

# FUTURE HEALTHCARE UTILIZATION

SHIRLEY COLLIE

# Background

South Africa's Healthcare system mirrors it's dual economy

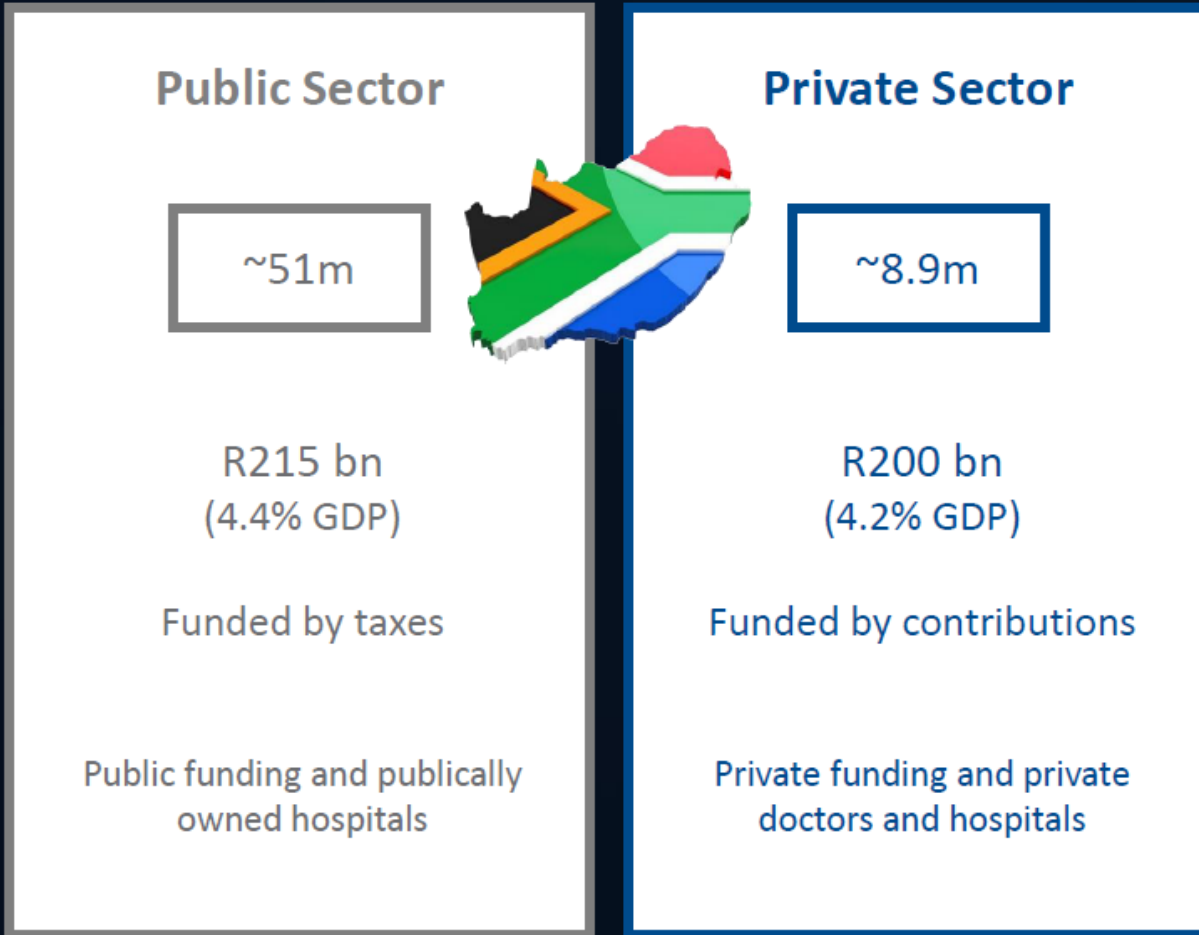


# Background on South Africa's healthcare system



## OVERVIEW OF HEALTHCARE IN SA

## IMBALANCE OF RESOURCES BETWEEN THE PUBLIC AND PRIVATE SECTORS



Beneficiaries



Spend



Beds



Specialists

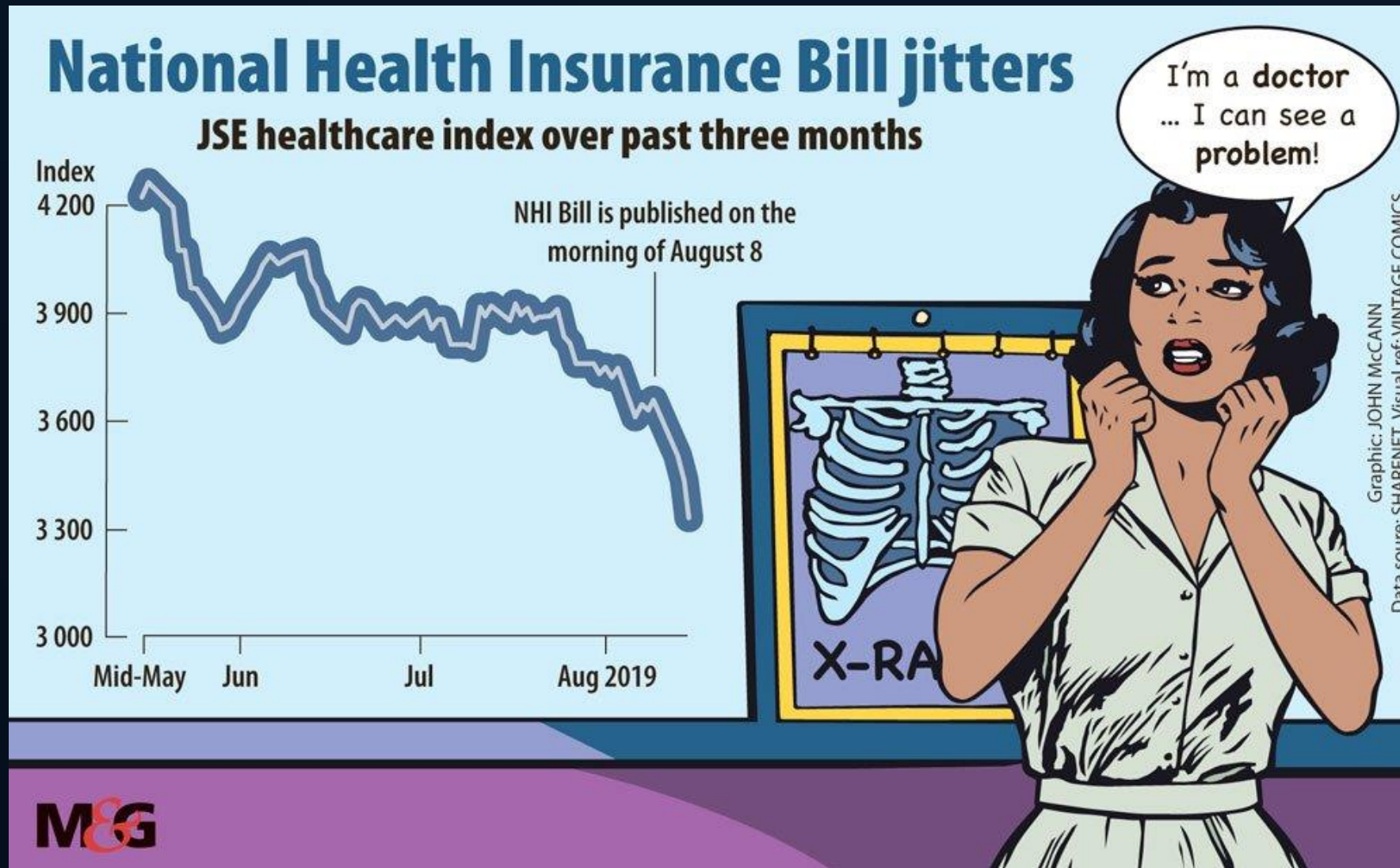
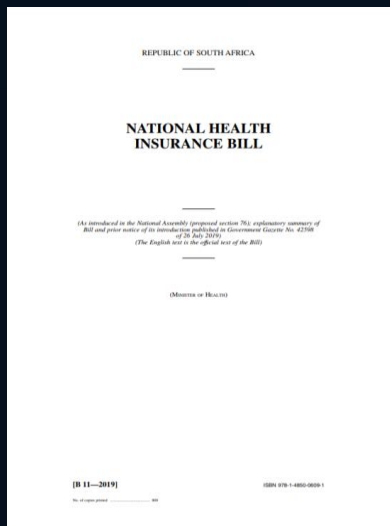
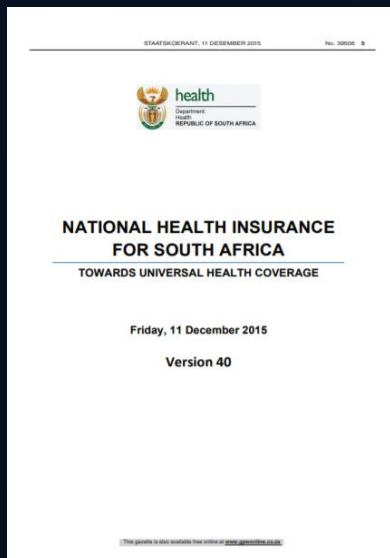


Doctors



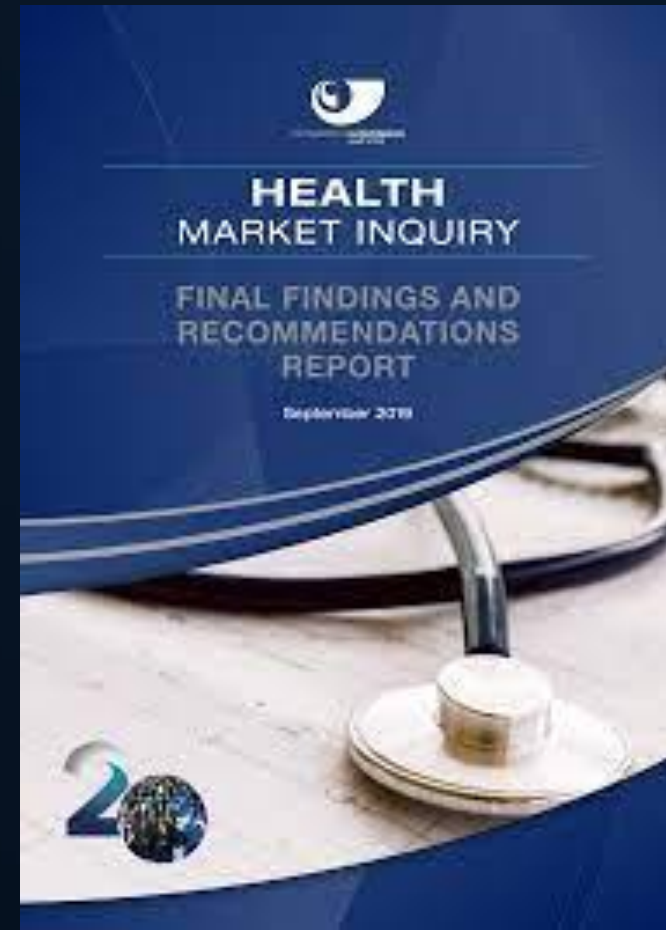
# Background

Policy rhetoric of national health insurance was becoming 'louder'

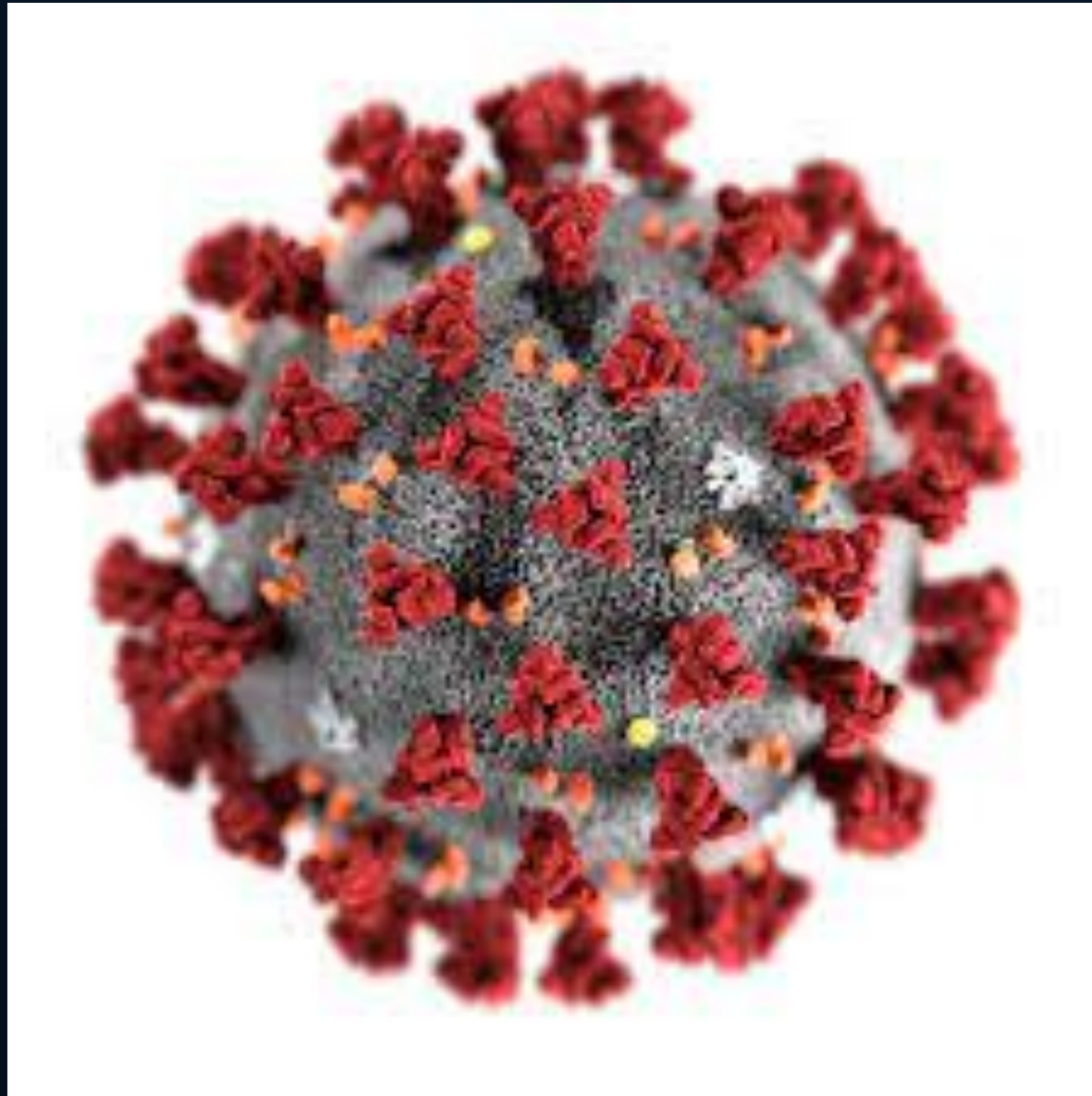




# Policy and regulation reform in the private sector has been slow



# COVID19




# South Africa's COVID19 experience



@PresidencyZA | www.stateofthenation.gov.za



## Summary of alert levels

ALERT LEVEL 5	ALERT LEVEL 4	ALERT LEVEL 3	ALERT LEVEL 2	ALERT LEVEL 1
 <b>OBJECTIVE</b>				
Drastic measures to contain the spread of the virus and save lives.	Extreme precautions to limit community transmission and outbreaks, while allowing some activity to resume.	Restrictions on many activities, including at workplaces and socially, to address a high risk of transmission.	Physical distancing and restrictions on leisure and social activities to prevent a resurgence of the virus.	Most normal activity can resume, with precautions and health guidelines followed at all times.  Population prepared for an increase in alert levels if necessary.



- Citizens experience one of the strictest lockdowns in the world in April 2020

# Mature data assets and scientific analysis were key enablers in guiding Discovery's pandemic response



## Integrated information landscape

External clients (www) | Visualization | Power BI | Qlik | COGNOS

Web services | Self service (MOLAP + TAB) | SQL Server | Netezza | Analytical Models | Scala | Big data | Cloudera | Oracle

Structured Data Warehouse (OPS, RISK) | Operational Data Store (ODS)



### COVID-19 CLINICAL TRACKER

DH CASES | 410,301 | 03 September 2021

	Tests Conducted	Positive Cases	Active Cases	Repeat Cases	Recoveries	Deaths	Members admitted	Vaccines administered
DH	2,011,025	410,301	24,138	4,573	372,808	13,355	58,319	1,881,868
SA	16,593,467	2,796,405	145,026	2,568,465	82,914	13,112,268		
	56.7% Testing rate	11.6% COVID proportion of DH lives	5.9% % Active	1.11% Proportion of repeat positive	90.9% Recovery rate	3.5% Case fatality rate*	14.7% Proportion admitted*	52.1% % Vaccinated
	36.2% Unique entities tested proportion	405,716 Unique DH Entities			368,821 Unique DH Entities	18.1% Hospital mortality rate	8.3% Proportion hospitalised	1,358,016 Unique DH Entities

### DAILY KEY INDICATORS

	New tests conducted	New Positive members	New admissions (7 day average)	New Deaths	New Vaccines administered
DH	4,670	1,084	136	28	20,454
SA	57,261	9,202		418	270,731

DH Pick up rate: 16.9%  
SA Pick up rate: 16.1%

Top DH Region: Western Cape  
Active Admissions: 1,324  
Top DH Region: St Augustine's Hospital

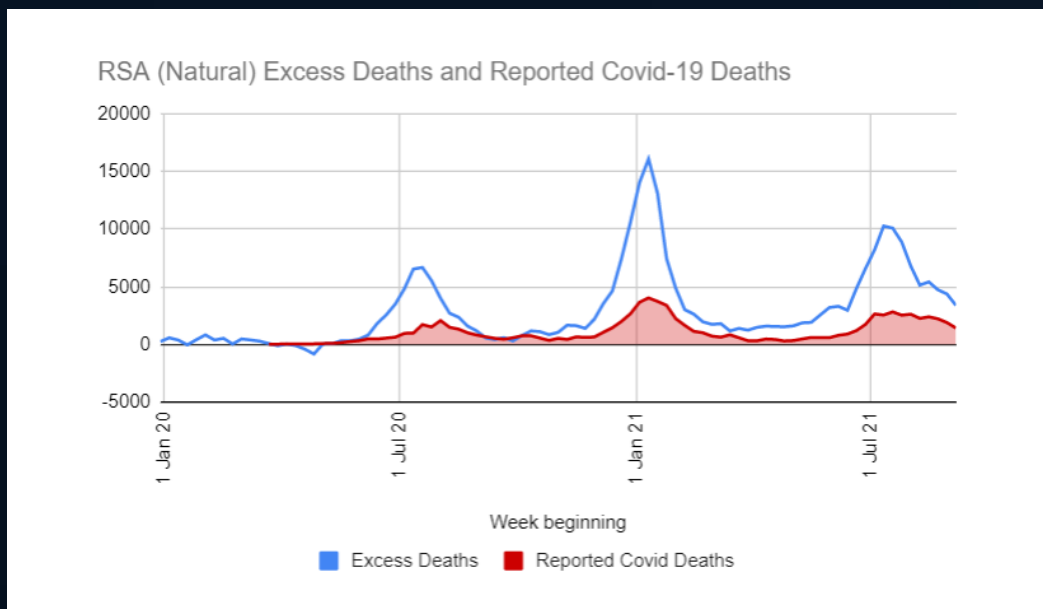
- #### Latest Headlines
- DH cases increased by 1,084 over the past day, while national cases increased by 9,202 over the same period.
  - KZN and the Western Cape accounted for 29% and 20% of national new cases respectively. For DH, the Western Cape and Gauteng accounted for 30% and 28% of new cases respectively.
  - The 16.9% pick up rate for DH is slightly higher than the national pick up rate of 16.1%.
  - Wave comparisons reveal a promising decline in new infections in KZN and the Western Cape.
  - COVID-related admissions have decreased to 136 new admissions per day.
  - There are currently 1,310 DH COVID-19 positive members in hospital for COVID-related conditions, with Gauteng having the highest number of active admissions (444), followed by the Western Cape (308) and KZN (281). St Augustine's Hospital in KZN has the highest number of active admissions (29), followed by Mediclinic Durbanville Hospital in the Western Cape (26).
  - There were an additional 28 COVID-19 deaths reported for DH over the past day.
  - As per the South African Medical Research Council (SAMRC) report published for the period ending 28th August 2021, the estimated number of excess natural deaths of persons 1+ years has increased by 4,625 to 249,471. 27% of the increase in excess deaths arose from KwaZulu Natal and a further 19% from the Western Cape.
  - Assuming that 90% of excess natural deaths are COVID-related, this implies that COVID deaths were under-reported by a factor of 2.8 at that point in time.
  - Excess deaths for Discovery Health Medical Scheme (DHMS) is estimated at 9,125 for YTD June 2021. This is based on historic mortality rates for the Scheme, adjusted for changes in the demographic profile over the period. Assuming that 96% of excess deaths are COVID-related, results in an under-reporting factor of 1.7 for DHMS over this period. This is lower than the national level of under-reporting - 2.7 as at 2 July 2021.
  - 270,731 new vaccines have been reported nationally over the past day. For DH, 20,454 new vaccine claims were received yesterday, with just over 50% of adult DH lives now known to be vaccinated (either partially or fully).
  - Pre-authorisation rates were 22% lower than 2019 levels over the past week.
  - YTD 2021, claim costs are currently 10% higher than 2019 levels, for claims processed to date.
  - The COVID pandemic is estimated to have generated R9.72 billion in additional healthcare expenditure since March 2020, for schemes under DH administration. This represents 6% of risk expenditure in 2020 and 17% of risk expenditure for YTD July 2021. COVID-related admissions and PCR testing constitute the bulk of these costs (74% and 17% respectively).



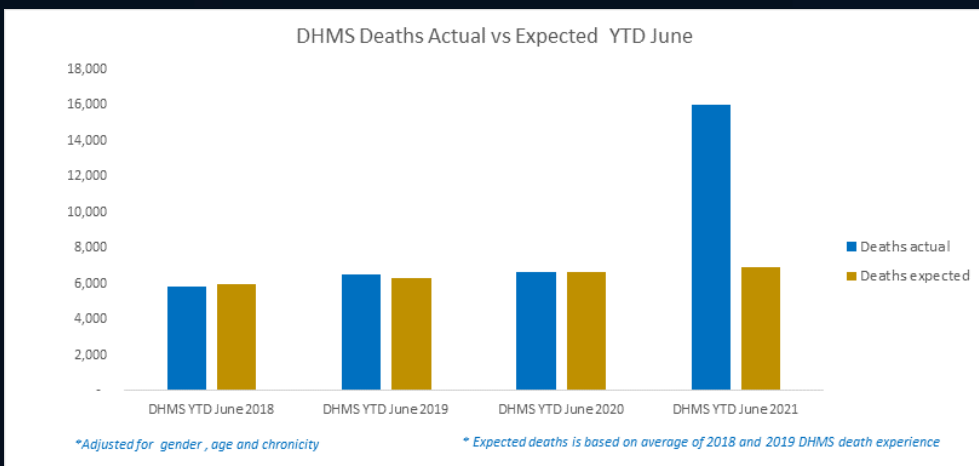
# South Africa's COVID19 experience: excess deaths



- As at end August there were 81,461 reported COVID19 deaths
- But, 249,471 excess deaths
- COVID19 deaths likely underreported by a factor of 2,8 nationally



Source: SAMRC report on weekly deaths




- In our own data we estimate COVID19 deaths are underreported by a factor of 1.7

# Innovations: Identifying high-risk patients for pulse oximeter use nearly halved their likelihood of death from COVID-19

## COVID 19 PULSE OXIMETER STUDY OUTLINE



Through the convergence of:

 Advanced **data** capabilities

 Modern **technology**, and the

 Mobilisation of **benefits**...

...Discovery Health managed to fund and distribute pulse oximeters for **high-risk members** diagnosed with COVID-19:



2 March 2020 – 31 October 2020



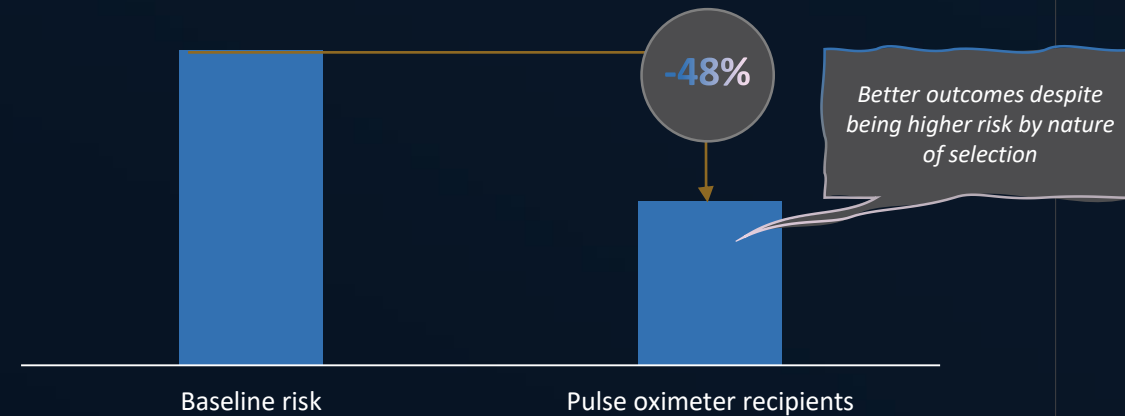
38,645 high-risk members in the group



8,113 received pulse oximeters

## OUTCOMES OF THE INITIATIVE

### Comparison of 60-day mortality rate



### Broader impact on the group



Improved early detection



Lower case severity



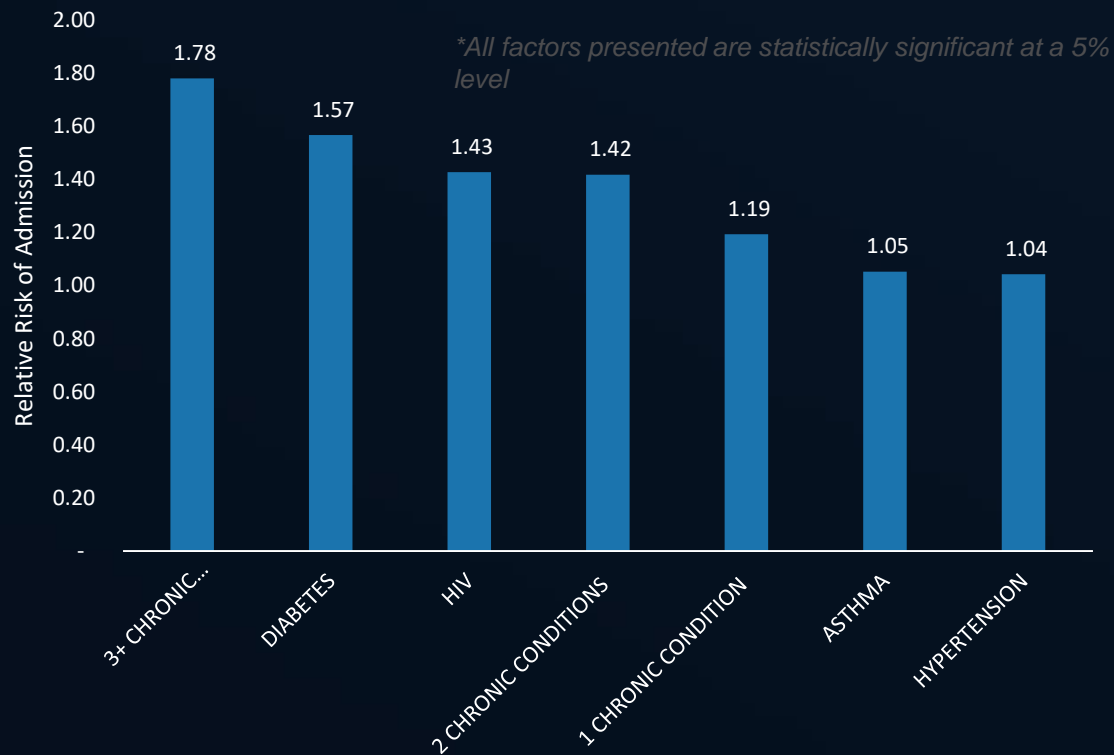
Regular monitoring of conditions



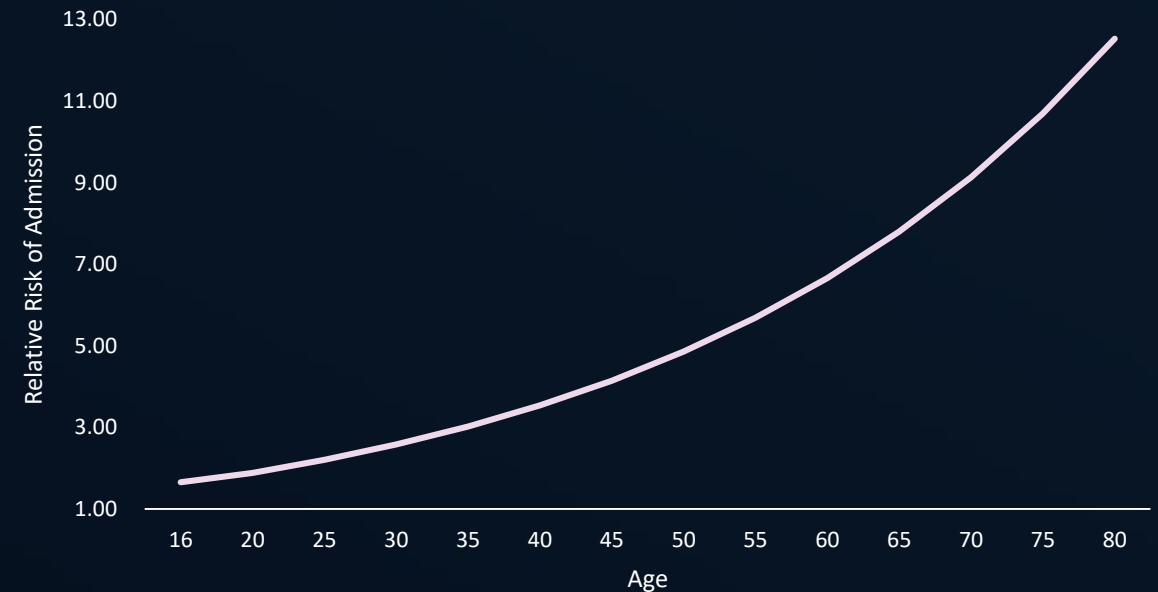
# FACTORS AFFECTING THE RISK OF COVID-19 ADMISSION

Output from Cox Proportional Hazard Model Run to predict risk of admission for COVID 19 Positive members

## Relative Risk of Severe COVID 19 Across Chronic Factors



## Relative Risk of Severe COVID 19 Across Ages



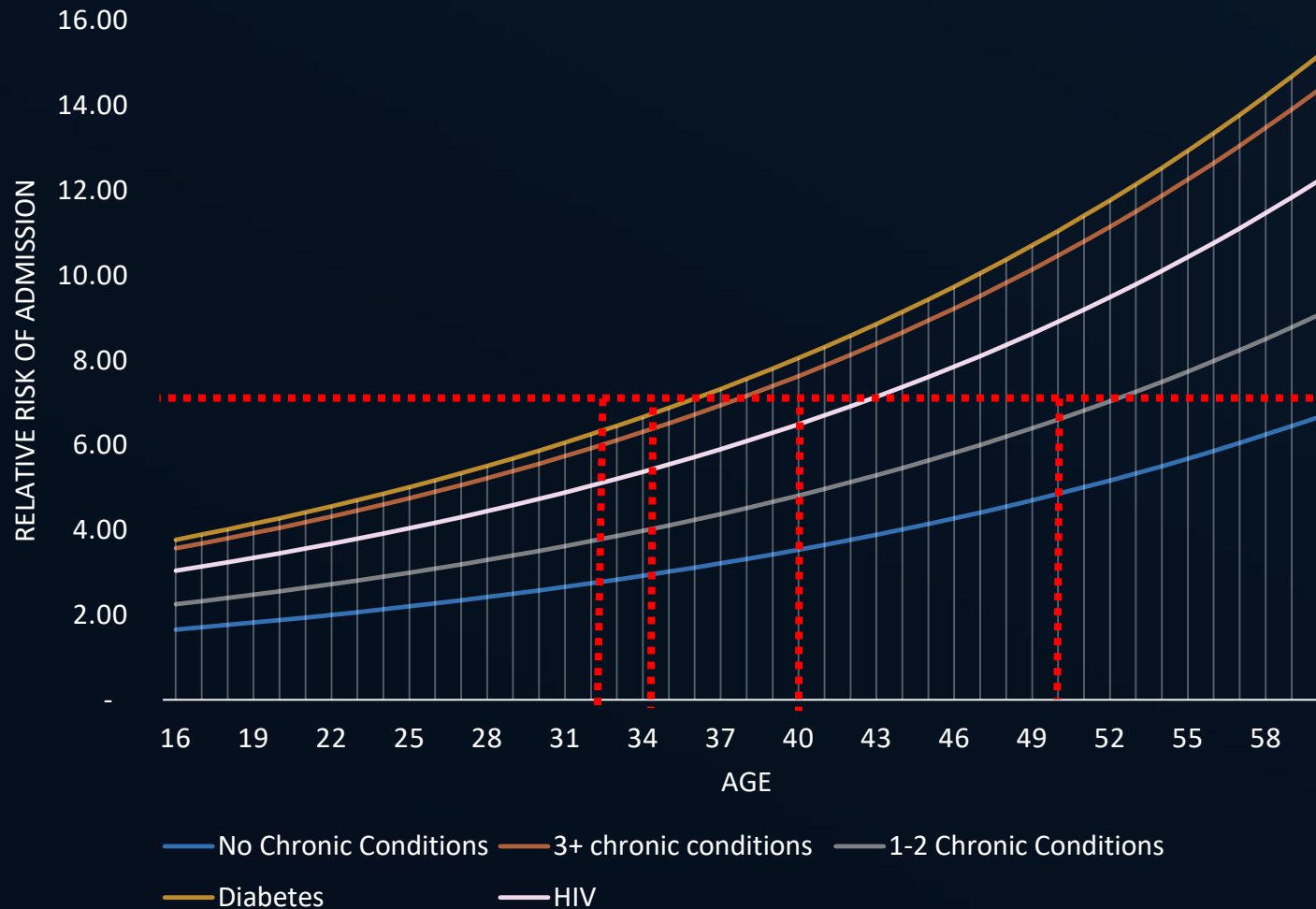
- **3 or more Chronic Conditions** have the largest relative risk (78% higher admission probability)
- **Diabetes** showed the highest admission risk (57% higher than the baseline)
- Baseline risk is members with no chronic conditions

- Age was associated with a higher risk of admission
- A 1 year increase in age increases the relative risk of admission by 3%



## ANALYTICS TO GUIDE PRIORITISATION OF THE POPULATION

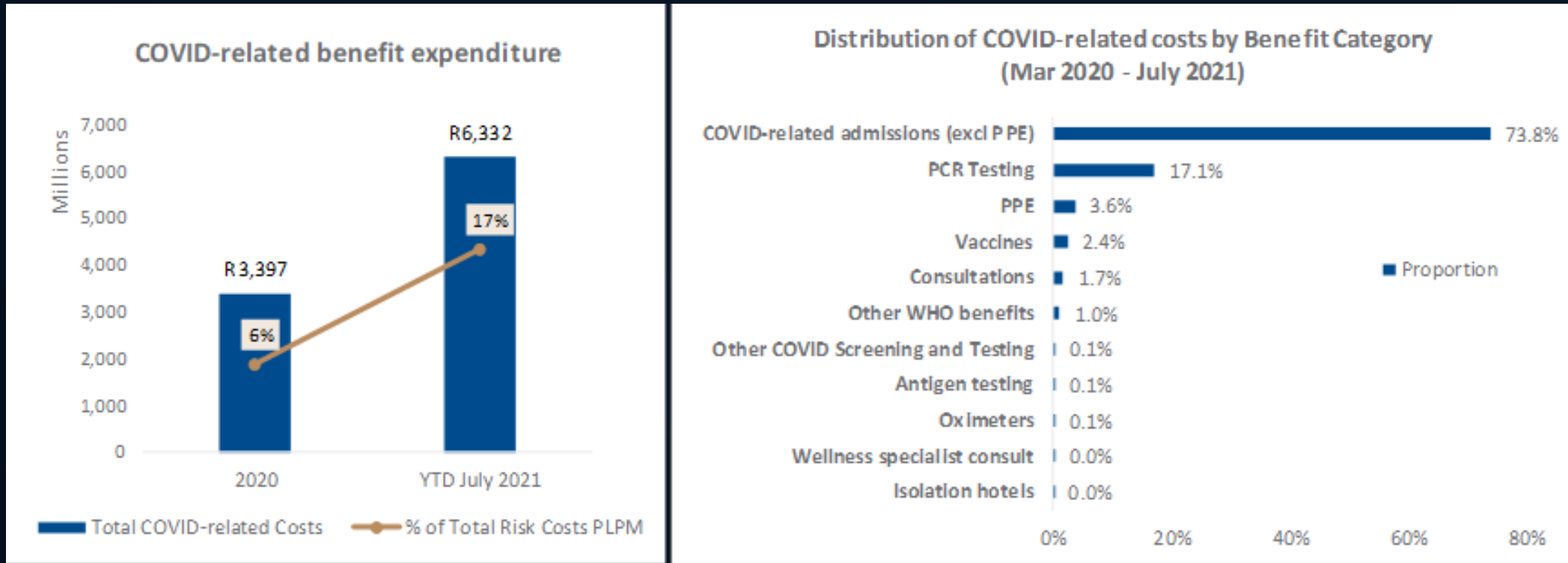
### Relative Risk of Severe COVID 19 Across Ages and Condition Groups



A **60 year old with No Chronic Conditions** has the same **relative risk of COVID 19 admission** as an average:

- 34 year old Diabetic
- 36 year old with 3 or More Chronic conditions (may include Diabetes)
- 41 year old who is HIV positive
- 51 year old with 1 or 2 Chronic Conditions

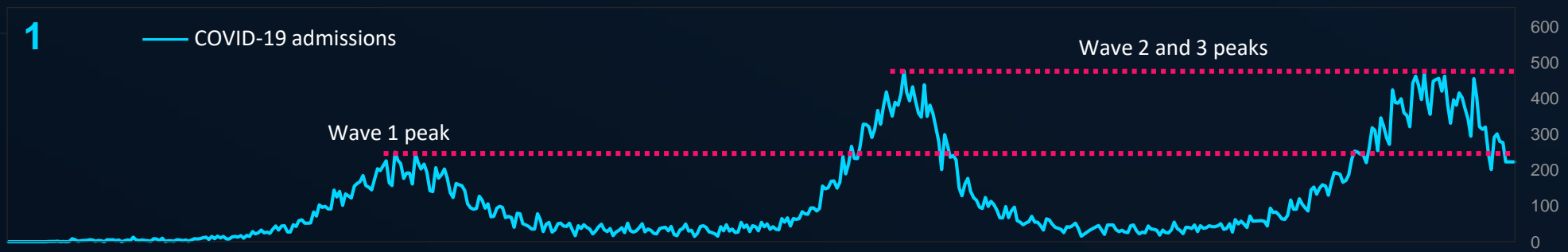
# Direct healthcare costs attributable to COVID19



# Utilisation patterns, which are the main driver of medical inflation, have been disrupted



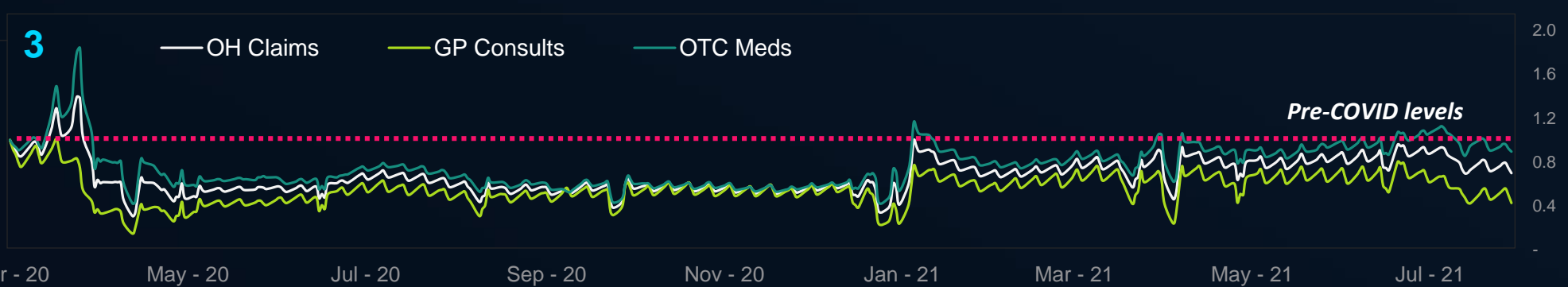
## 1 COVID-19 ADMISSIONS



## IN-HOSPITAL CARE



## OUT-OF-HOSPITAL CARE



Mar - 20 May - 20 Jul - 20 Sep - 20 Nov - 20 Jan - 21 Mar - 21 May - 21 Jul - 21

# Emerging non-COVID-19 utilisation patterns over the period



## 2

### IN-HOSPITAL CARE

Reduced across the board, with a shift from large acute hospitals to smaller day surgery type facilities




## 3

### OUT-OF-HOSPITAL CARE


Starting to increase, with increased care at home and changes in health-seeking behaviour




#### Decline in discretionary medical admissions

 Cardiac catheterisation Admissions ↓**21%**

 Endoscopies Claimants ↓**27%**

 Tonsillectomy and adenoid Admissions ↓**61%**

 Spinal medical procedures Admissions ↓**29%**

#### Decline in maternity-related utilisation

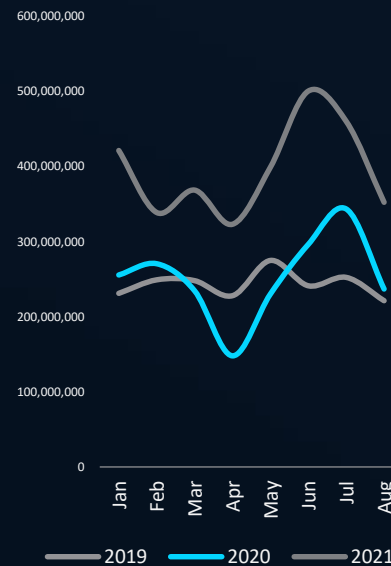
Admissions average LOS ↓**6%**

Neonatal admissions ↓**14%**

% Pre-38 week births ↓**14%**

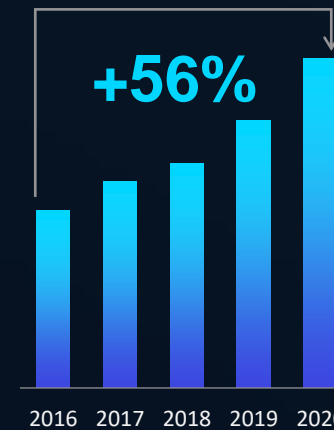
NICU admissions ↓**3.2%**

#### Spike in pathology claims




#### Move to care outside large hospitals

Proportion of admissions occurring in a day clinic



#### Decline in preventative and screening care

Depression registrations  ↓**20%**

Breast cancer screening  ↓**55%**

Diabetes management  ↓**27%**



# Accelerated adoption of digital and telehealth delivery methods

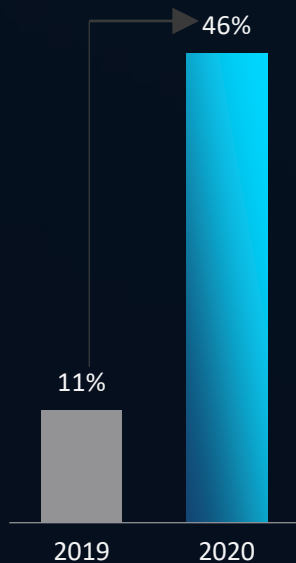
## Global expansion of digital healthcare

Evidenced by telemedicine use

Growth in provider remote consults 2019 to 2020

**~ 50 – 175 x**

% of US consumers using telehealth

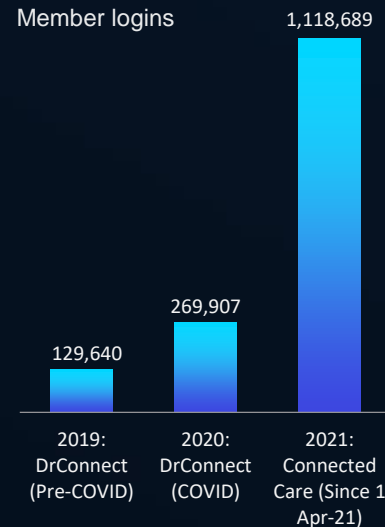


## Discovery Health has a fully integrated digital healthcare platform

Platform achieved scale through vaccination journey

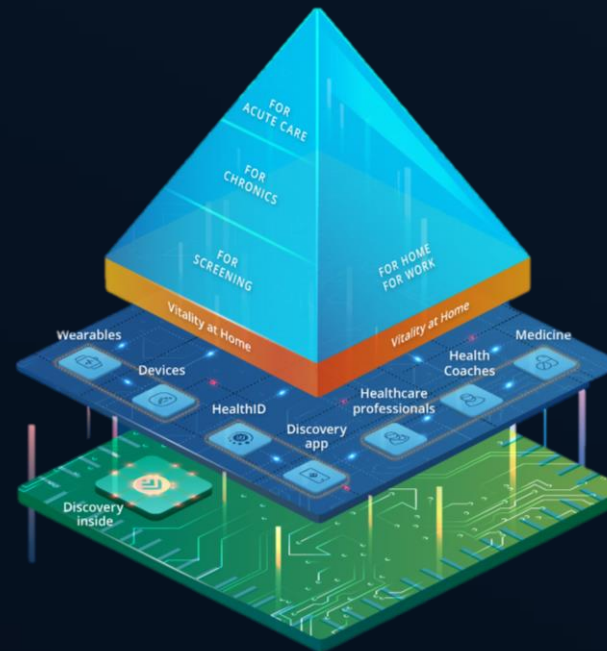
Ecosystem has a comprehensive patient record, and connects the communities of doctors, members and case managers across a common platform with integration to various parts of the medical system

DH is already deploying AI and digitisation for homecare and enhanced quality



Connected Care **1.01m** logins

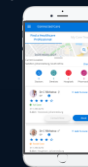
Vaccine Navigator **3.68m** logins



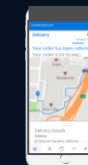
Detailed medical examinations and advanced virtual consultations



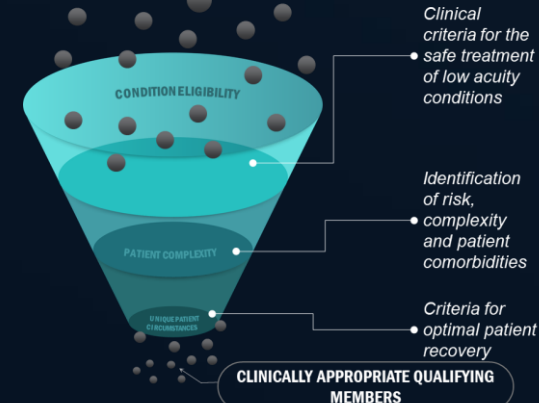
24/7 doctor support



End-to-end digital experience

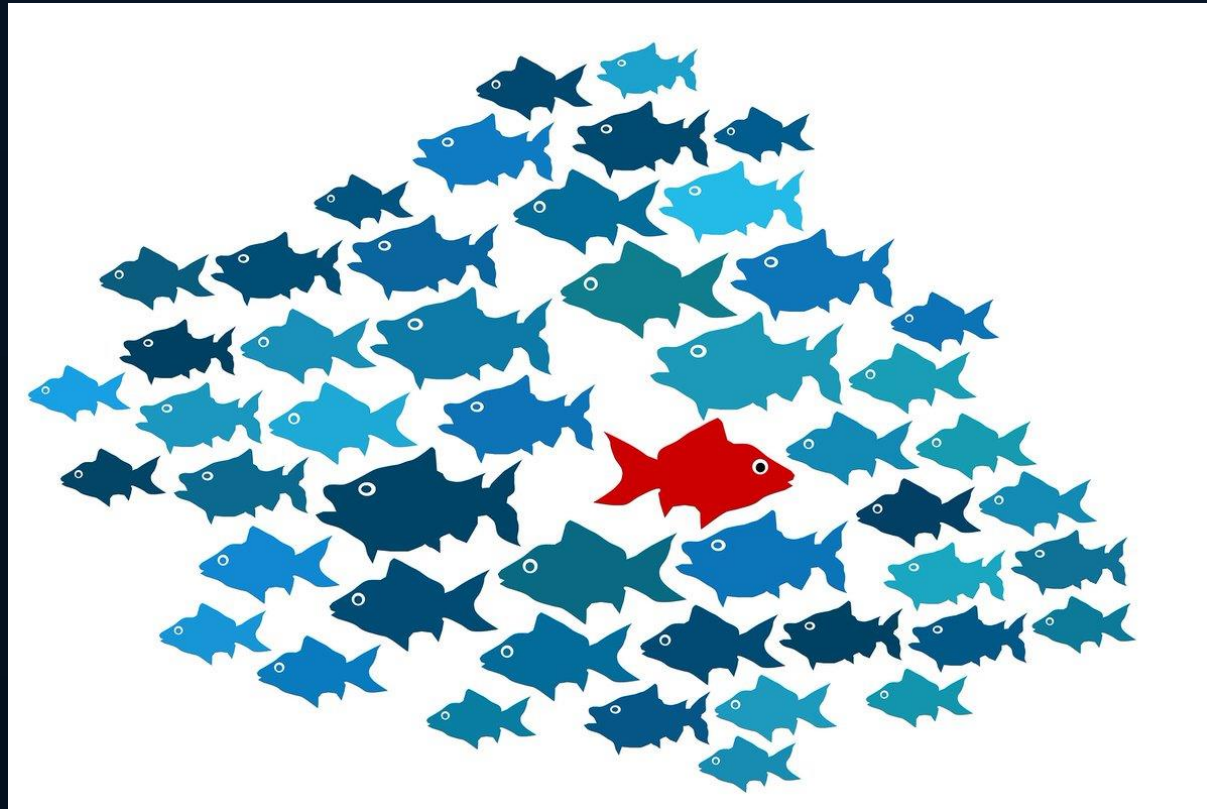


Convergence of clinical and data insights to offer high quality care at home





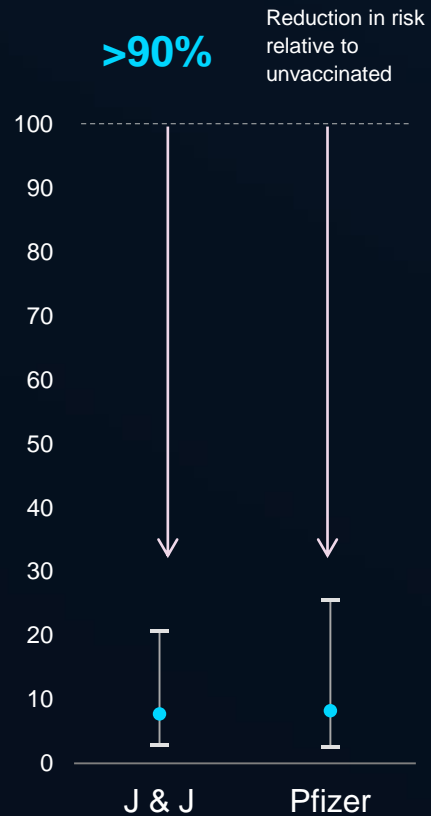
2020 & 2021 utilization experience are outliers for future assumption setting



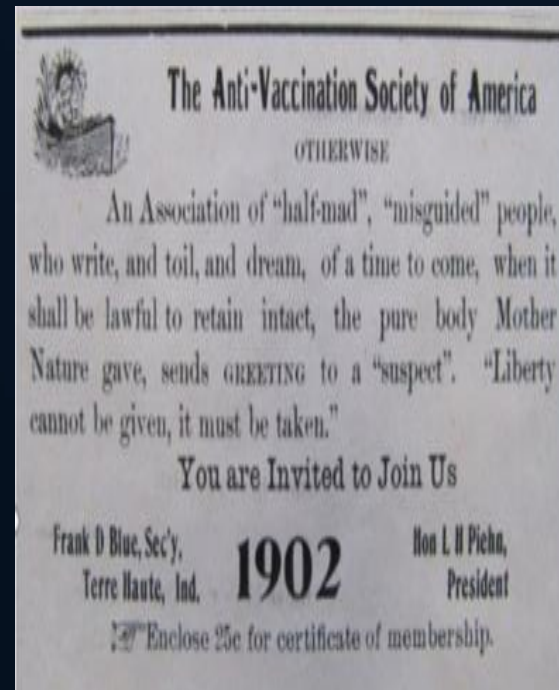


# How long will the pandemic last?

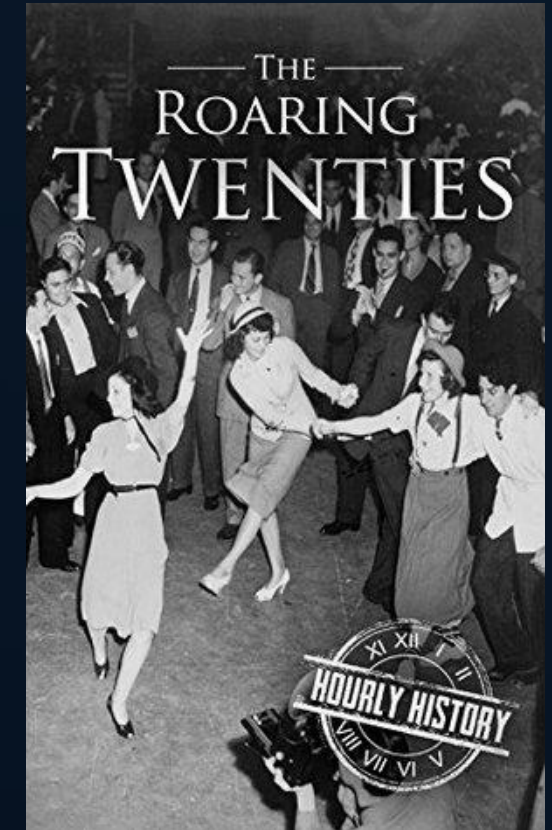
## Death



Vaccines are effective



Vaccine hesitancy



Peoples perceptions time to move on- roaring 20's despite continued influenza deaths

# The long term effects of the pandemic



Children with polio in iron lungs

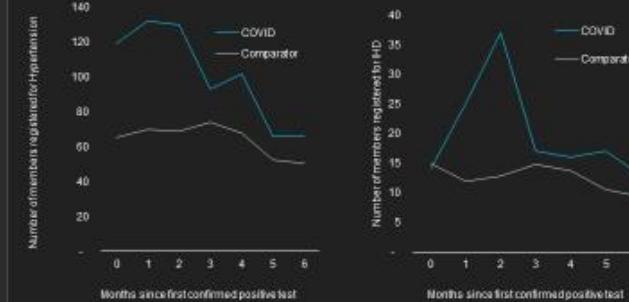


Some that survived severe polio infections suffered from permanent disability

## Long COVID | Cardiac risk

### Onset of cardiac conditions post COVID

- 1.9% registered for a Cardiac condition within 6 months
- 5.4% of hospitalised members registered for a Cardiac condition within 6 months



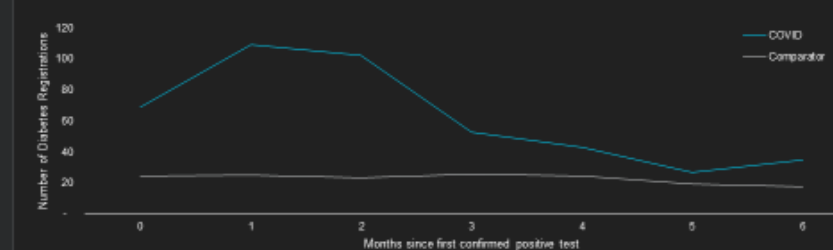
1.5x Higher Risk of developing a Cardiac Condition  
3.5x higher risk if hospitalised  
compared to non-Covid members in 2020

<https://www.heart.org/en/news/2022/09/03/what-covid-19-is-doing-to-the-heart-even-after-recovery#:~:text=Nearly%20one%20in%20four%20new%20may%20be%20new%20widespread>  
<https://jamanetwork.com/journals/jamacardiology/fullarticle/2765515>

## Long COVID | Diabetes risk

### Onset of diabetes mellitus post COVID

- 0.8% of COVID members registered for Diabetes Mellitus within 6 months
- 2.8% of hospitalised COVID members registered for Diabetes Mellitus within 6 months



2.75x Higher Risk of developing Diabetes  
5x higher if hospitalised  
compared to non-Covid members in 2020 (DBI adjusted)

<https://www.beckershospitalreview.com/patient-safety-patients/covid-19-might-be-triggering-new-onset-diabetes-researchers-say.html>  
Diabetes, Obesity and Metabolism. Website: <https://doi.org/10.1016/j.diab.2022.101118>

Sethi T, Tapp RJ, Cooper ME, Zimmet P. Potential metabolic and inflammatory pathways between COVID-19 and new-onset diabetes. Diabetes Metab. 2022. <https://doi.org/10.1016/j.diab.2022.101118>





But there is still a lot of uncertainty.....



Climate change



Financial markets and system



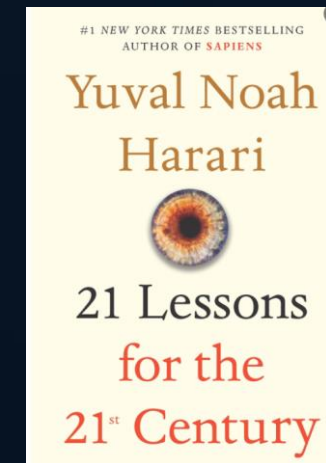
Nationalism



How long will the bull equity market last?



Social unrest

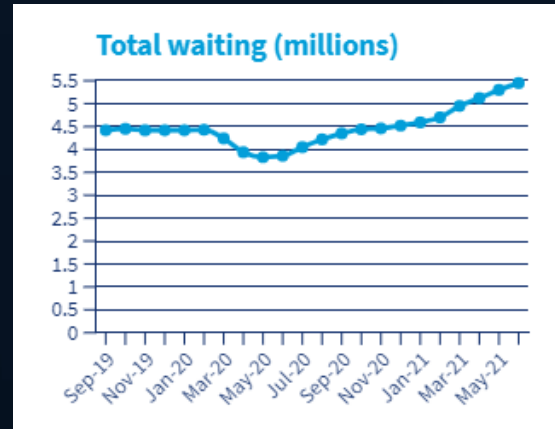


No one 'knows'

# Despite the uncertainty....

In the absence of variants with significant antigenetic drift....

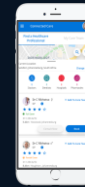
# 2022



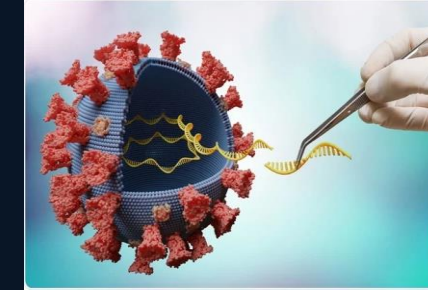
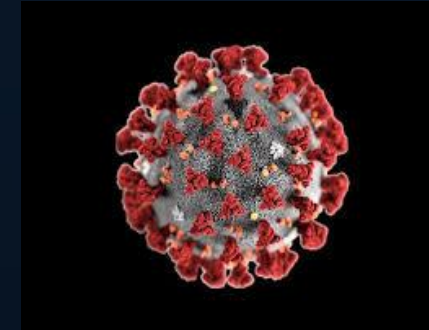
Detailed medical examinations  
and advanced virtual  
consultations



24/7 doctor support



End-to-end digital  
experience



Most healthcare systems  
returning to 'normal'

Utilisation increase due to  
backlog in elective care

Adoption of  
digital and  
telehealth modes  
of healthcare  
delivery to persist

Cost of diagnosis,  
treatment and  
prevention of  
COVID19 will  
persist at lower  
levels

Innovative  
discoveries likely to  
be inflationary in  
the short term

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