacker BF, et al. Mapping geographical inequalities in access to drinking water and sanitation facilities in low-income and middle-income countries, 2000–17. *Lancet Glob Health*, 2020; 8(9):e1162–e85.

Figure 5: Universal Health Coverage service coverage index for the infectious diseases category by district, 2019

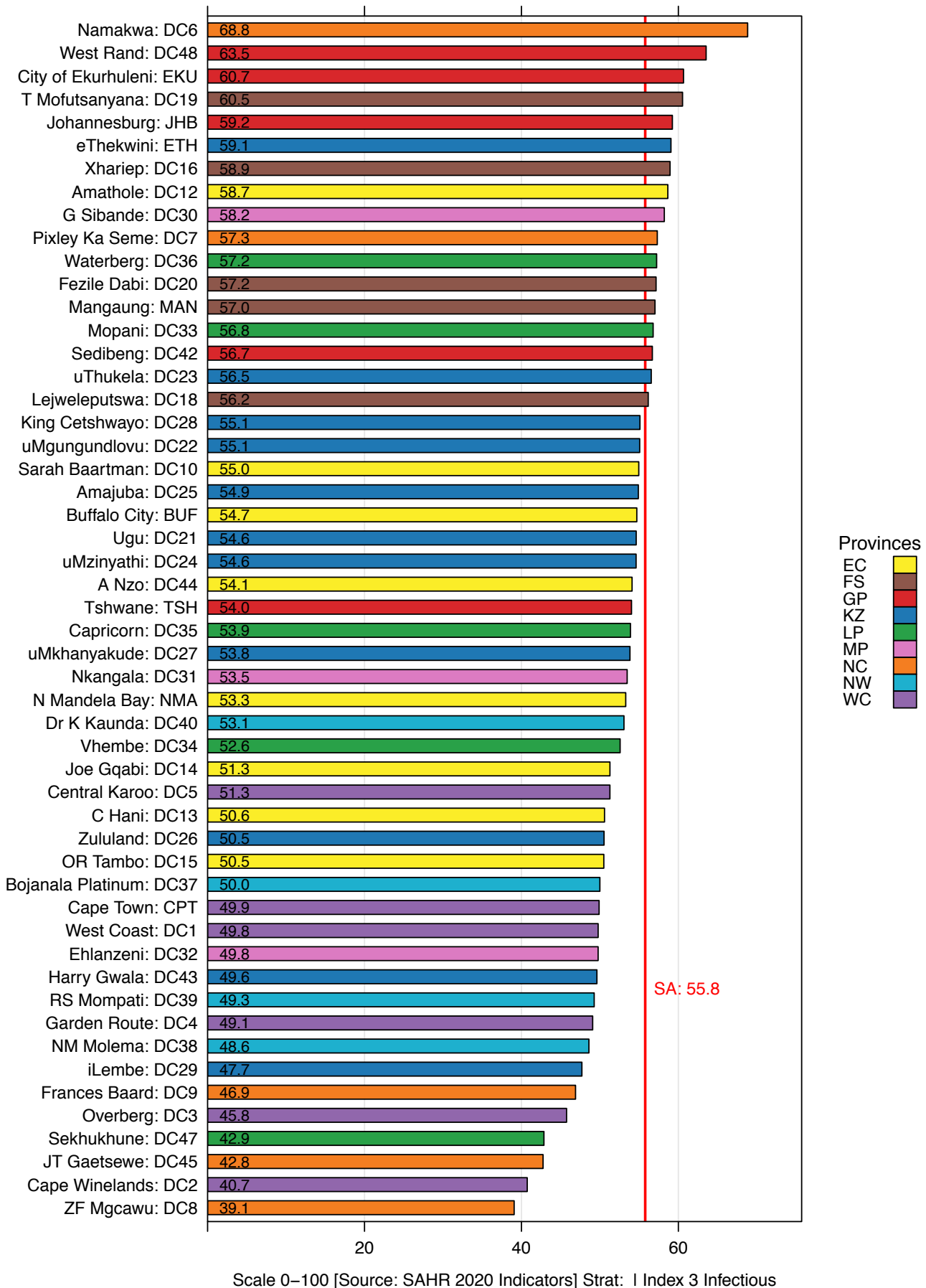
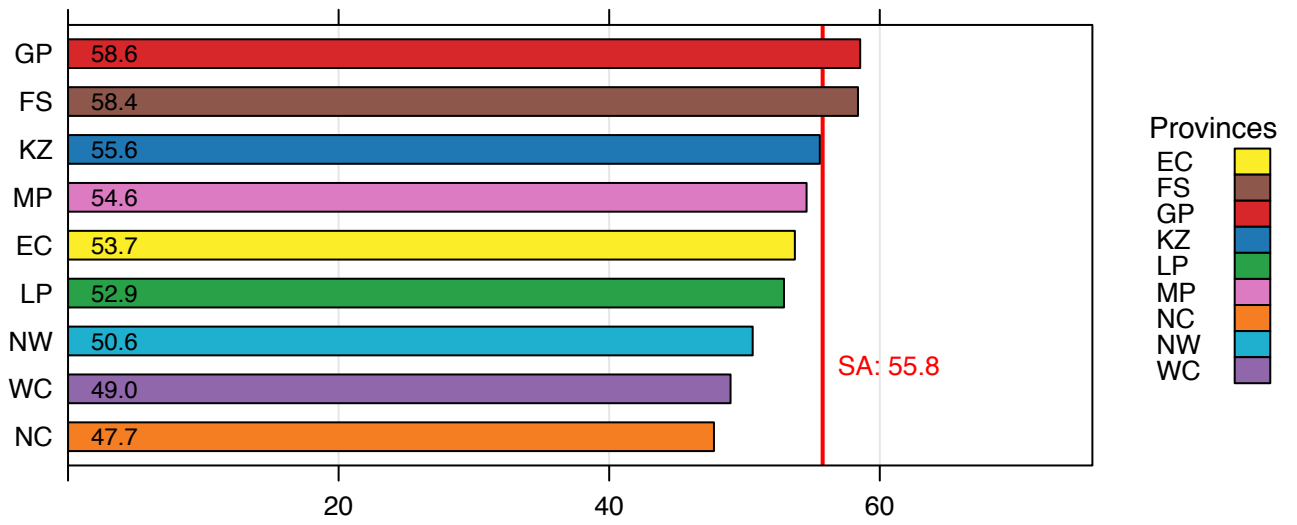
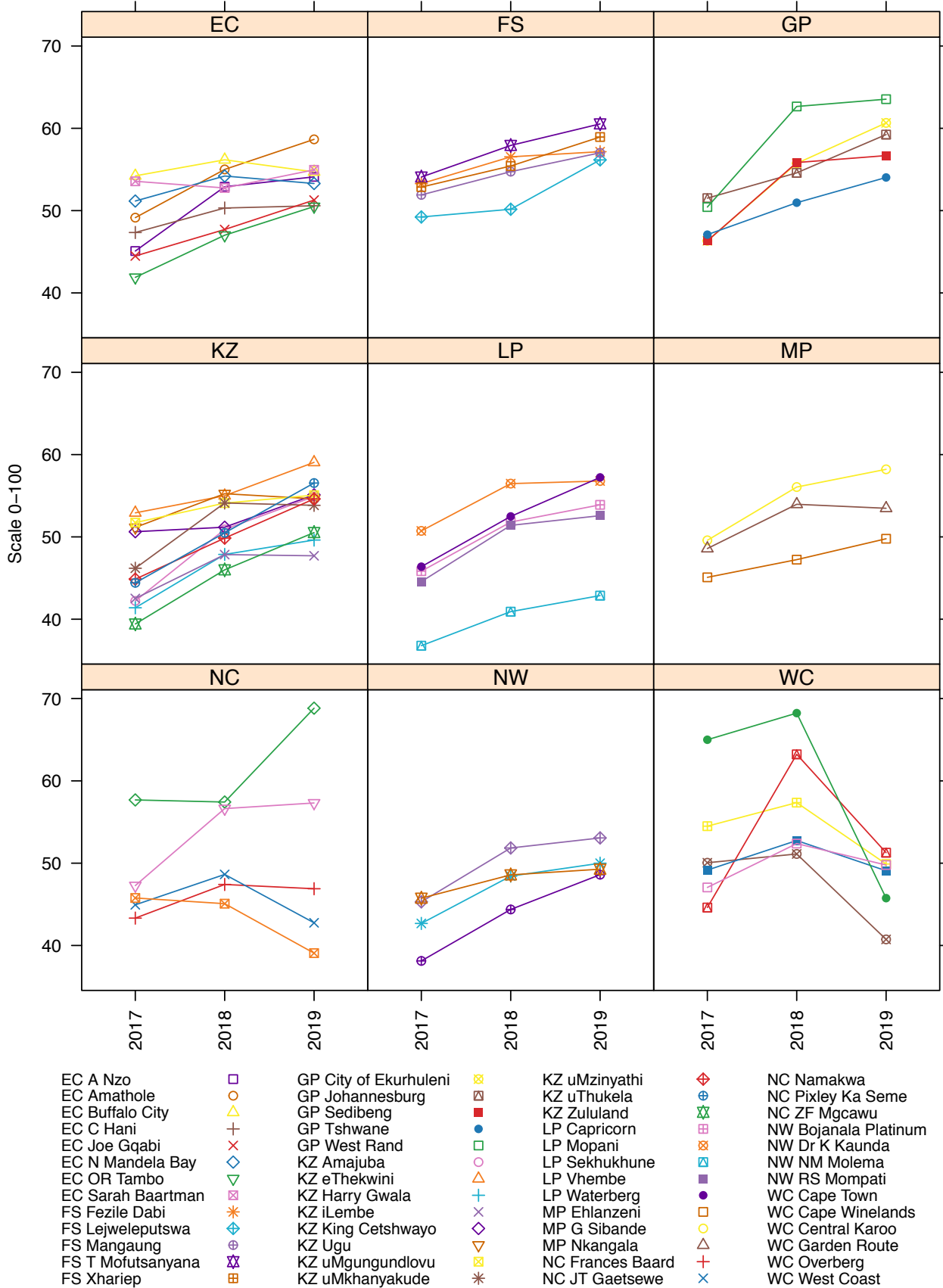


Figure 6: Universal Health Coverage service coverage index for the infectious diseases category by province, 2019



Scale 0–100 [Source: SAHR 2020 Indicators] Strat: | Index 3 Infectious

Figure 7: Annual trends – Universal Health Coverage service coverage index for the infectious diseases category by district, 2017–2019



Non-communicable diseases

Universal Health Coverage 9: Prevention of cardiovascular disease

Universal Health Coverage 9 relies on an age-standardised estimate of the percentage of the population (aged 15 years and older) with non-raised blood pressure, regardless of treatment status. The data for the time series reported here were again reliant on the 'waves' of NiDS, but were not rescaled using the minimum observed value, as was done for the previous DHB and SAHR.

The index varied across a narrow range at a provincial level, from 76.1 in the Northern Cape to 86.0 in Mpumalanga. The national index value was 81.3. The range of district values was more widely dispersed, from 66.3 in Cape Winelands (Western Cape) to 93.1 in Sedibeng (Gauteng).

Universal Health Coverage 10: Management of diabetes

Although UHC10 appears to be simple (relying on the percentage of people with diabetes receiving treatment), accessing such data at district level is by no means easy. A machine learning model was thus used to predict the individual probability of being diabetic from demographic, bio-behavioural and self-reported diagnosis and treatment data in SADHS 2016. The resultant model was then applied to the data from each NiDS 'wave' to estimate diabetes prevalence at sub-national level. Treatment coverage was expressed as the ratio between the proportion of self-reported treated cases and diabetes prevalence. A smooth variation over time was assumed for both variables, and final yearly estimates were generated by fitting a series of generalised linear models.

The index values per province ranged from 31.6 (Western Cape) to 48.4 (Mpumalanga), with a national value of 37.9. At a district level, the index values do raise concerns, as two Gauteng districts are positioned at the lowest (West Rand, 5.8) and highest (Ekurhuleni, 63.7). As will be seen, the low index value for West Rand has a dramatic effect on the overall non-communicable disease category index for that district. The challenges that are evident from trying to model district-level diabetes coverage from very limited data highlights the need for regular biomarker-based surveys at granular level.

Universal Health Coverage 11: Cancer detection

Universal Health Coverage 11 has been recalculated as a time series from 2010, applying the revised DHIS definition for cervical cancer screening coverage. In accordance with the 2017 Cervical Cancer Prevention and Control Policy, 80% of women aged 30 years and older should be screened for cervical cancer every 10 years, and 20% (those estimated to be living with HIV) should be screened every three years. These proportions and testing intervals are therefore applied to the denominator (estimated population in need of screening).

In 2019, seven of the 10 highest index values were recorded in KwaZulu-Natal districts (ranging from 80.9 in Harry Gwala to 61.0 in uMgungundlovu). The lowest index value was recorded in Capricorn (Limpopo) at 28.1. At provincial level, the values ranged from a low of 32.0 in the Northern Cape to a high of 57.9 in Mpumalanga. The KwaZulu-Natal value (55.9) was lowered by poor performance in Amajuba (50.8), uThukela (50.5), Ugu (49.6) and eThekweni (47.2).

Universal Health Coverage 12: Tobacco control

Universal Health Coverage 12 cannot be calculated from routine data sources, so has to be based on self-reported smoking behaviour in the five 'waves' of NiDS. The index is thus based on an estimate of the percentage of adults aged 15 years and older who are non-smokers, or who have not smoked tobacco in the previous 30 days, as 100 minus the modelled prevalence of smoking, per district, across the time series.

In 2019, the index varied from a high of 96.2 in Zululand (KwaZulu-Natal) to a low of 48.6 in Namakwa (Northern Cape). All Northern Cape and Western Cape districts were below the national value of 81.5. At a provincial level, Limpopo (88.8), KwaZulu-Natal (87.8), Mpumalanga (84.4) and the Eastern Cape (81.8) were above the national value. The two provinces with the highest percentage of smokers were therefore the Western Cape (70.0) and Northern Cape (69.5).

Universal Health Coverage service coverage index for the non-communicable disease category

Combining the four non-communicable disease (NCD) indicators (focused on cardiovascular disease, diabetes, cancer detection and tobacco control) yields the service coverage index for the NCD category. In 2019, this index varied from 69.3 in Ehlanzeni (Mpumalanga) to 37.6 in the West Rand (Gauteng) (Figure 8). Caution should be exercised in interpreting these values, as they are highly dependent on outlier values in individual indicators. In 2019, the UHC10 (diabetes) value for the West Rand district was 5.8, which appeared to be driven by a rising estimate of prevalence. Limited numbers of data points in particular districts can result in unstable modelled estimates, affecting the index value. That two Gauteng districts were the best- and worst-performing in terms of diabetes treatment coverage appears to be questionable.

Provincially, the NCD service coverage index thus ranged between 49.4 (Northern Cape) and 67.1 (Mpumalanga) in 2019, narrowly banding the national value of 58.6 (Figure 9). The poor performance in the Western Cape (51.8) reflected the influence of low values for a number of indicators, including tobacco control and diabetes treatment coverage.

It is important not to dismiss the linkages that exist between health systems elements that deliver care for infectious and non-communicable diseases, and thus to over-interpret indicators that might assume a silo approach. For example, a study conducted in the Agincourt sub-district showed that patients on ART had greater awareness of and access to treatment for hypertension and diabetes, with measurably lower mean systolic blood pressure and mean blood glucose.^p Disruptions to routine health service delivery due to COVID-19 are expected to impact on 2020 measures of treatment coverage. Despite the ban on cigarette sales during the early months of the pandemic, little impact on smoking prevalence is expected. In 2021, a sample of 11 000 South African households will be included in the Global Adult Tobacco Survey, which will add a new data source for this indicator.^q

p Manne-Goehler J, Siedner MJ, Montana L, Harling G, Geldsetzer P, Rohr J, et al. Hypertension and diabetes control along the HIV care cascade in rural South Africa. *J Int AIDS Soc*, 2019; 22(3):e25213. Epub 28 March 2019.

q de Wet P. Have you tried to quit? SA to take part in a big tobacco survey ahead of planned new restrictions. *Business Insider South Africa*. 3 August 2020.

Figure 8: Universal Health Coverage service coverage index for the non-communicable disease category by district, 2019

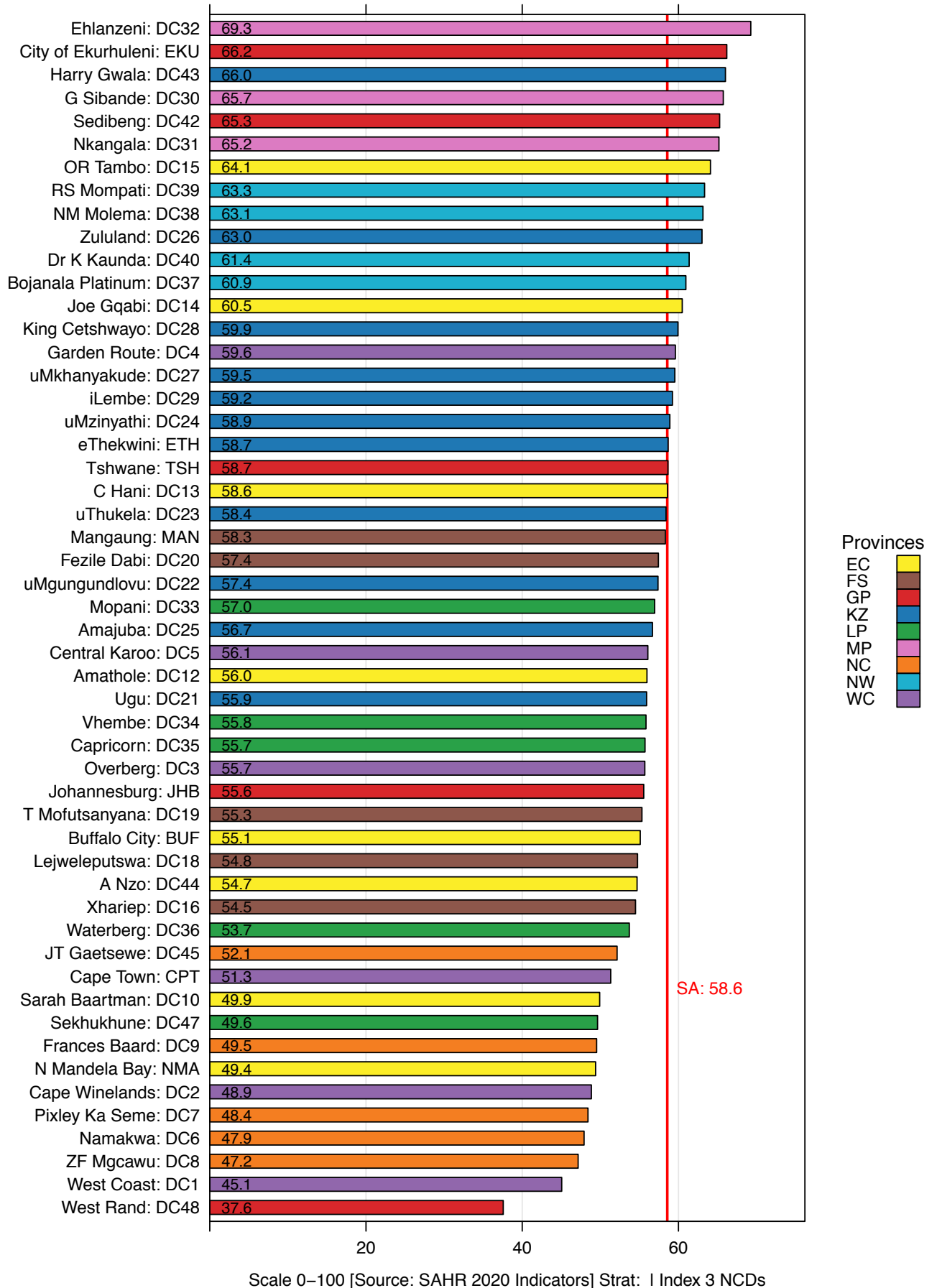
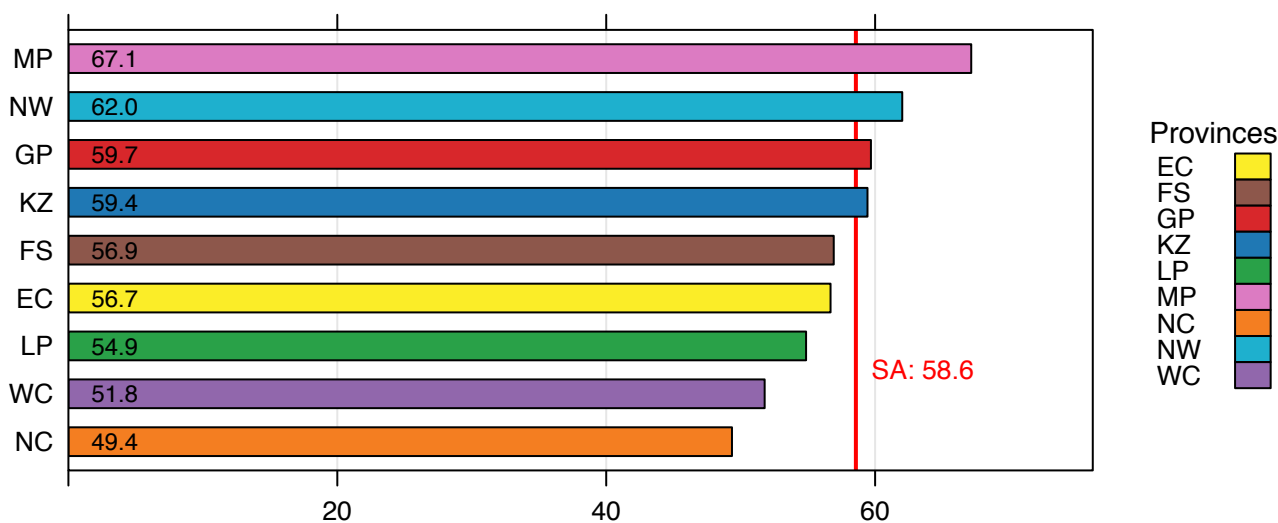


Figure 9: Universal Health Coverage service coverage index for the non-communicable disease category by province, 2019



Scale 0–100 [Source: SAHR 2020 Indicators] Strat: I Index 3 NCDs

Service capacity and access

Universal Health Coverage 13: Facility access

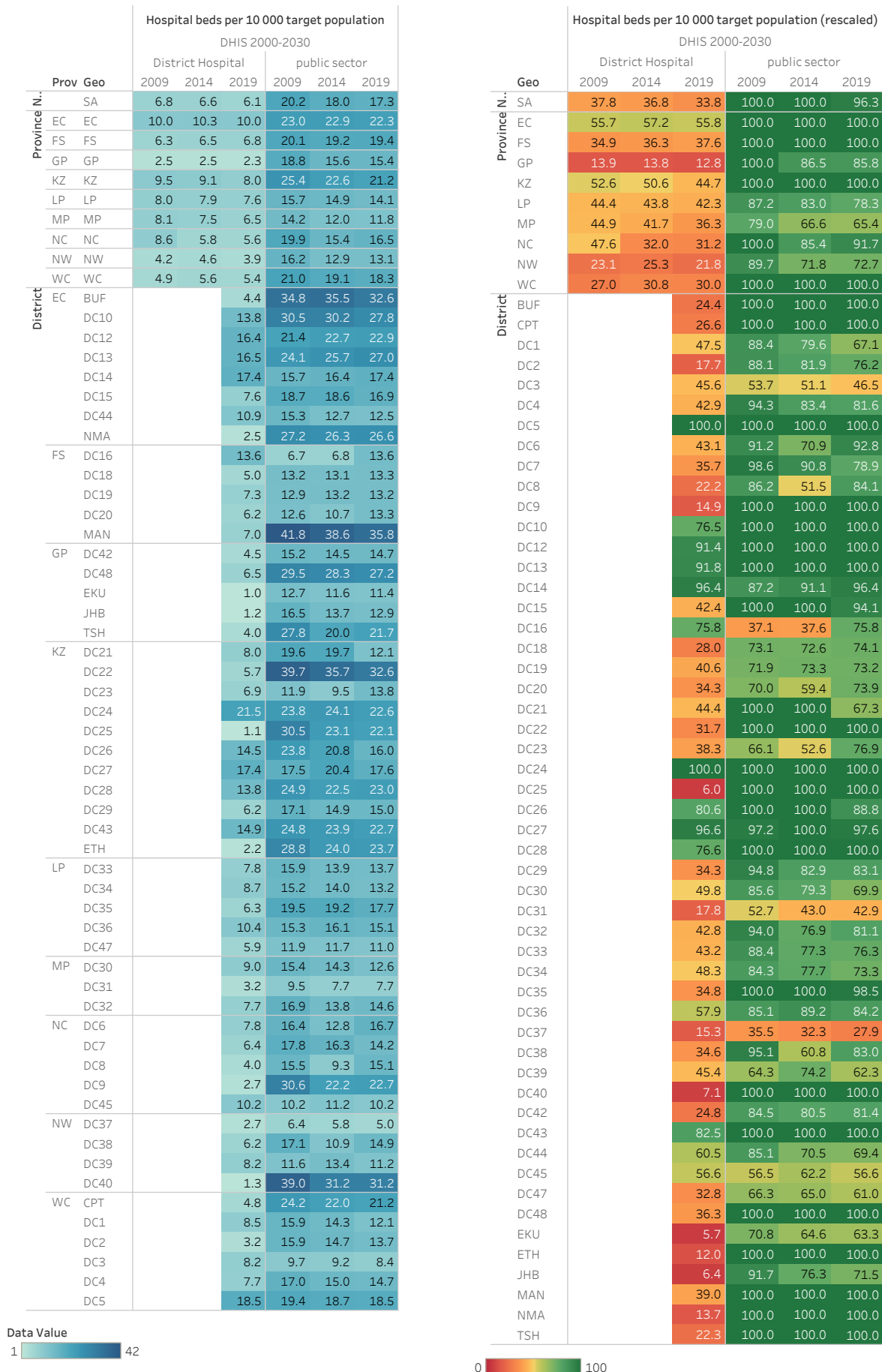
Universal Health Coverage 13 is calculated from the number of hospital beds per 10 000 population, applying a threshold value of 18 beds per 10 000 population, according to the WHO guidance.^h However, this is calculated from the total number of public sector hospital beds (all levels of care), and the estimate of the uninsured population per district. As neither the Council for Medical Schemes nor Statistics South Africa report this population per district, the estimates were generated using a small area model based on the 2011 Census and 2016 Community Survey, and scaled using the 2018 General Household Survey and the Council for Medical Schemes data.^f At provincial and national levels, the influence of regional and central hospitals would be diluted, but at district level their inclusion ignores the fact that these hospitals serve a population from outside of the district in which they are located.

At a national level, the index value (96.3) reflects a bed density close to the threshold, and four provinces (Western Cape, KwaZulu-Natal, Free State and Eastern Cape) exceed that value and have met the threshold (index value of 100) in 2019. The lowest index values were calculated for Mpumalanga (65.4) and North West (72.7). Low index values in the districts reflect persistent infrastructure differences inherited from the apartheid health system. For example, the low value of 46.5 in the Overberg (Western Cape) reflects persistent reliance on the large hospitals in the nearby metropole. The lowest index value for a metropolitan municipality was 63.3 in Ekurhuleni (Gauteng), which relies on large hospitals in adjoining districts. Nonetheless, previous homeland areas remain poorly served.

A different picture emerges when the index is calculated for public sector district hospital beds only. On that basis, and still applying the threshold of 18 beds per 10 000 uninsured population, the national value declines to 33.8, with the lowest value (12.8) shown in Gauteng and the highest (55.8) in the Eastern Cape. Many regional hospitals are delivering a range of services that include those expected of district hospitals. A cluster of metropolitan municipalities at the lower end of the league table (Nelson Mandela Bay (Eastern Cape), 13.7; eThekweni (KwaZulu-Natal), 12.0; Johannesburg, 6.4; Ekurhuleni, 5.7 (Both Gauteng) underscores this point. Rural districts such as uMzinyathi (KwaZulu-Natal) and Central Karoo (Western Cape) still meet the threshold.

^r Modelling done by Daniel Shapiro, Insight Actuaries. See Introduction and overview section for more details.

Figure 10: Heatmap of hospital bed density and index (rescaled density) for district hospital and all levels of public sector hospitals



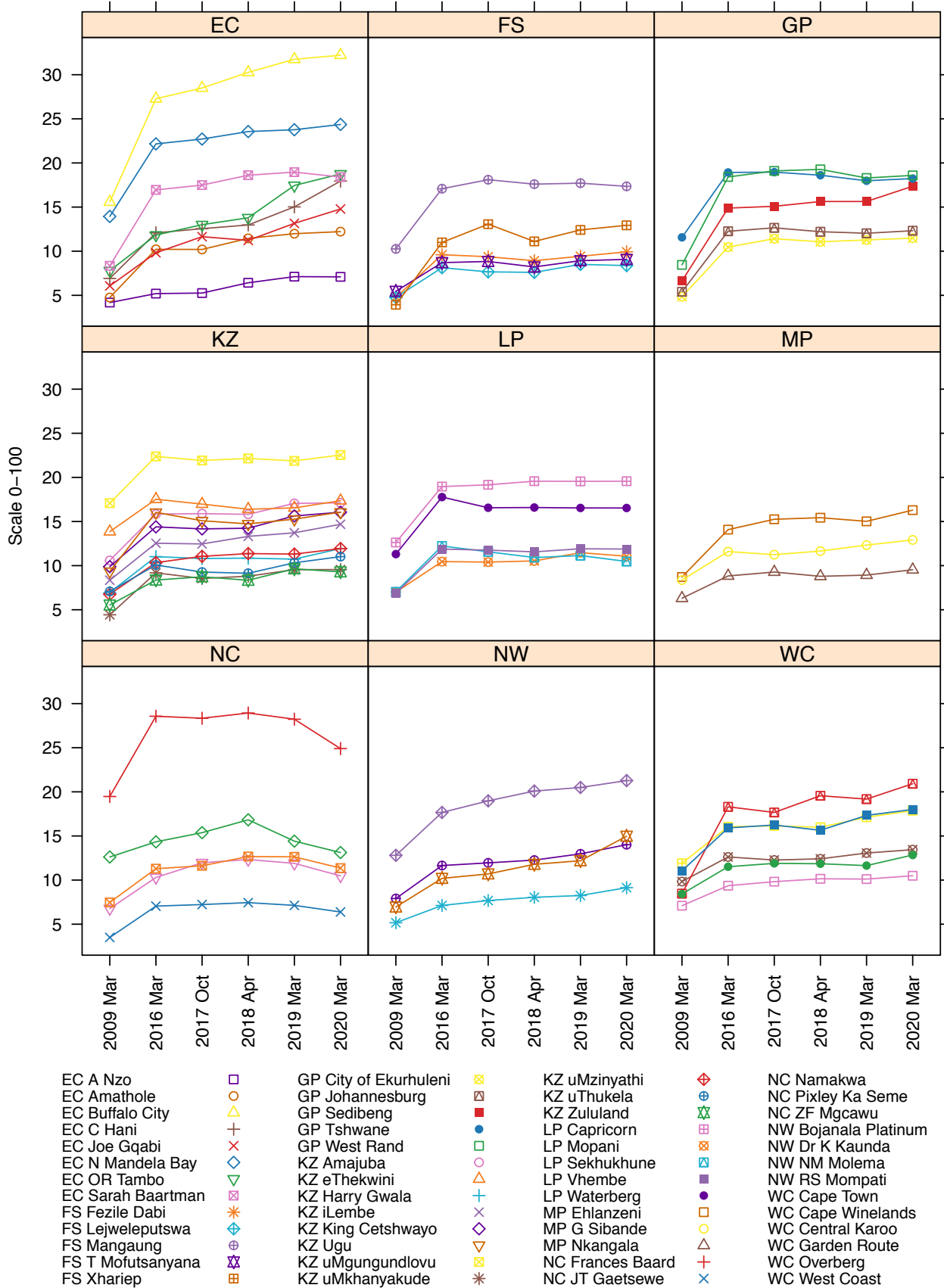
Universal Health Coverage 14: Health worker density

Universal Health Coverage 14 aims to track health worker density, using thresholds of 30 Physicians, 100 Nurses and Midwives, and five Pharmacists employed in the public sector, per 10 000 uninsured population. The thresholds were proposed by the Global Burden of Disease^j (GBD) 2017 SDG Collaborators, and may result in index values which under-represent the reality of service capacity. The National Department of Health's 2030 Human Resources for Health Strategy, which was dated March 2020, noted that South Africa (across both sectors) exceeded the SDG threshold of 44.5 doctors, nurses and midwives per 10 000 population, but that "improving inter-provincial equity in the public sector by 2025 will require an additional 97 000 health workers".⁵ It must be emphasised, however, that a third of these additional human resources would be Community Health Workers, who are not currently reflected in PERSAL data nor incorporated into the index. The Strategy document also acknowledged the paucity of data: "The absence of consolidated national health workforce accounts data, from both the public and private health sectors, compromises the validity of estimates of health workforce availability and need." Apart from the persistent differences between the public and private sectors, the Strategy noted that the "maldistribution of health workers within provinces by district and level of care also requires further analysis and policy attention".

In 2019, although interprovincial differences in the health worker density index were relatively small, ranging from 12.4 (Mpumalanga) to 18.5 (Northern Cape), the differences between districts were stark and increasing (Figure 10). The three lowest index values were calculated for Alfred Nzo (Eastern Cape, 7.1), John Taolo Gaetsewe (Northern Cape, 7.1) and Bojanala Platinum (North West, 8.2). The highest index value was calculated for Buffalo City (Eastern Cape, 31.7).

⁵ National Department of Health. 2030 Human Resources for Health Strategy: Investing in the Health Workforce for Universal Health Coverage. Pretoria: National Department of Health; 2020 March.

Figure 11: Annual trends – health worker density index, 2009 and 2016–2020



Universal Health Coverage 15: Access to essential medicines

In 2019, UHC15 could still be calculated from the indicator routinely reported in DHIS, the proportion of primary care facilities (fixed clinics, CHC/CDCs) that experienced a stock-out of any tracer item for any time during the period under review. However, that indicator will no longer be reported after March 2020. Although essential medicine availability is reported to the National Surveillance Centre (NSC) at the Affordable Medicines Directorate of the National Department of Health, these data are not included in the National Indicator Data Set. Urgent attention to this critical measure of health systems performance is needed.

Data quality issues are suspected to have affected the index values in a number of districts, where unexpected changes over time have been seen. For example, a low value of 1.0 was calculated for Lejweleputswa in 2019 (since the reported stock-out rate exceeded 100%), which is out of step with the other districts in the Free State. In Limpopo, all districts showed declining values over time but a wide range, with low values calculated in 2019 for Sekhukhune (34.4), Mopani (20.7) and Vhembe (6.0). Such values should be contrasted with the national figure of 66.0. The Limpopo provincial index was 33.4. The highest index value was calculated in the Western Cape (93.6) and three districts in that province were in the top five (Garden Route, 96.9; Cape Winelands, 95.5; West Coast, 95.2).

Universal Health Coverage 16: Health security

Universal Health Coverage 16 relies on an assessment of municipal compliance with National Environmental health norms and standards, using an audit tool. Since no updated data for the 2019/20 financial year were available, the values from 2018/19 were carried forward in computing the 2019 index. At a district level, the range of index values carried forward to 2019 were from 13 (Bojanala Platinum, North West) to 91 (Harry Gwala, KwaZulu-Natal). The national value was 62.3, with provincial indices ranging from 40.5 (North West) to 75.2 (Northern Cape).

The COVID-19 pandemic has focused attention on national capacity in relation to the International Health Regulations (IHR 2005), but also the need to revisit that instrument.^t

Universal Health Coverage service coverage index for the service capacity and access category

The UHC service coverage index for service capacity and access thereto relies on two public sector measures (bed density and human resources for health), both of which could be improved: a relatively weak measure of essential medicines access, and a dated assessment of environmental health service provision.

Low values in a particular indicator could influence the distribution of the category index. A wide range of values, from 67.6 in Buffalo City (Eastern Cape) to 14.6 in Lejweleputswa (Free State), was calculated for 2019 (Figure 11). Disaggregated by municipal type, the metropolitan municipalities performed better and were less variable than the district municipalities (Figure 12). Nonetheless, in terms of provincial ranking, the results seem to reflect reality, ranging from a high of 57.0 in the well-resourced Western Cape, to a low of 37.8 in North West, where the Provincial Department of Health was under administration (Figure 13). Viewed over the three years reported here, the outliers are evident, but so also is the spread between districts, which is more marked in some provinces (such as the Eastern Cape) than others (KwaZulu-Natal and the Western Cape) (Figure 14).

^t Taylor AL, Habibi R, Burci GL, Dagron S, Eccleston-Turner M, Gostin LO, et al. Solidarity in the wake of COVID-19: reimagining the International Health Regulations. *Lancet*, 2020; 396(10244):82–3.

Figure 12: Universal Health Coverage service coverage index for the service capacity and access category by district, 2019

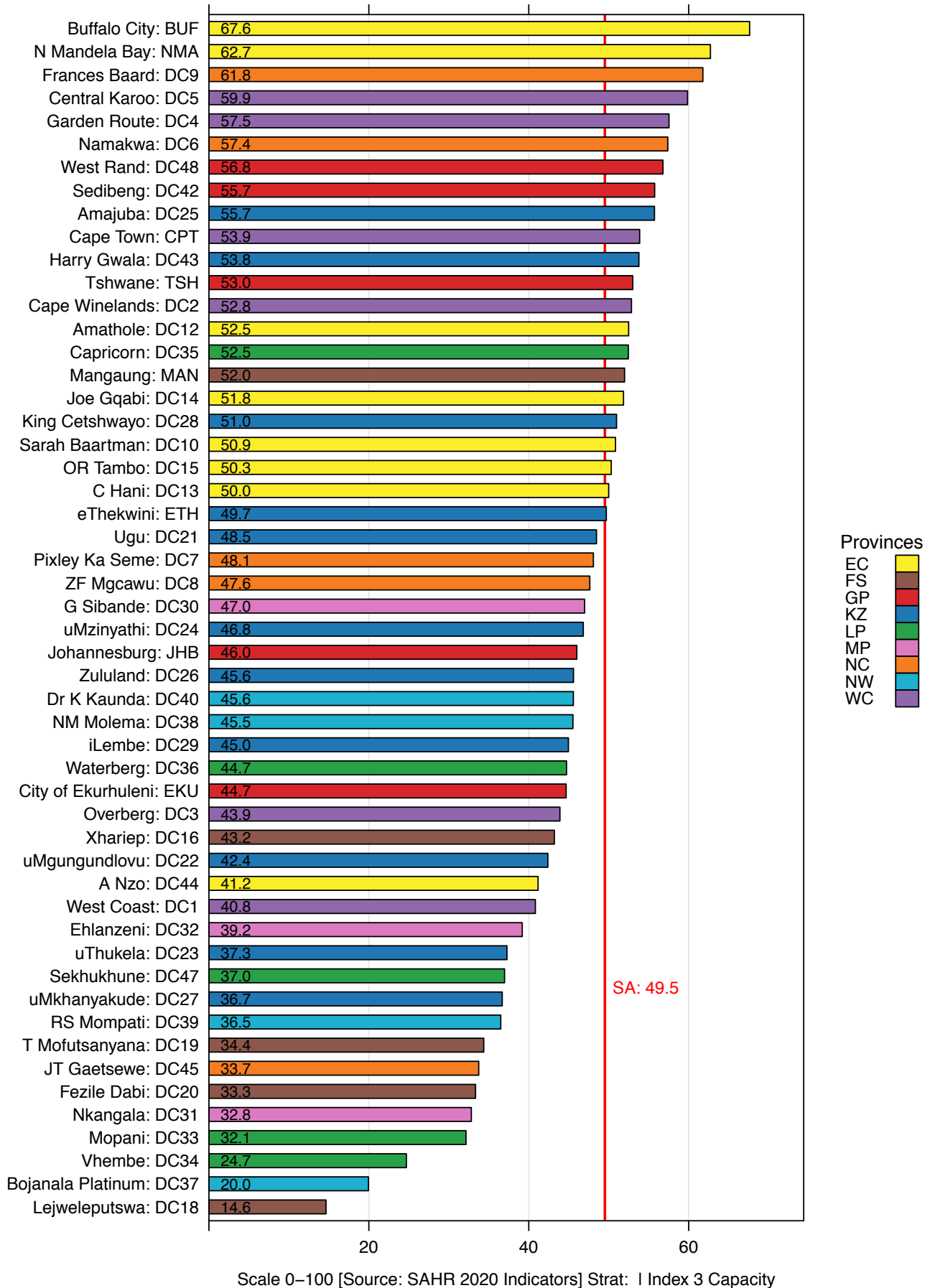


Figure 13: Box-and-whisker plot of the index for the service capacity and access category for districts by type of municipality, 2019

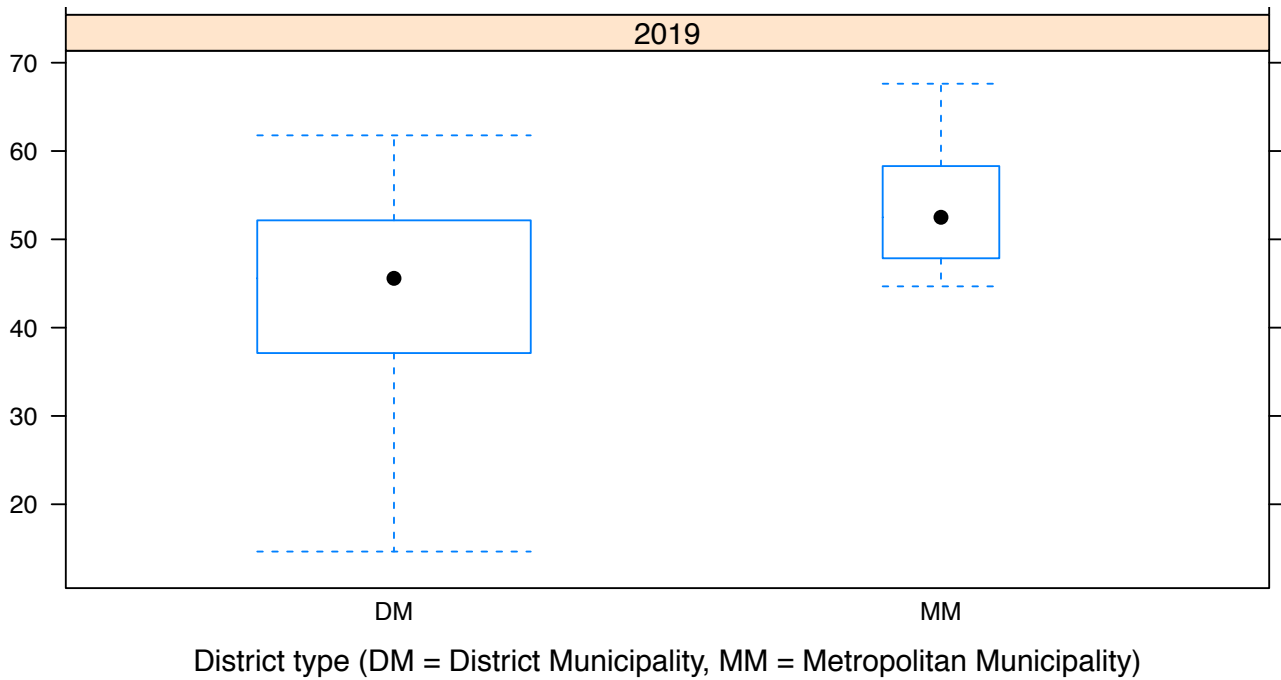


Figure 14: Universal Health Coverage service coverage index for the service capacity and access category by province, 2019

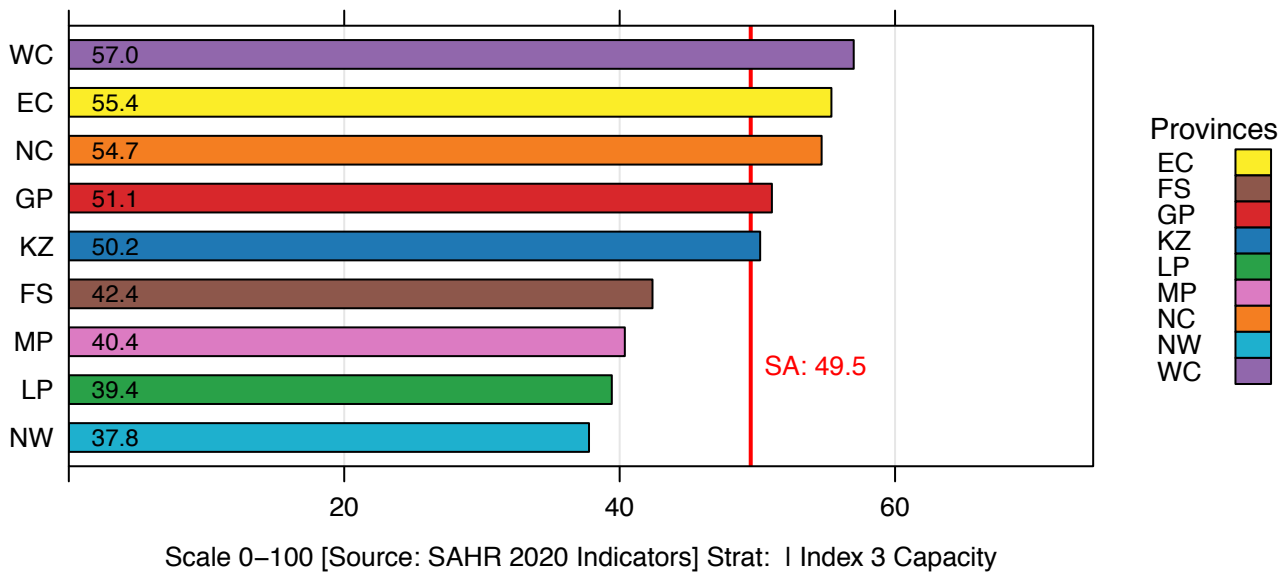
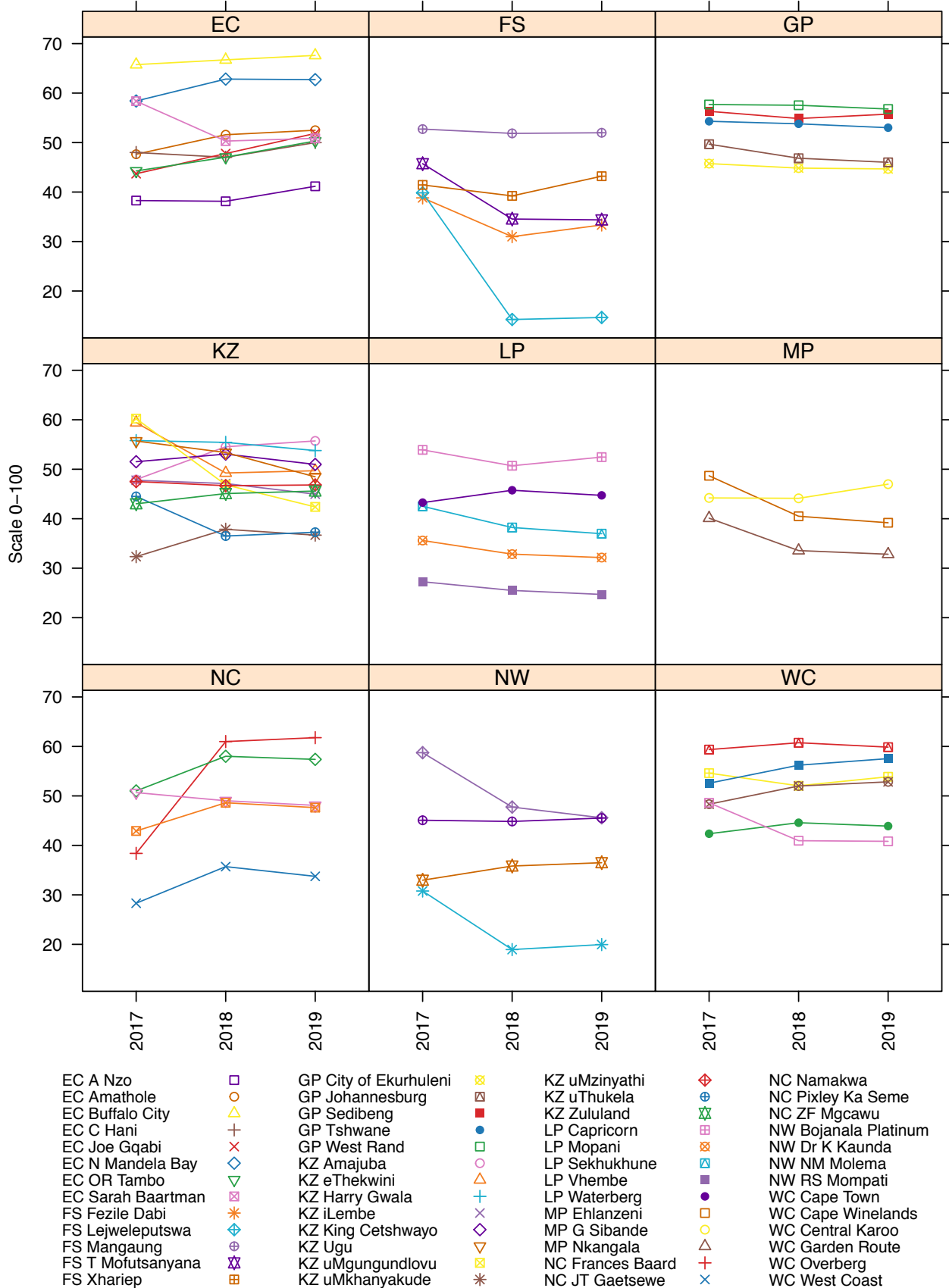


Figure 15: Annual trends – Universal Health Coverage service coverage index for the service capacity and access category by district, 2017–2019



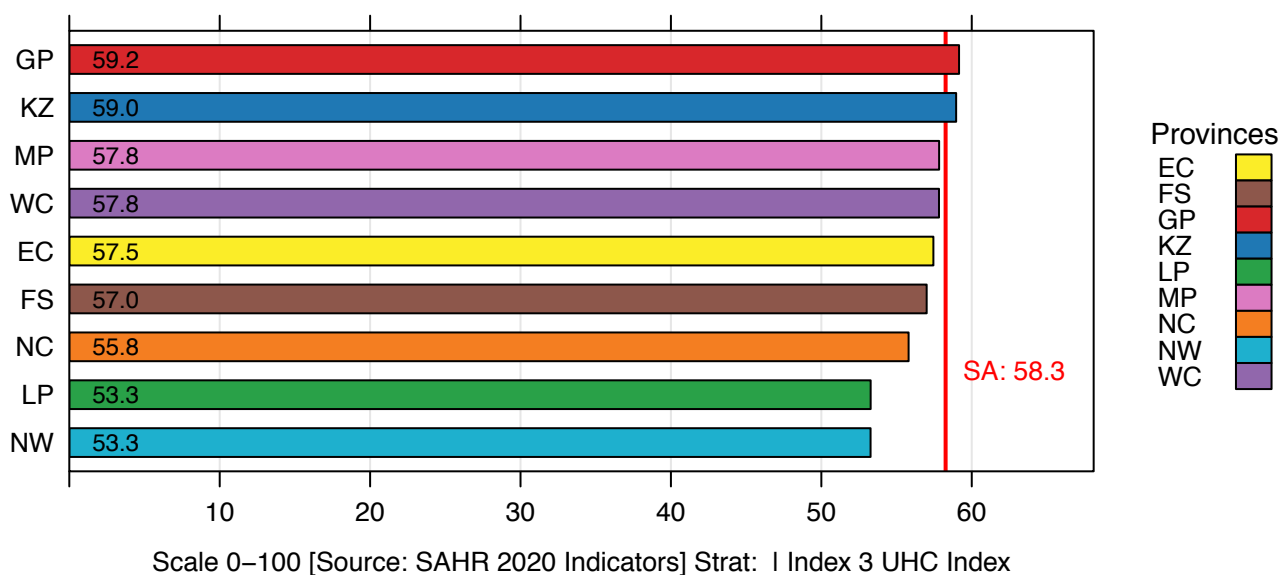
Overall Universal Health Coverage service coverage index

The overall UHC service coverage index is calculated as the geometric mean of the values for the four categories (RMNCH, infectious diseases, NCDs, capacity and access). In 2019, the national value was 58.3, and the provincial values varied from 53.3 (North West) to 59.2 (Gauteng) (Figure 15).

At a district level, the highest service coverage index value was calculated for Sedibeng (Gauteng, 61.9) (Figure 16). Sedibeng’s strong performance in the NCD category was notable. The lowest index value in 2019 was calculated for Lejweleputswa (Free State, 42.5), and was largely driven by its poor service capacity and access index (and in turn by the questionable essential medicines availability indicator value). The national index value increased from 56.2 in 2017, to 57.6 in 2018 and 58.3 by 2019. Most districts reflect this gradual increase, and for those that deviate, data quality issues or uncertainty in modelling estimates for some indicators generally explain the variation (Figure 17). Disaggregated by municipal type, the metropolitan municipalities performed better and were less variable than the district municipalities (Figure 18). A wide variation in the range of values by province and by district is noted across the different tracers included in the index, highlighting the challenge in formulating indicators that reliably capture variations in actual coverage of health services (Figure 19).

An alternative measure of effective UHC coverage has recently been reported by the GBD 2019 Universal Health Coverage Collaborators, which combined 23 effective coverage indicators, weighted by their potential health gains.^u The reported value for South Africa in 2019 was 60, close to the global value of 60.3. The range in national values was from less than 25 to more than 95. Replicating this index, using existing routine data sources and disaggregating to district level, would be challenging. Continuing to rely on the UHC service coverage index proposed by Hogan et al. and adapting it to allow maximal use of routine data and disaggregation will allow progress to be tracked, equity to be monitored, and the need for remedial action identified.

Figure 16: Universal Health Coverage service coverage index by province, 2019



^u Lozano R, Fullman N, Mumford JE, Knight M, Barthelemy CM, Abbafati C, et al. Measuring universal health coverage based on an index of effective coverage of health services in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*, 2020; 396:1250–84. Available from: [https://doi.org/10.1016/S0140-6736\(20\)30750-9](https://doi.org/10.1016/S0140-6736(20)30750-9).

Figure 17: Universal Health Coverage service coverage index by district, 2019

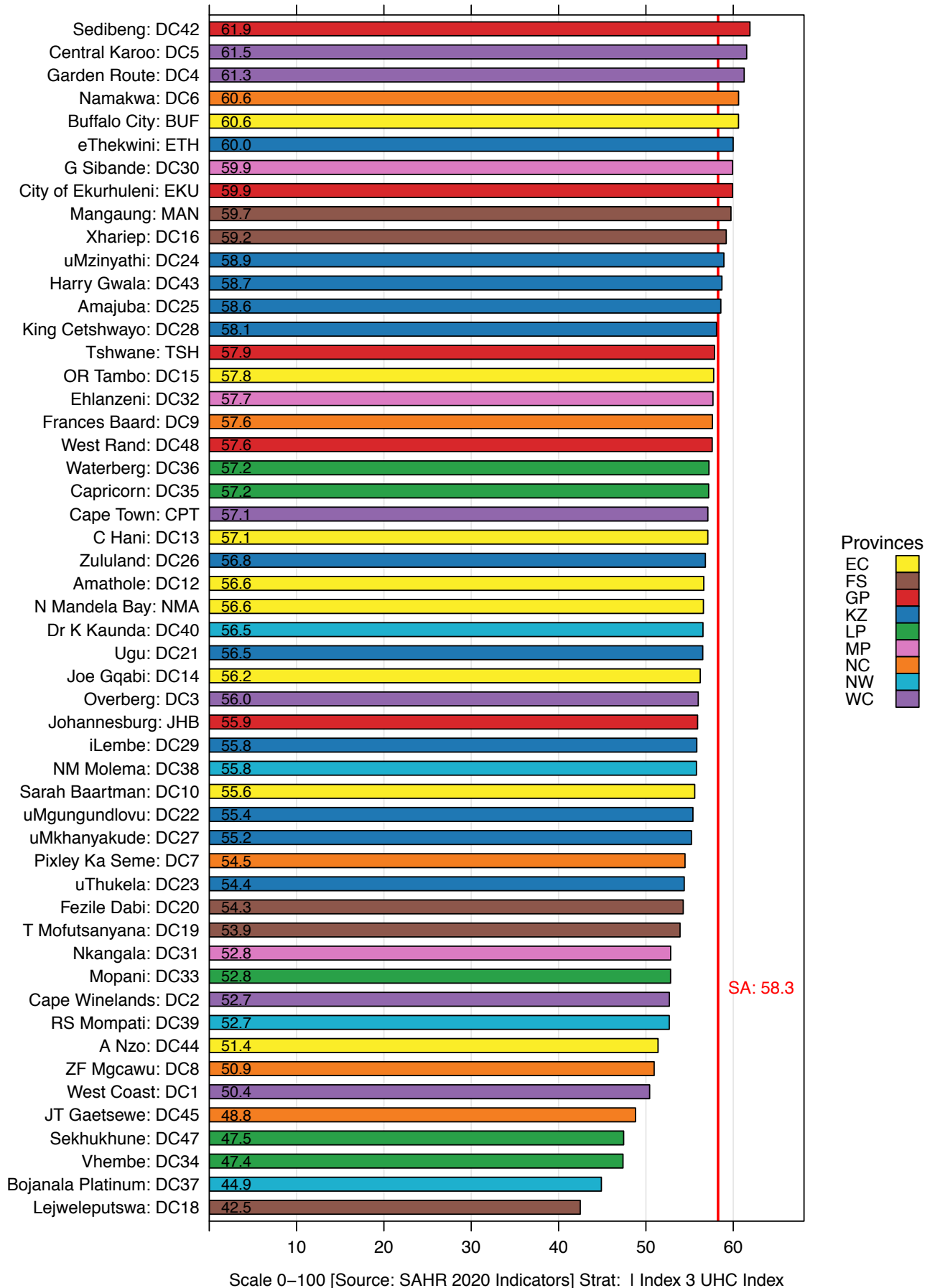


Figure 18: Annual trends – Universal Health Coverage service coverage index by district, 2017–2019

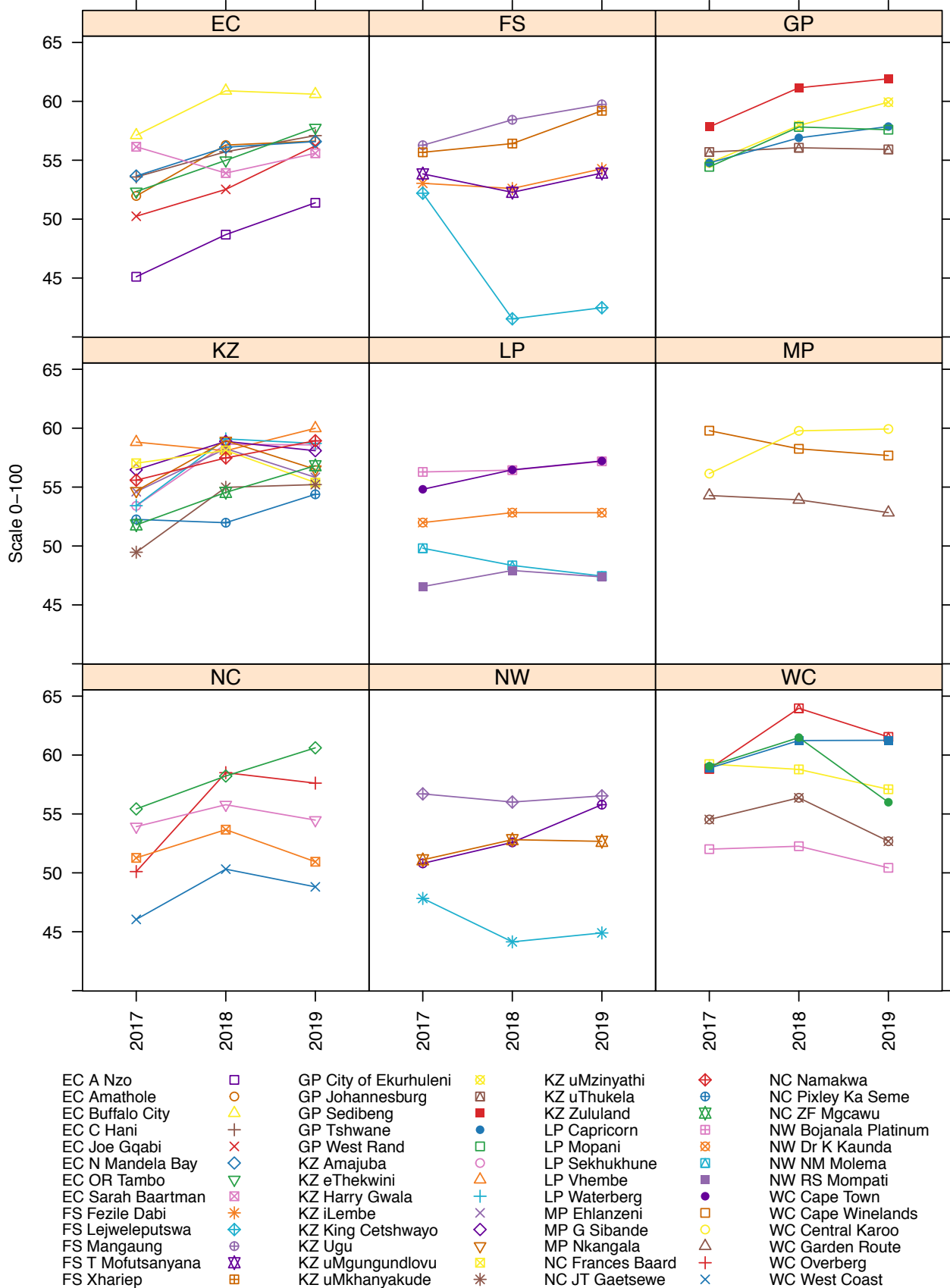


Figure 19: Box-and-whisker plot of the Universal Health Coverage service coverage index for districts by type of municipality, 2019

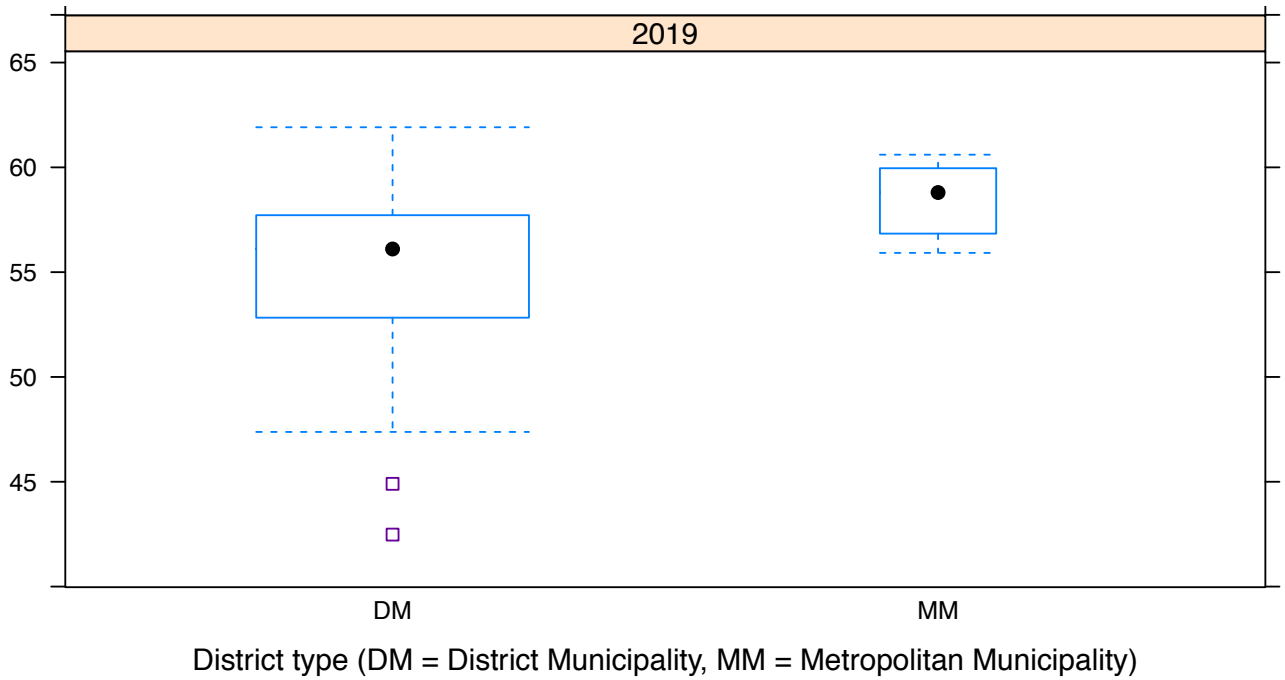


Table 3: Universal Health Coverage service coverage indicators for each tracer indicator, national, provincial and by district, 2019

		RMNCH				Infectious			NCDs				Capacity				Index					
		1	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17					
		Couple year protection rate (index)	Antenatal 1st visit coverage before 20 weeks (index)	Immunisation under 1 year coverage (index)	Pneumonia case survival under 5 years rate	Tuberculosis effective treatment coverage	Antiretroviral effective coverage	Percentage of households with access to improved sanitation (index)	Age-standardised prevalence of non-raised blood pressure (index)	Diabetes treatment coverage	Cervical cancer screening coverage (index)	Tobacco non-smoking prevalence (index)	Hospital beds per 10 000 target population (rescaled)	Health worker density (rescaled)	Proportion of health facilities with essential medicines	Environmental health services compliance rate	UHC: RMNCH coverage index	UHC: Infectious coverage index	UHC: NCDs coverage index	UHC: Capacity coverage index	Universal health coverage: service coverage index	
South Africa		55	58	84	98	60	42	77	81	38	47	82	96	15	66	62	71	56	59	50	58	
Province	Eastern Cape	55	43	76	97	60	37	79	80	32	50	82	100	18	78	67	65	54	57	55	57	
	Free State	79	53	77	98	59	45	83	79	36	46	80	100	13	41	59	75	58	57	42	57	
	Gauteng	44	60	87	97	62	40	90	83	46	42	80	86	14	82	69	69	59	60	51	59	
	KwaZulu-Natal	57	56	91	98	61	48	67	80	32	56	88	100	15	73	56	73	56	59	50	59	
	Limpopo	55	63	74	96	61	52	53	84	36	33	89	78	14	33	64	70	53	55	39	53	
	Mpumalanga	48	72	97	98	62	48	62	86	48	58	84	65	12	57	58	76	55	67	40	58	
	Northern Cape	57	65	89	98	58	26	80	76	35	32	69	92	19	70	75	75	48	49	55	56	
	North West	62	55	63	98	59	37	67	82	40	56	81	73	12	56	41	68	51	62	38	53	
	Western Cape	65	66	85	100	59	24	94	78	32	42	70	100	17	94	68	77	49	52	57	58	
Eastern Cape	District	Buffalo City	58	51	66	98	54	38	91	79	27	60	73	100	32	100	66	66	55	55	68	61
		Sarah Baartman	64	51	68	100	57	38	88	70	30	44	67	100	19	95	37	68	55	50	51	56
		Amathole	57	34	68	97	63	48	75	83	24	56	87	100	12	92	69	60	59	56	52	57
		Chris Hani	70	42	92	98	59	37	67	81	34	52	82	100	15	68	61	72	51	59	50	57
		Joe Gqabi	58	41	66	95	55	39	71	74	39	58	81	96	13	67	85	62	51	60	52	56
		OR Tambo	50	54	86	95	58	37	68	85	42	54	88	94	17	54	72	68	50	64	50	58
		Alfred Nzo	37	37	85	94	65	36	78	83	27	46	88	69	7	82	71	57	54	55	41	51
		Nelson Mandela Bay	57	40	67	98	62	29	95	73	28	38	78	100	24	88	74	62	53	49	63	57

Section A: Universal Health Coverage

		RMNCH				Infectious			NCDs				Capacity			Index						
		1	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17					
		Couple year protection rate (index)	Antenatal 1st visit coverage before 20 weeks (index)	Immunisation under 1 year coverage (index)	Pneumonia case survival under 5 years rate	Tuberculosis effective treatment coverage	Antiretroviral effective coverage	Percentage of households with access to improved sanitation (index)	Age-standardised prevalence of non-raised blood pressure (index)	Diabetes treatment coverage	Cervical cancer screening coverage (index)	Tobacco non-smoking prevalence (index)	Hospital beds per 10 000 target population (rescaled)	Health worker density (rescaled)	Proportion of health facilities with essential medicines	Environmental health services compliance rate	UHC: RMNCH coverage index	UHC: Infectious coverage index	UHC: NCDs coverage index	UHC: Capacity coverage index	Universal health coverage: service coverage index	
Free State	District	Xhariep	100	71	88	99	58	44	92	78	27	55	77	76	12	44	84	88	59	55	43	59
	District	Lejweleputswa	71	52	76	99	59	38	90	80	30	46	80	74	9	1	73	72	56	55	15	42
	District	Thabo Mofutsanyana	72	53	77	99	59	57	75	83	29	49	81	73	9	59	36	73	61	55	34	54
	District	Fezile Dabi	94	55	81	95	60	40	88	75	35	51	81	74	9	52	34	79	57	57	33	54
	District	Mangaung	79	50	76	98	60	42	83	76	50	39	78	100	18	59	70	74	57	58	52	60
Gauteng	District	Sedibeng	64	50	84	95	60	37	93	93	62	45	69	81	16	86	88	71	57	65	56	62
	District	West Rand	83	60	88	98	68	48	89	78	6	55	80	100	18	95	60	81	64	38	57	58
	District	Ekurhuleni	44	66	93	98	64	45	88	83	64	45	80	63	11	77	73	72	61	66	45	60
	District	Johannesburg	33	63	87	97	63	39	95	80	42	36	79	71	12	87	60	65	59	56	46	56
	District	Tshwane	47	52	83	98	59	36	84	85	38	44	83	100	18	70	63	67	54	59	53	58
KwaZulu-Natal	District	Ugu	60	47	82	98	57	54	60	77	31	50	83	67	15	72	75	69	55	56	48	57
	District	uMgungundlovu	56	51	85	99	58	45	72	80	27	61	81	100	22	49	30	70	55	57	42	55
	District	uThukela	73	42	85	98	61	51	65	83	32	51	86	77	10	78	31	71	57	58	37	54
	District	uMzinyathi	74	58	99	98	63	42	70	82	25	63	92	100	11	83	51	80	55	59	47	59
	District	Amajuba	59	42	88	99	57	47	71	80	31	51	83	100	17	90	63	68	55	57	56	59
	District	Zululand	51	57	93	97	67	40	54	81	33	62	96	89	10	74	68	72	51	63	46	57
	District	uMkhanyakude	65	63	98	98	66	51	53	84	24	67	95	98	10	44	44	79	54	60	37	55
	District	King Cetshwayo	49	53	85	96	60	54	58	79	28	61	94	100	16	72	60	68	55	60	51	58
	District	iLembe	62	57	100	96	58	43	49	77	30	62	87	83	14	55	65	76	48	59	45	56
	District	Harry Gwala	55	47	81	98	60	45	52	83	33	81	86	100	11	86	91	67	50	66	54	59
	District	eThekweni	50	67	98	98	61	49	78	79	37	47	87	100	17	88	42	75	59	59	50	60
Limpopo	District	Mopani	58	73	77	97	61	55	61	82	38	38	88	76	11	21	59	75	57	57	32	53
	District	Vhembe	51	61	76	98	56	52	56	85	41	32	89	73	12	6	71	69	53	56	25	47
	District	Capricorn	57	55	75	91	62	53	54	88	46	28	85	98	20	62	63	68	54	56	52	57
	District	Waterberg	67	68	83	98	62	50	68	82	27	44	88	84	17	60	48	78	57	54	45	57
	District	Sekhukhune	49	58	62	98	61	49	29	83	25	31	94	61	11	34	80	64	43	50	37	47
Mpumalanga	District	Gert Sibande	49	61	90	98	60	44	84	86	41	64	84	70	12	70	81	72	58	66	47	60
	District	Nkangala	40	64	86	97	60	42	68	84	54	52	77	43	9	57	53	68	53	65	33	53
	District	Ehlanzeni	55	83	100	98	63	55	40	88	49	59	91	81	15	48	40	82	50	69	39	58
Northern Cape	District	Namakwa	56	58	81	99	62	66	91	73	42	35	49	93	14	93	87	71	69	48	57	61
	District	Pixley Ka Seme	48	58	70	98	61	39	89	78	31	33	69	79	12	66	87	66	57	48	48	54
	District	Zwelentlana Fatman Mgcawu	58	68	90	99	54	16	79	70	37	30	63	84	13	63	77	77	39	47	48	51
	District	Frances Baard	61	63	92	98	58	23	87	82	31	30	77	100	28	81	64	77	47	50	62	58
	District	John Taolo Gaetsewe	56	60	100	97	54	27	60	73	39	36	73	57	7	53	61	75	43	52	34	49
Northe West	District	Bojanala Platinum	60	57	60	98	59	41	59	84	38	54	81	28	8	53	13	67	50	61	20	45
	District	Ngaka Modiri Molema	69	54	64	97	63	39	52	79	41	58	86	83	13	53	75	69	49	63	46	56
	District	Dr Ruth Segomotsi Mompati	59	59	62	98	58	29	80	78	57	49	74	62	12	63	37	68	49	63	36	53
	District	Dr K Kaunda	61	53	70	100	57	31	95	86	33	62	79	100	20	57	37	69	53	61	46	57
Western Cape	District	Cape Town	60	65	91	100	58	26	93	82	30	39	71	100	17	93	53	77	50	51	54	57
	District	West Coast	69	57	64	100	63	24	93	67	31	33	59	67	10	95	43	71	50	45	41	50
	District	Cape Winelands	60	65	75	100	58	14	96	66	30	41	69	76	13	96	82	73	41	49	53	53
	District	Overberg	89	81	84	99	66	17	96	73	40	52	64	47	12	87	79	88	46	56	44	56
	District	Garden Route	86	70	81	100	58	24	95	75	38	59	74	82	17	97	80	84	49	60	58	61
	District	Central Karoo	93	65	80	99	60	26	98	72	36	69	55	100	19	92	73	83	51	56	60	62

Figure 20: Range of Universal Health Coverage service coverage by province and district, 2019



Recommendations

- ◆ The UHC service coverage index should continue to be tracked over time in order to measure progress in relation to the key health-related SDGs. Where possible, the component indicators should also be disaggregated for factors such as sex, gender, age group, socio-economic status and urban/rural splits. This disaggregation will allow for the uncovering of the disparities that persist at lower geographic levels. The 15 indicators comprising the UHC service coverage index for South Africa have now been tracked consistently over a number of years. There is still room for improvement, though, and some challenges should be addressed.
- ◆ Close attention is needed to ensure optimal data quality, for example where data are missing or reported values seem improbably low. The ART effective coverage figures are a case in point. Where data sources relied upon in the past are no longer available, such as the essential medicines availability indicator in DHIS, alternative sources should be explored. Considerable amounts of data are being captured by the National Surveillance Centre and reported at various levels of disaggregation (geographical, facility type, and medicine type). Updated assessments of environmental health service coverage at municipal level are needed. There are still questions regarding the

thresholds relied upon for the health worker density indicator, and which hospitals are to be included in the bed density indicator. Introducing an element of quality in the latter measure is also possible. Reporting of TB outcomes according to cohort treatment outcome or reporting year, rather than the year of initiation of treatment, will allow for alignment across different regimen types and with other indicators in the index.

- ◆ In relation to particular indicators, verification is needed from well-conducted and representative prevalence surveys, as these can provide accurate denominators at sub-national levels. Examples in this regard include the national tuberculosis prevalence survey and the national immunisation coverage survey. There have been no further 'waves' of NiDS since 2017, so modelled NCD prevalence data may become increasingly unreliable without new district-level survey data. Nonetheless, modelling efforts to fill the gaps between measurement periods and also to estimate indicators such as diabetes treatment coverage, where no direct measure is available at district level, can be refined.
- ◆ Lastly, the COVID-19 pandemic has demonstrated that private sector data can rapidly be incorporated into routine health management information systems. Extending those efforts to ensure that the DHIS is reflective of the entire health system must be a priority.