

# Subnational Under-five Mortality Estimates, 1990–2019

Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation (UN IGME)



# Acknowledgments

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Sinae Lee laid out the brochure.

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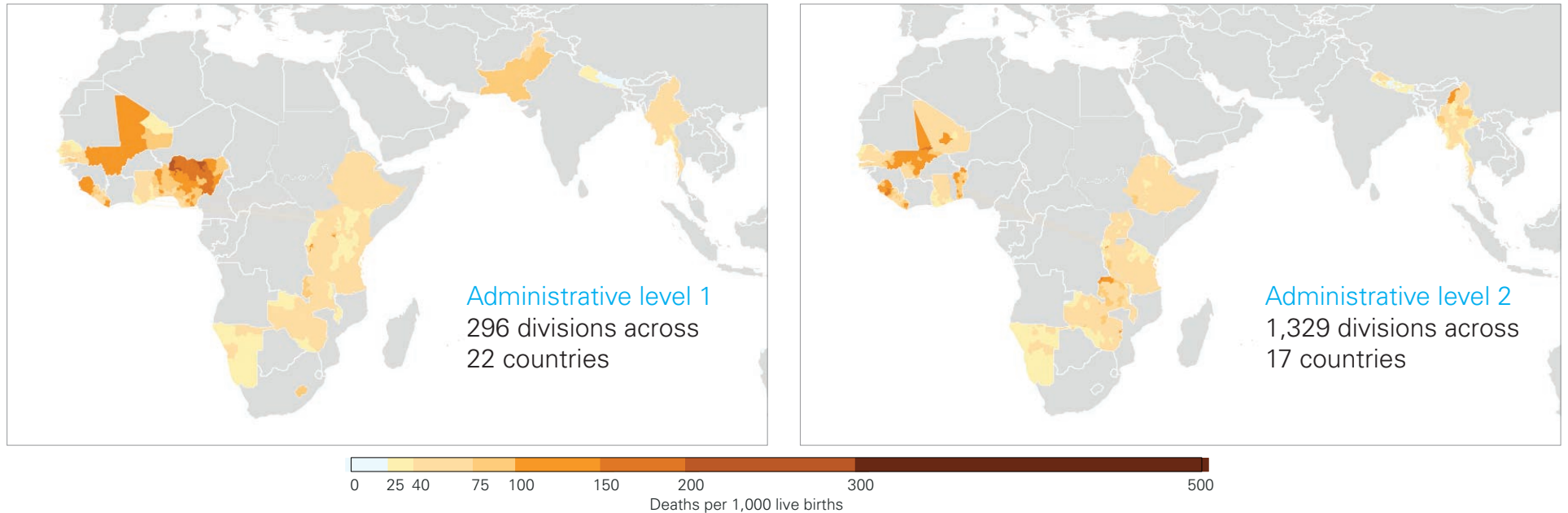
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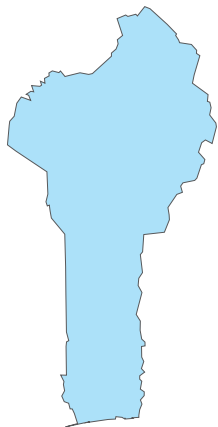
# Subnational under-five mortality rate (U5MR) estimates, 1990–2019, for 22 countries across sub-Saharan Africa and Southern Asia provide critical insight into mortality rates and trends at the level at which health interventions and decisions on resource allocation are typically made

Under-five mortality rate at administrative level 1 and administrative level 2, 2019



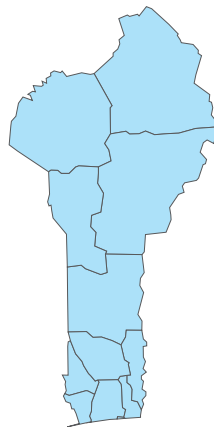
Administrative divisions of Benin

Administrative level 0



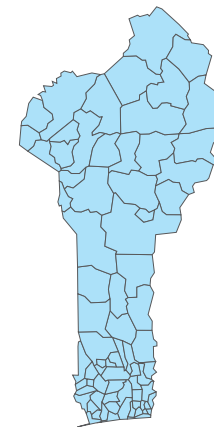
National-level estimate

Administrative level 1



Broadest subnational estimate after national level

Administrative level 2



Finest subnational-level estimate

**Finer geographical gradation**

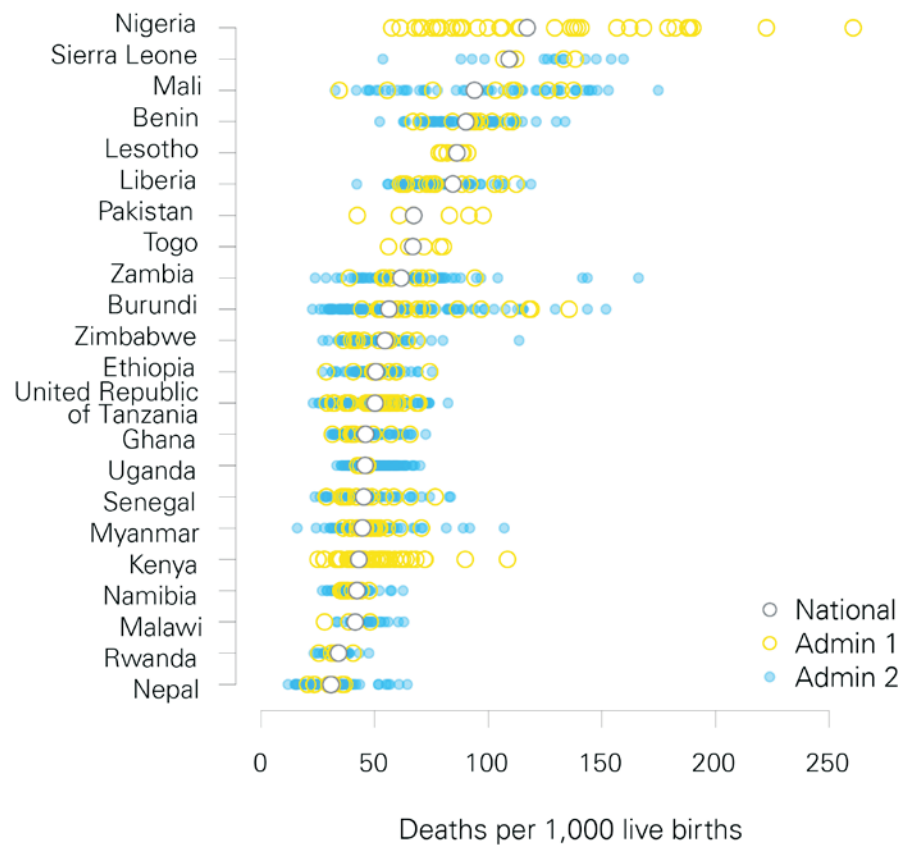
Note: Benin is used here for illustrative purposes.

These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

## Subnational estimates can help target where interventions are most needed

In Nigeria, where the national under-five mortality rate for 2019 was 117 deaths per 1,000 live births, rates at administrative level 1 ranged from a low of 58 deaths per 1,000 live births to a high of 261 deaths per 1,000 live births in 2019.

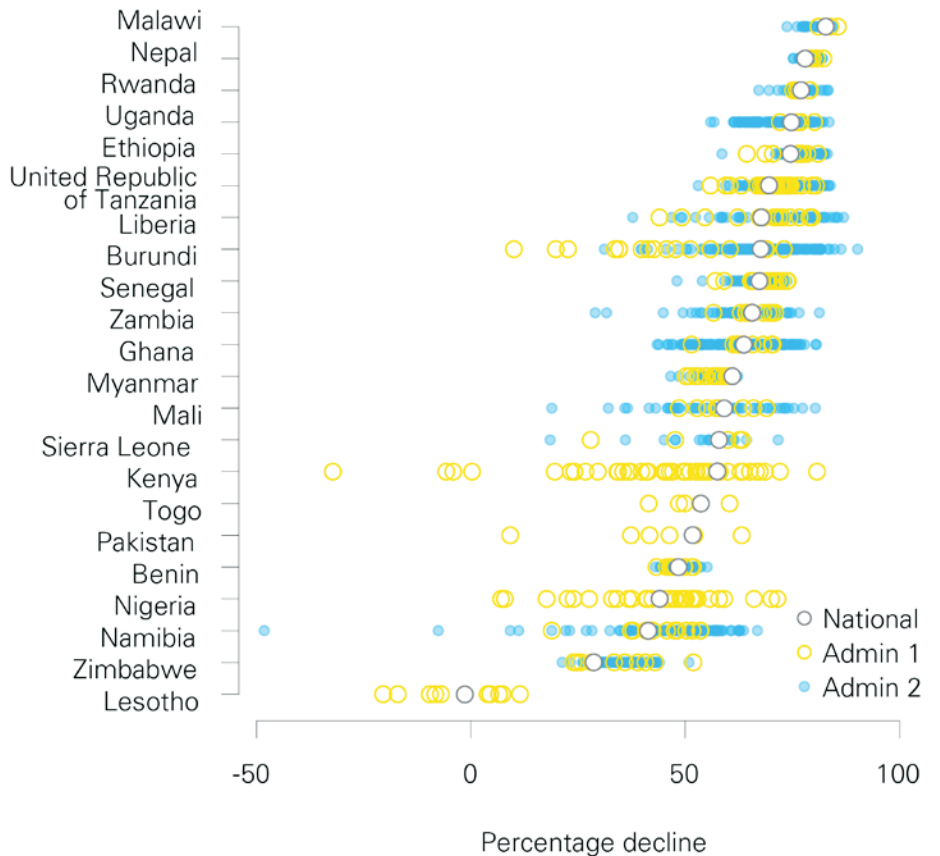
Under-five mortality rate at administrative level 1 and administrative level 2 for 22 countries, 2019



## National progress in reducing under-five mortality can obscure uneven subnational trends

In Kenya, the national under-five mortality rate has declined by 57 per cent since 1990, while the per cent decline within administrative level 1 divisions ranged from a high of 81 per cent to a low of -32 per cent (an increase since 1990).

Percentage decline in the under-five mortality rate at administrative level 1 and administrative level 2 for 22 countries, 1990–2019

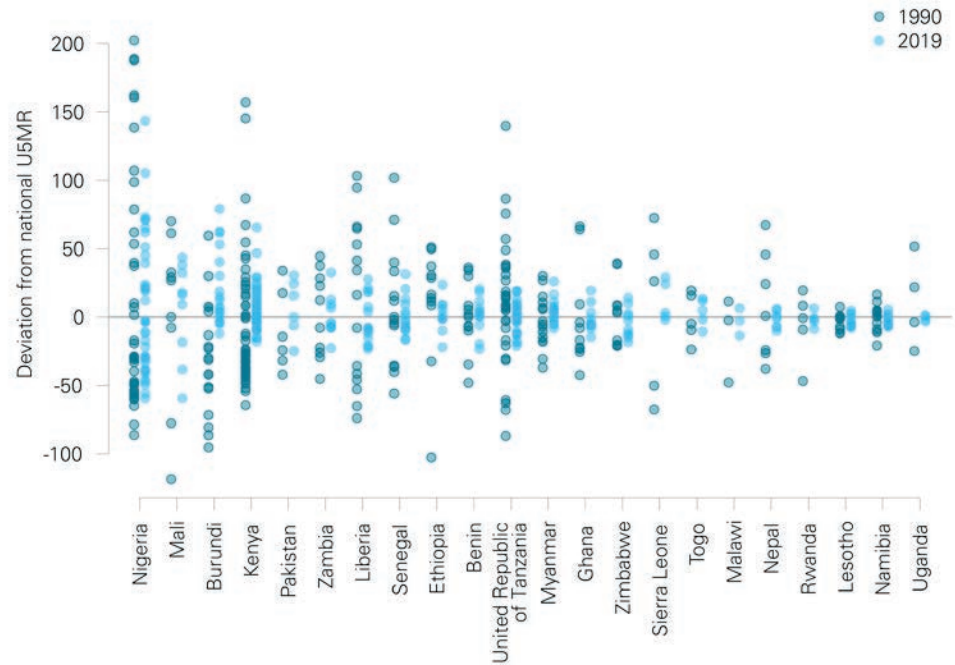


## There was less variation in under-five mortality rates among subnational divisions in 2019 than in 1990

At the same time, national under-five mortality rates are declining and subnational under-five mortality rates are deviating less from national levels.

Deviation from national under-five mortality rate at administrative level 1 in 22 countries, 1990 and 2019 ↻

*Note: Countries ordered from widest to narrowest range in administrative level 1 under-five mortality rate in 2019.*

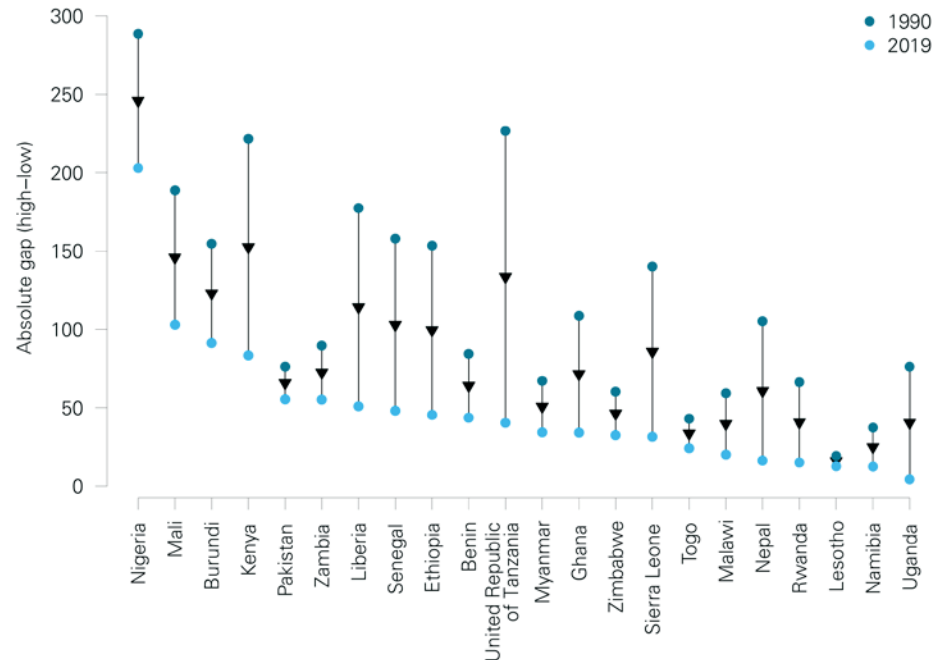


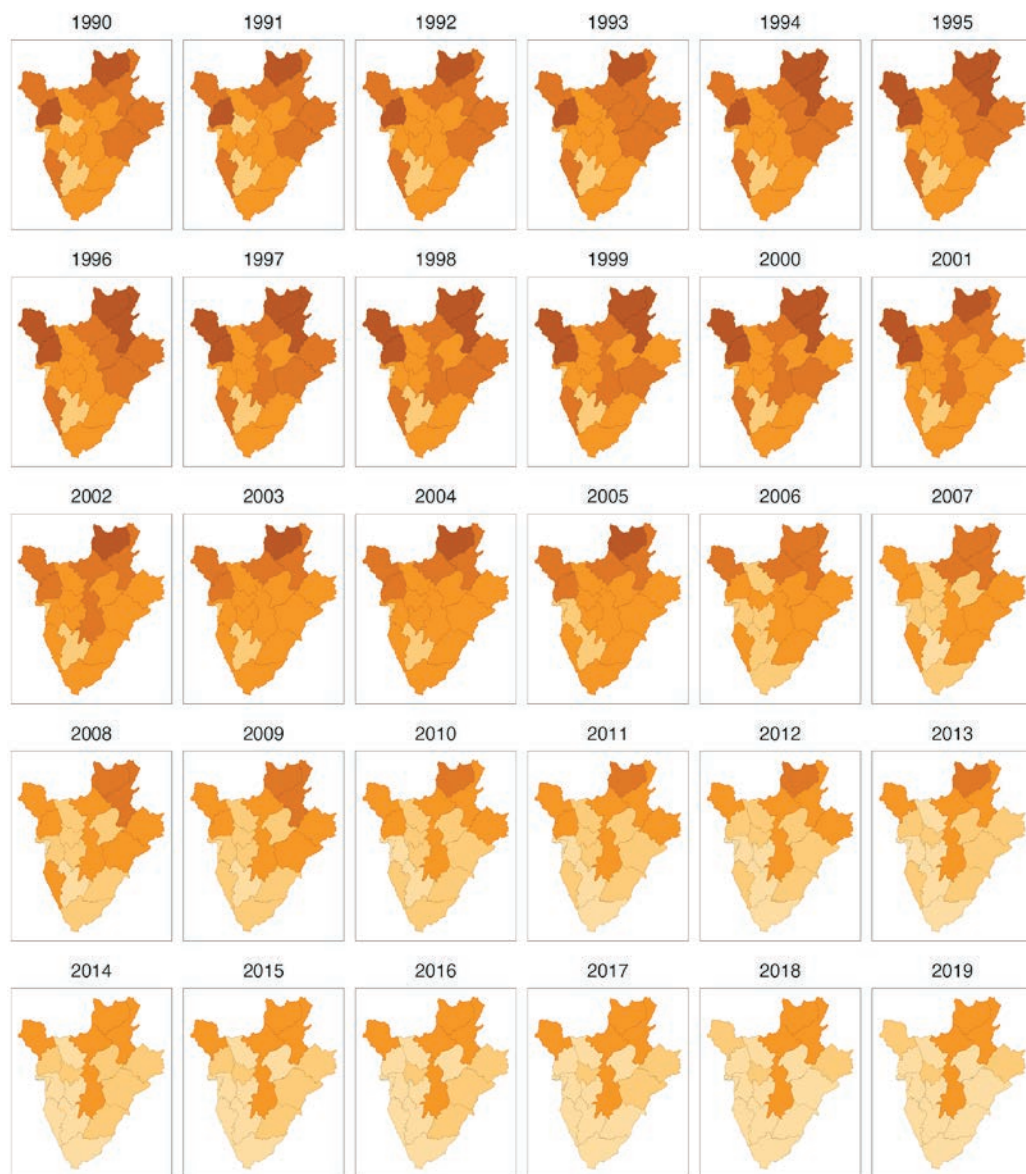
## The gap between the highest and lowest subnational mortality rates has narrowed across all countries

In the United Republic of Tanzania, the absolute gap between the highest and lowest administrative level 1 under-five mortality rate declined from a difference of 227 deaths per 1,000 live births in 1990 to 40 deaths per 1,000 live births in 2019. Still, substantial inequities remain: The gap in Nigeria for 2019 is 196 deaths.

Gap between the highest and lowest under-five mortality rate at administrative level 1 in 22 countries, 1990 and 2019 ↻

*Note: Countries ordered by gap between highest and lowest administrative level 1 under-five mortality rate in 2019.*





## Subnational regional variation in under-five mortality rates persists in some cases, even while all subnational areas see decline

In Burundi, mortality risk has remained lower in the southern provinces relative to the northern provinces, even while the national under-five mortality rate fell by 68 per cent since 1990 and all provinces (administrative level 1) saw a decline in under-five mortality since 1990.

→ Under-five mortality rate at administrative level 1 in Burundi, 1990–2019

*These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.*

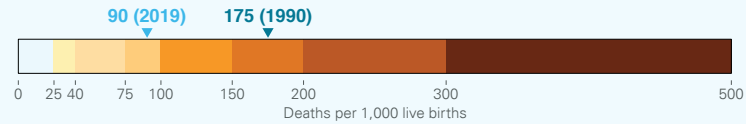


Administrative level 1  
(Département): **12**

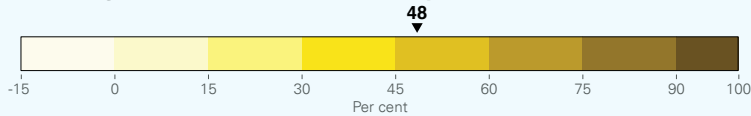
Administrative level 2  
(Commune): **76**

## National level

### Under-five mortality rate, 1990 and 2019

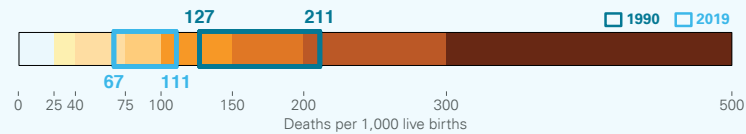


### Percentage decline in under-five mortality rate, 1990–2019

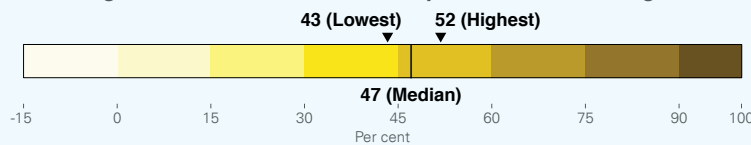


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

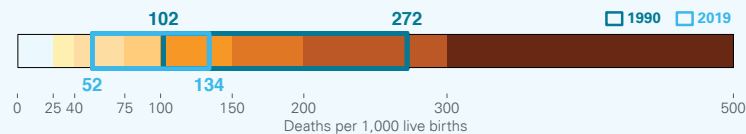


### Percentage decline in under-five mortality rate, 1990–2019 (range)

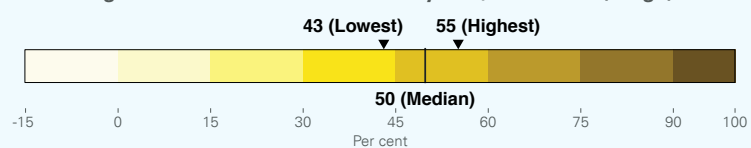


## Administrative level 2

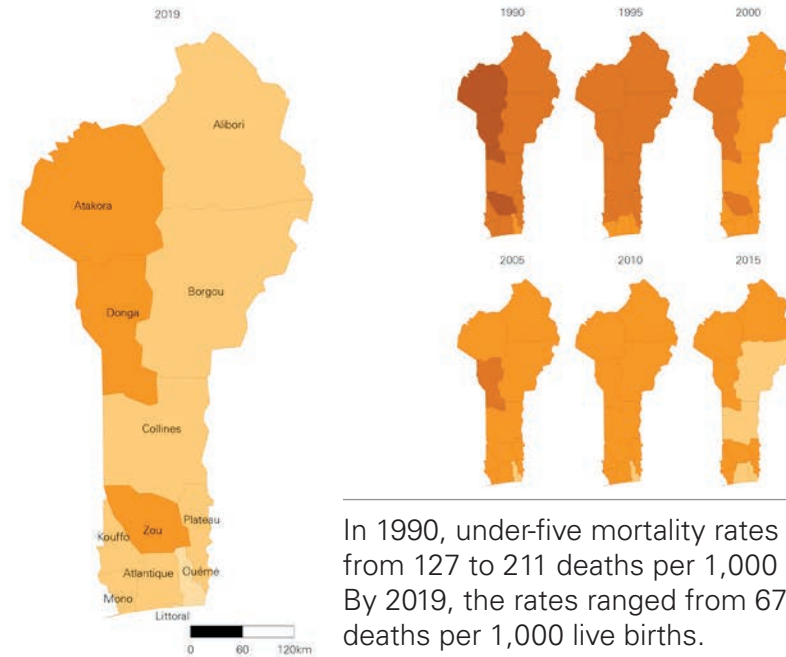
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

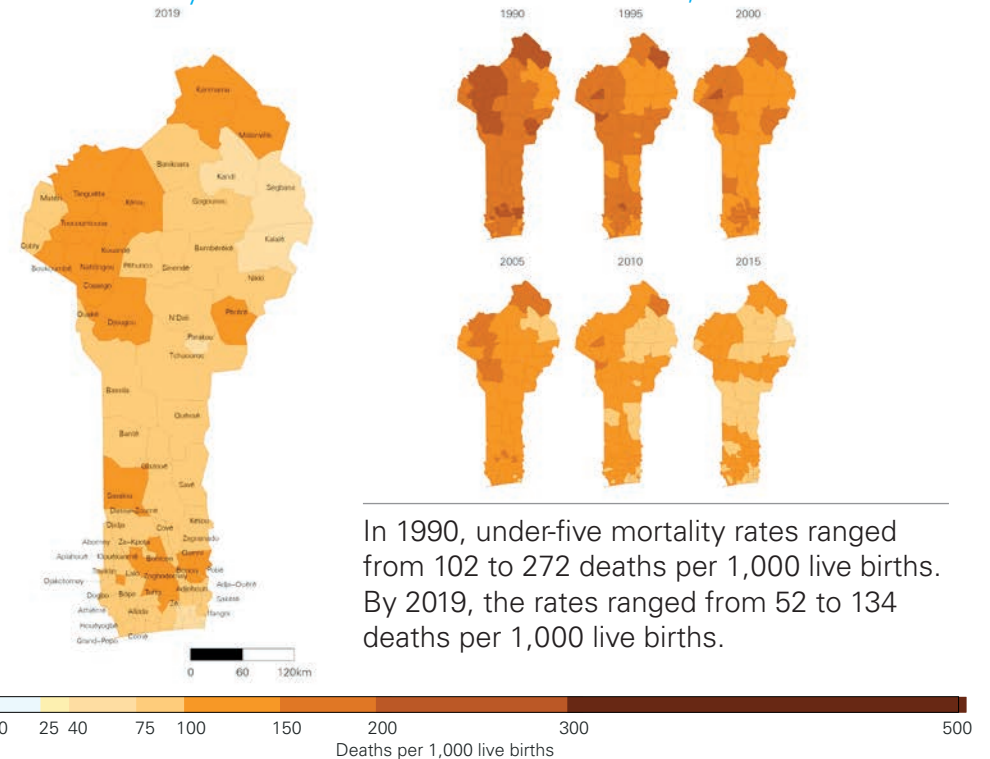


## Under-five mortality rate at administrative level 1 in Benin, 1990–2019



In 1990, under-five mortality rates ranged from 127 to 211 deaths per 1,000 live births. By 2019, the rates ranged from 67 to 111 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Benin, 1990–2019



In 1990, under-five mortality rates ranged from 102 to 272 deaths per 1,000 live births. By 2019, the rates ranged from 52 to 134 deaths per 1,000 live births.



Percentage decline in under-five mortality rate at administrative level 1 in Benin, 1990–2019

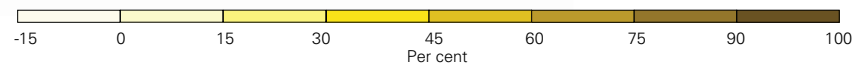


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 43 per cent to a high of 52 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Benin, 1990–2019

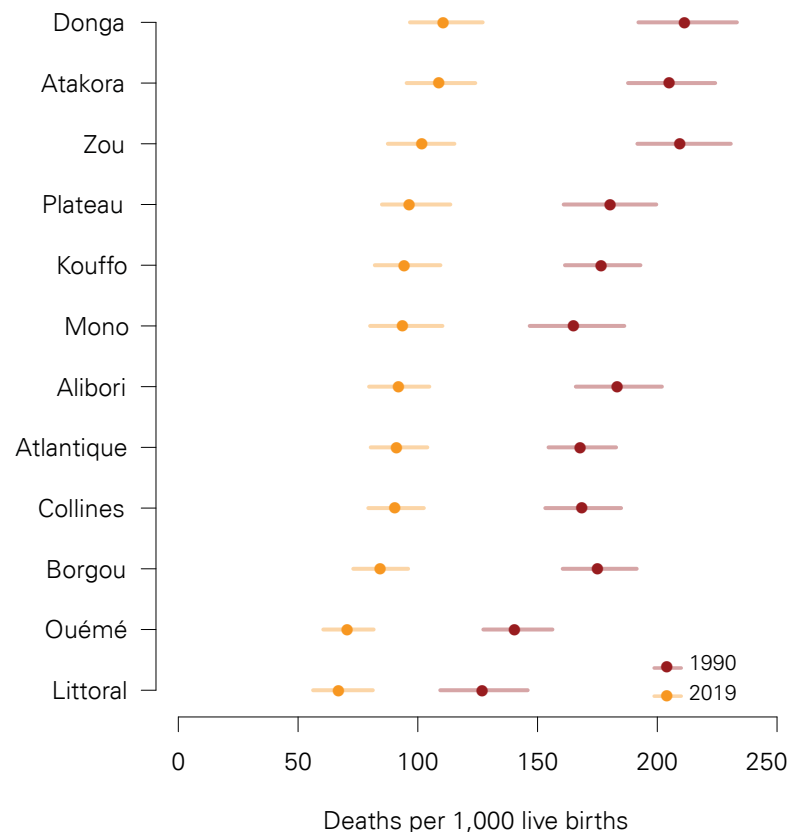


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 43 per cent to a high of 55 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Benin, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.7 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.7 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Benin: Demographic and Health Survey 1996; Demographic and Health Survey 2001; Demographic and Health Survey 2017–2018.

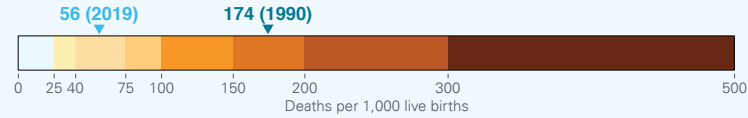
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Administrative level 1  
(Province): **18**

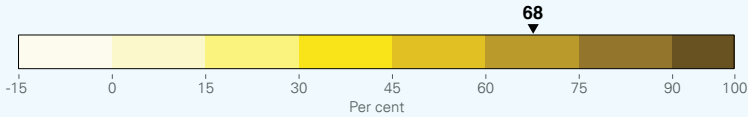
Administrative level 2  
(Commune): **119**

## National level

### Under-five mortality rate, 1990 and 2019

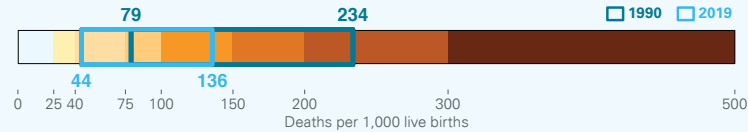


### Percentage decline in under-five mortality rate, 1990–2019

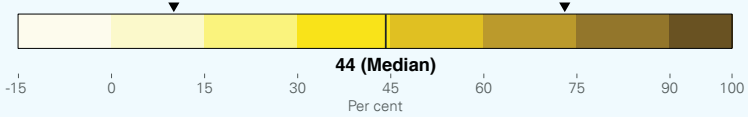


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

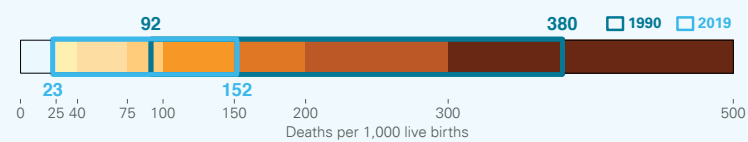


### Percentage decline in under-five mortality rate, 1990–2019 (range)

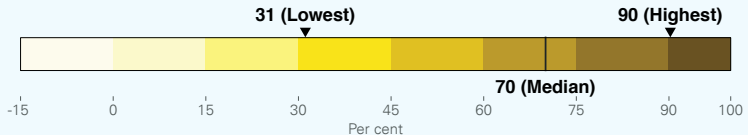


## Administrative level 2

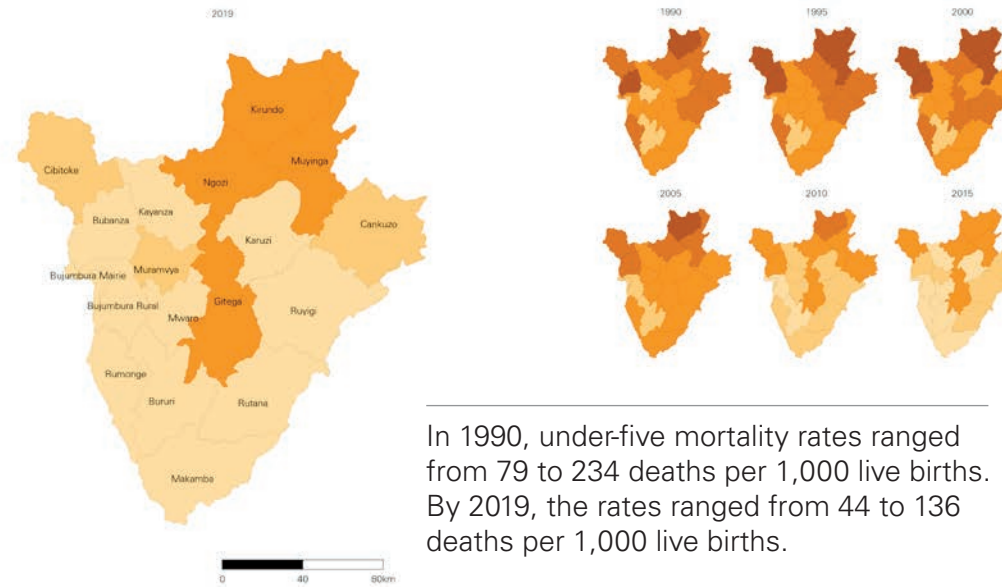
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

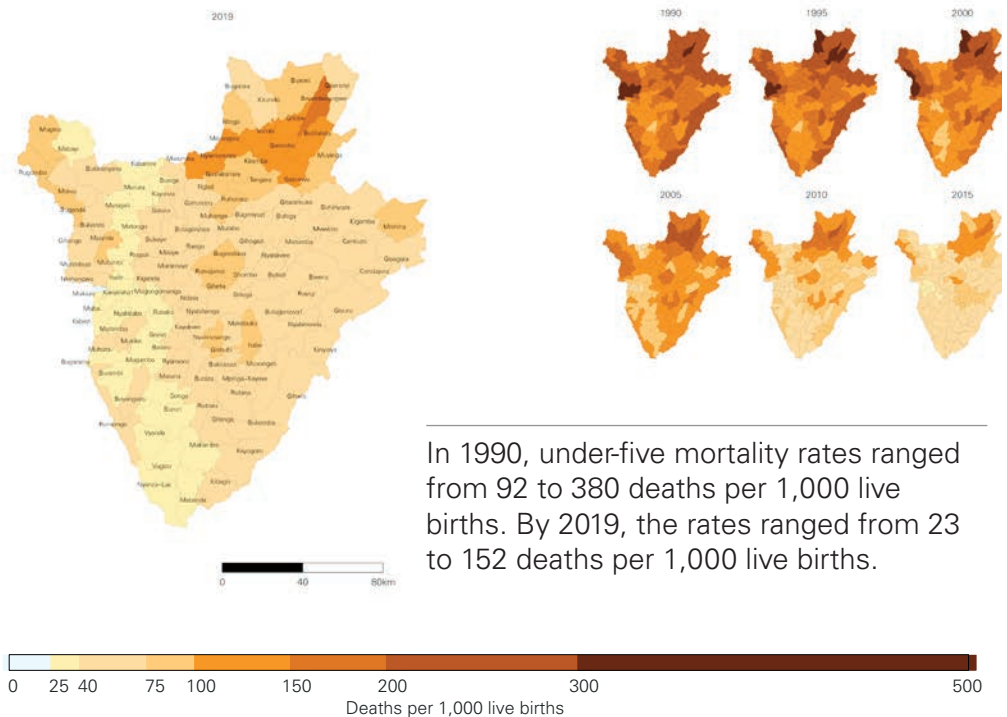


## Under-five mortality rate at administrative level 1 in Burundi, 1990–2019



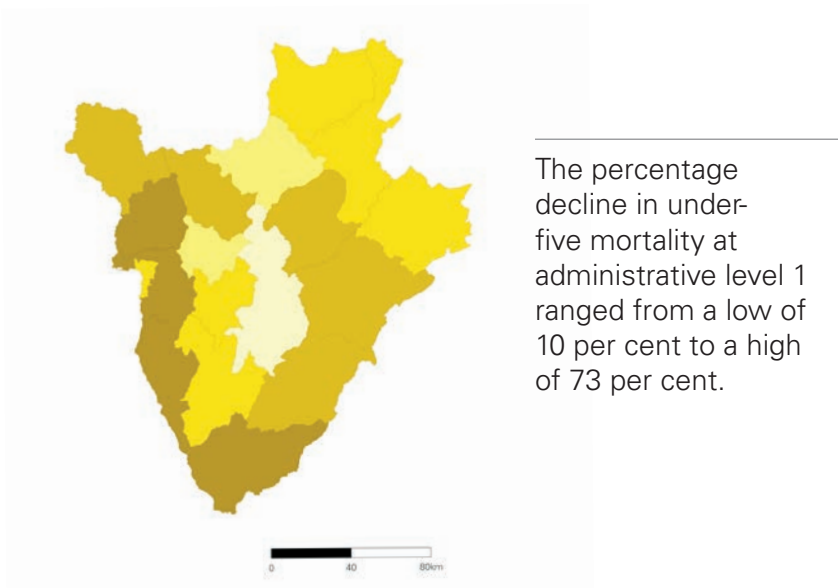
In 1990, under-five mortality rates ranged from 79 to 234 deaths per 1,000 live births. By 2019, the rates ranged from 44 to 136 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Burundi, 1990–2019

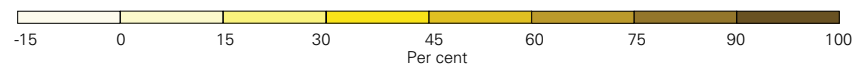
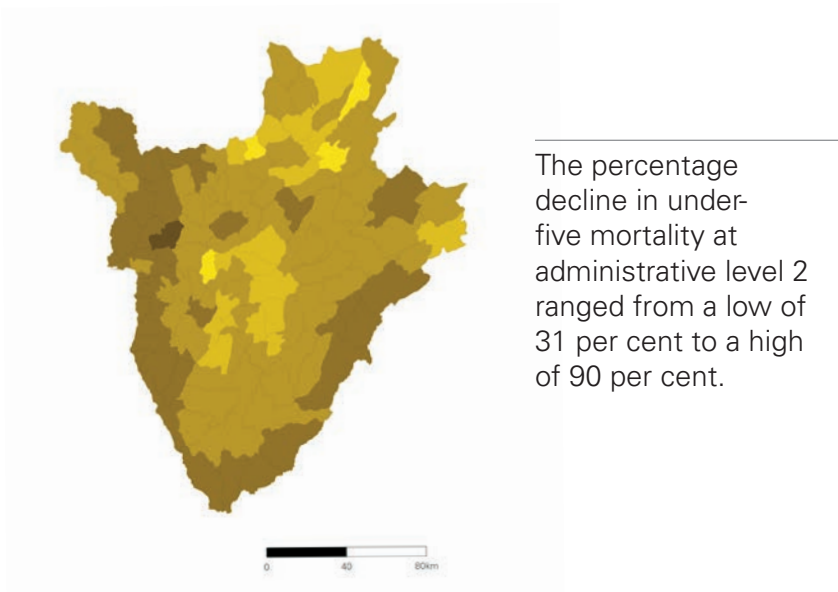


In 1990, under-five mortality rates ranged from 92 to 380 deaths per 1,000 live births. By 2019, the rates ranged from 23 to 152 deaths per 1,000 live births.

## Percentage decline in under-five mortality rate at administrative level 1 in Burundi, 1990–2019

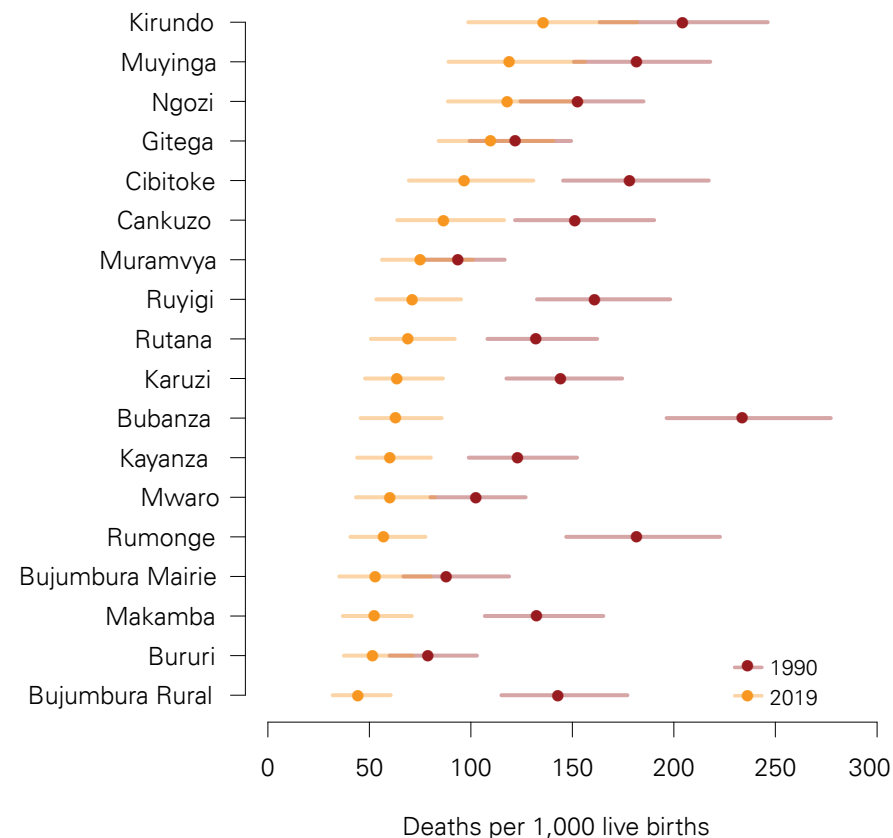


## Percentage decline in under-five mortality rate at administrative level 2 in Burundi, 1990–2019



## Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Burundi, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 3 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 3.1 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on shapefiles from the UN Office for the Coordination of Humanitarian Affairs.

Data sources for Burundi: Demographic and Health Survey 2010–2011; Demographic and Health Survey 2016–2017.

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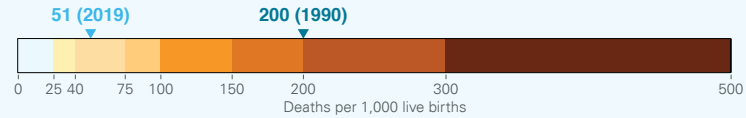
# ETHIOPIA

Administrative level 1  
(State/City): **11**

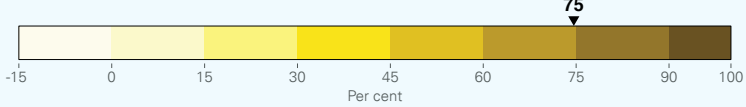
Administrative level 2  
(Zone/Woreda): **79**

## National level

### Under-five mortality rate, 1990 and 2019

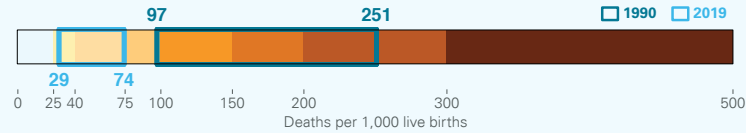


### Percentage decline in under-five mortality rate, 1990–2019

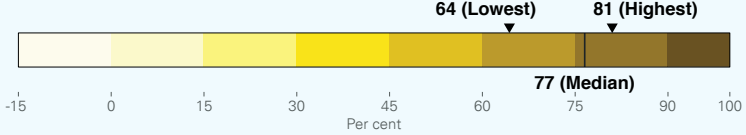


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

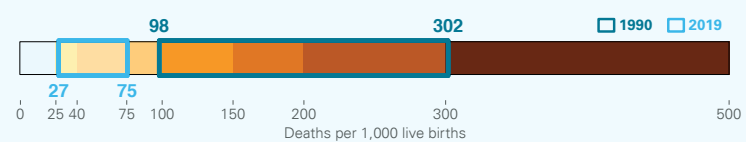


### Percentage decline in under-five mortality rate, 1990–2019 (range)

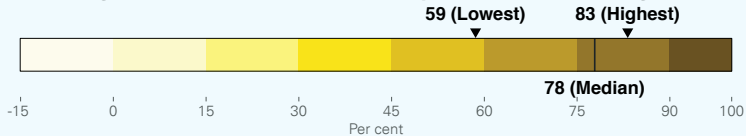


## Administrative level 2

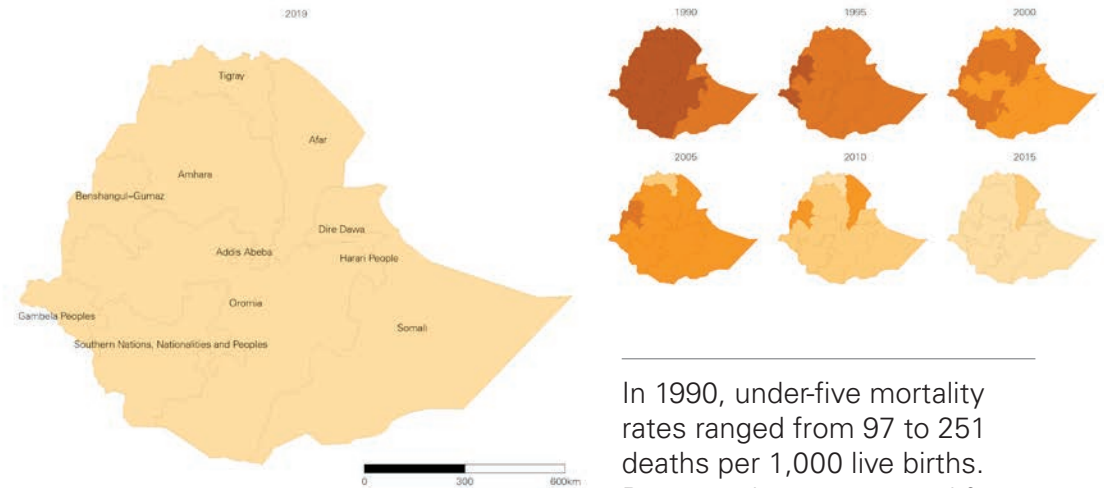
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

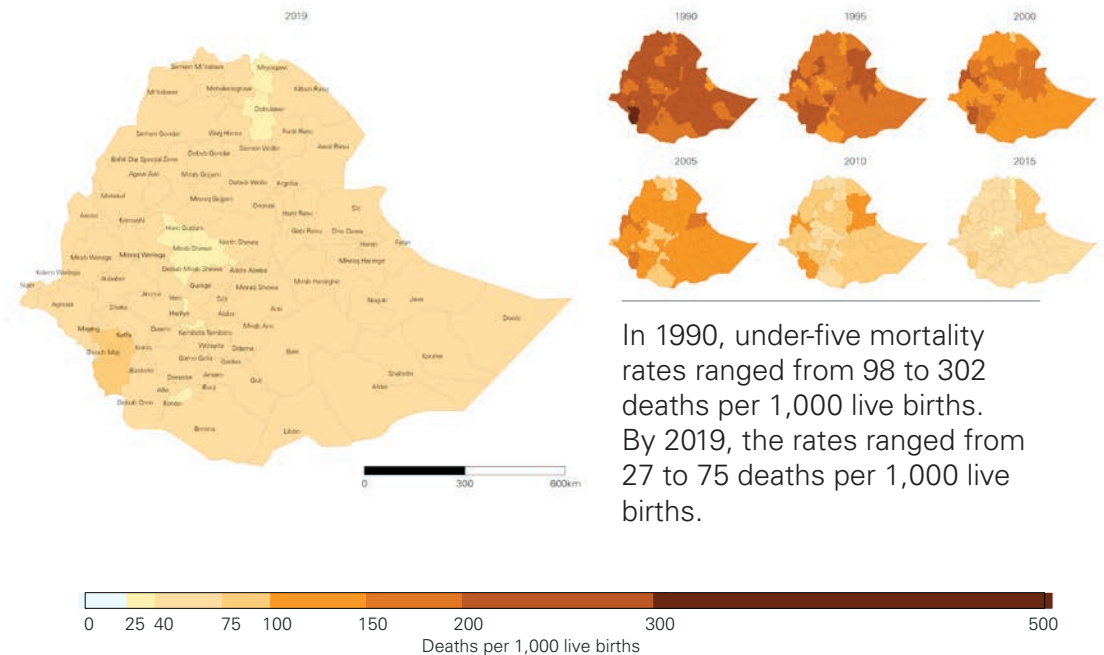


## Under-five mortality rate at administrative level 1 in Ethiopia, 1990–2019



In 1990, under-five mortality rates ranged from 97 to 251 deaths per 1,000 live births. By 2019, the rates ranged from 29 to 74 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Ethiopia, 1990–2019



In 1990, under-five mortality rates ranged from 98 to 302 deaths per 1,000 live births. By 2019, the rates ranged from 27 to 75 deaths per 1,000 live births.

Percentage decline in under-five mortality rate at administrative level 1 in Ethiopia, 1990–2019

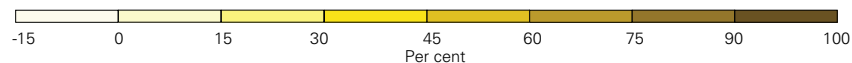


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 64 per cent to a high of 81 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Ethiopia, 1990–2019

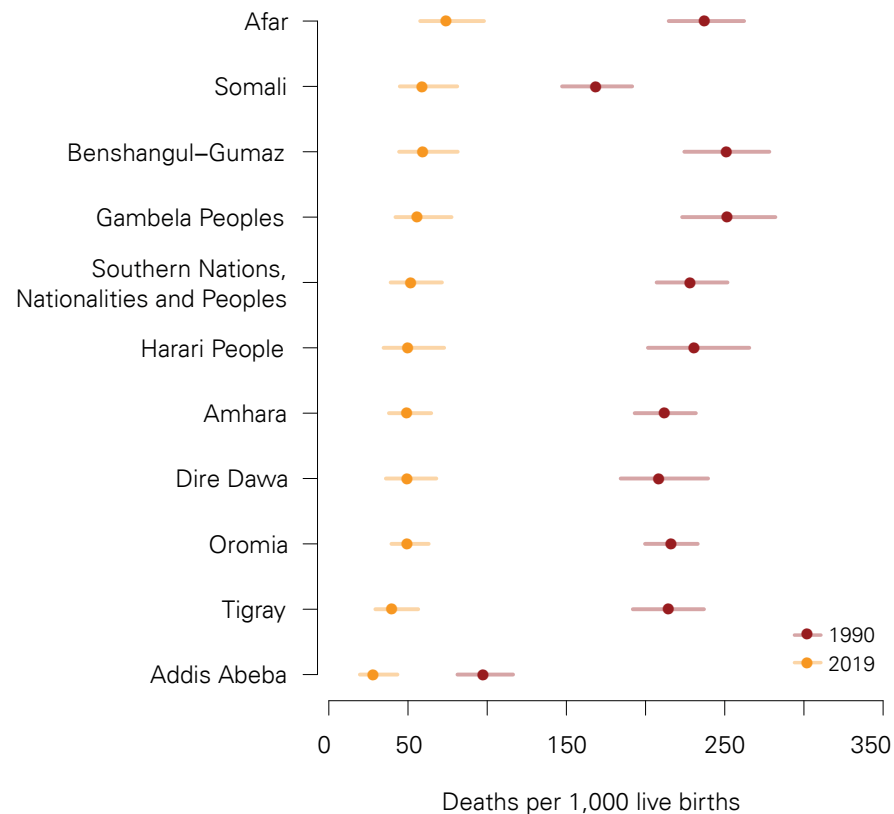


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 59 per cent to a high of 83 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Ethiopia, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 2.6 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 2.6 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Ethiopia: Demographic and Health Survey 2000; Demographic and Health Survey 2005; Demographic and Health Survey 2011; Demographic and Health Survey 2016.

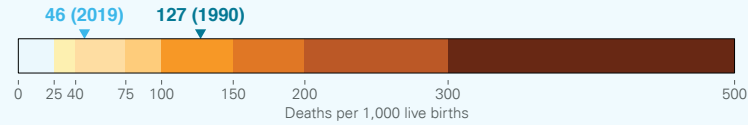
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Administrative level 1  
(Region): **10**

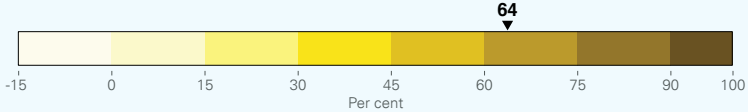
Administrative level 2  
(District): **137**

## National level

### Under-five mortality rate, 1990 and 2019

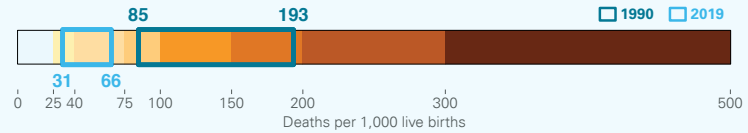


### Percentage decline in under-five mortality rate, 1990–2019

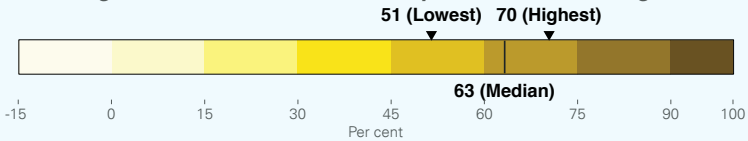


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

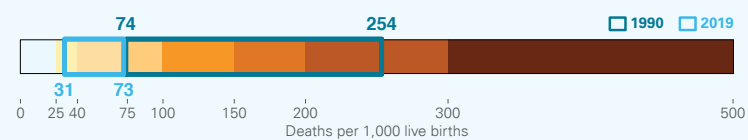


### Percentage decline in under-five mortality rate, 1990–2019 (range)

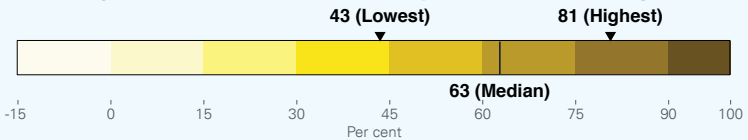


## Administrative level 2

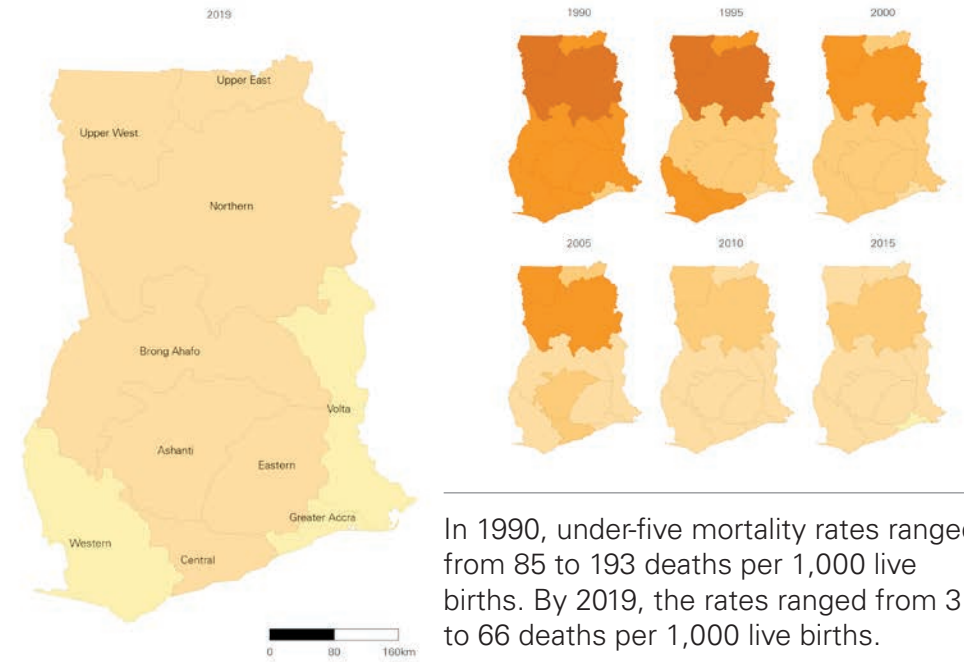
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

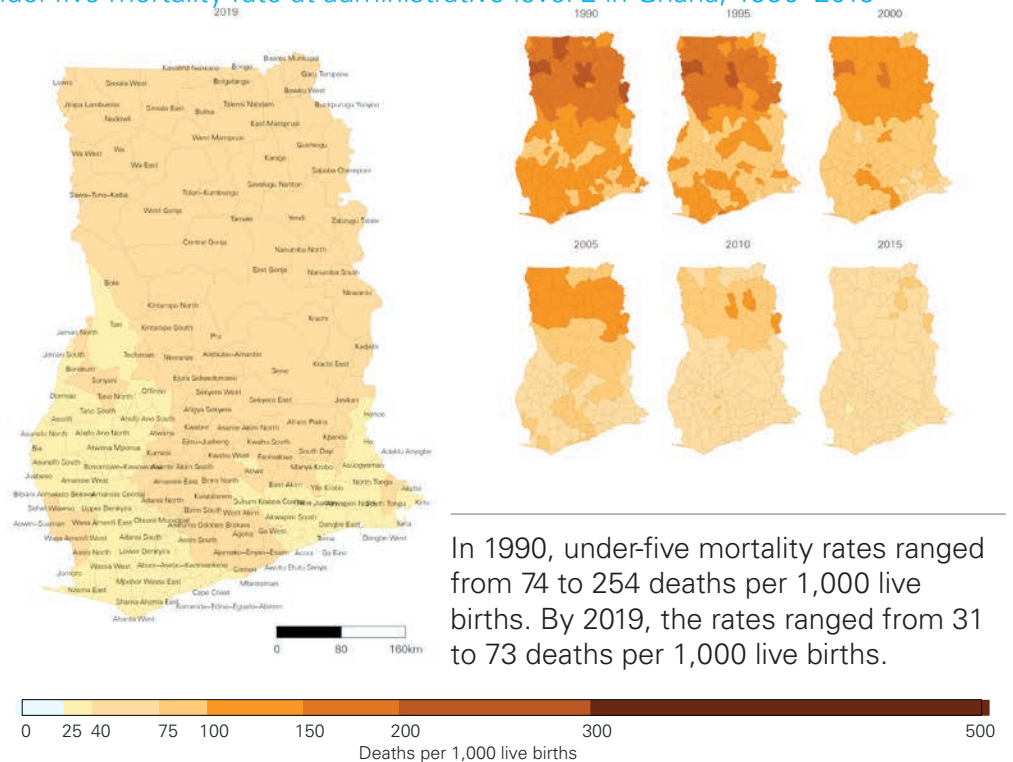


## Under-five mortality rate at administrative level 1 in Ghana, 1990–2019



In 1990, under-five mortality rates ranged from 85 to 193 deaths per 1,000 live births. By 2019, the rates ranged from 31 to 66 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Ghana, 1990–2019



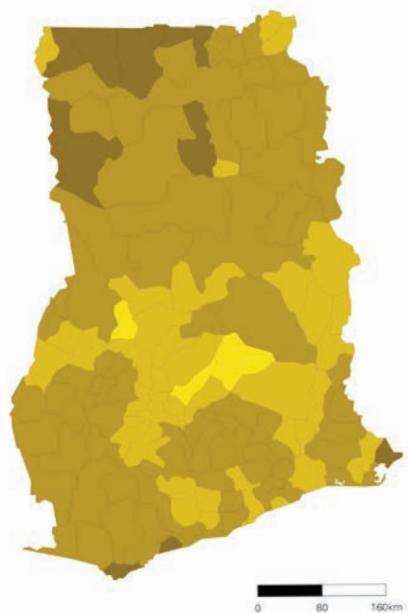
In 1990, under-five mortality rates ranged from 74 to 254 deaths per 1,000 live births. By 2019, the rates ranged from 31 to 73 deaths per 1,000 live births.

Percentage decline in under-five mortality rate at administrative level 1 in Ghana, 1990–2019

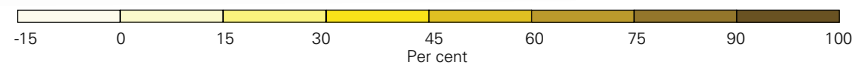


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 51 per cent to a high of 70 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Ghana, 1990–2019

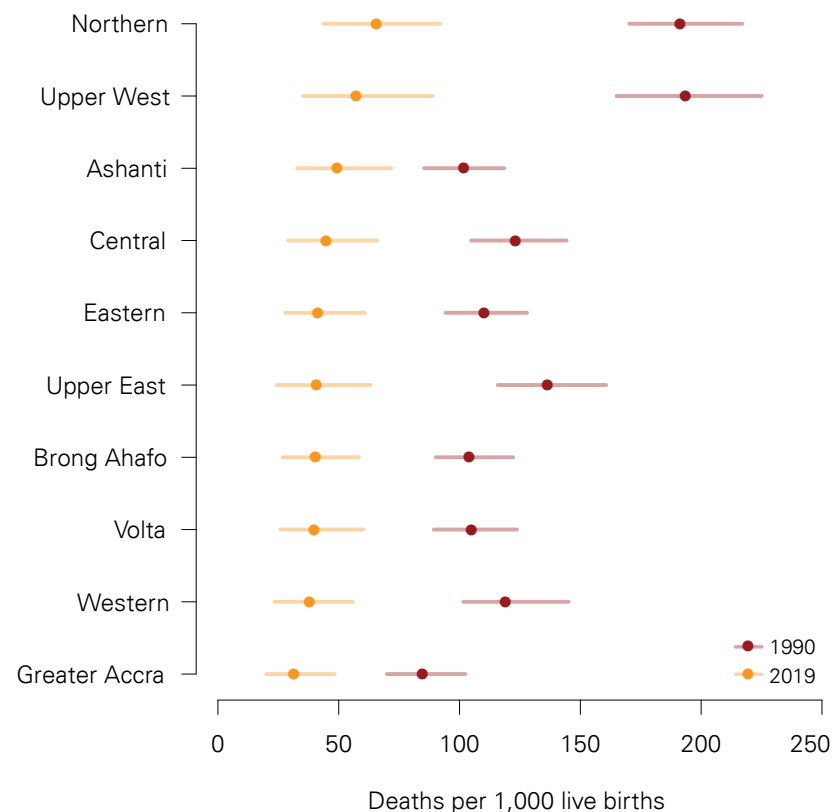


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 43 per cent to a high of 81 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Ghana, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 2.3 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 2.1 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Ghana: Demographic and Health Survey 1993–1994; Demographic and Health Survey 1998–1999; Demographic and Health Survey 2003; Demographic and Health Survey 2008; Demographic and Health Survey 2014.

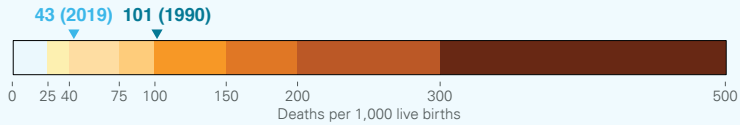
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Administrative level 1  
(County): **47**

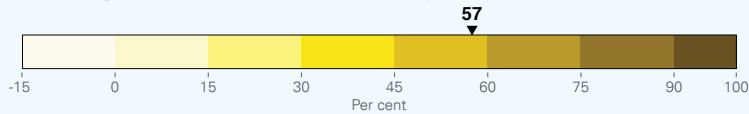
Administrative level 2: -

## National level

### Under-five mortality rate, 1990 and 2019

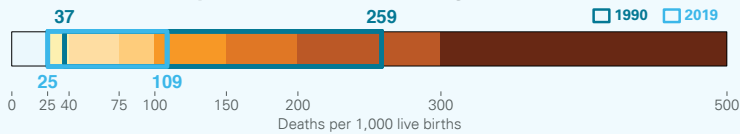


### Percentage decline in under-five mortality rate, 1990–2019

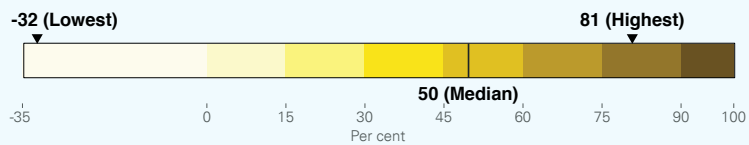


## Administrative level 1

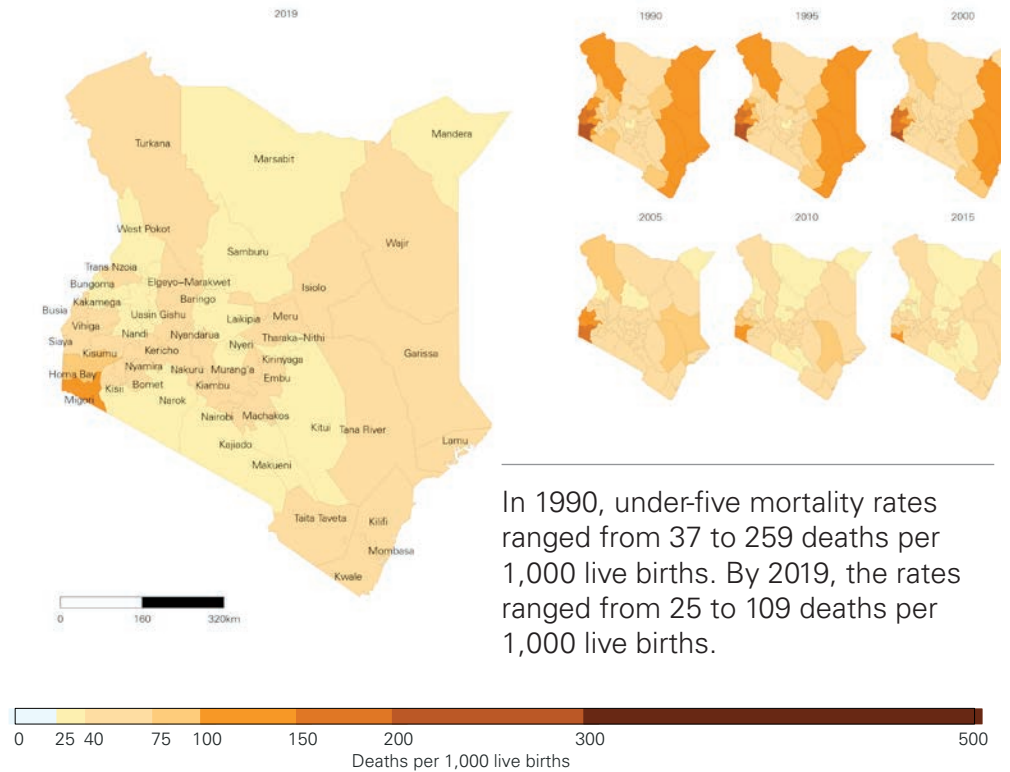
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

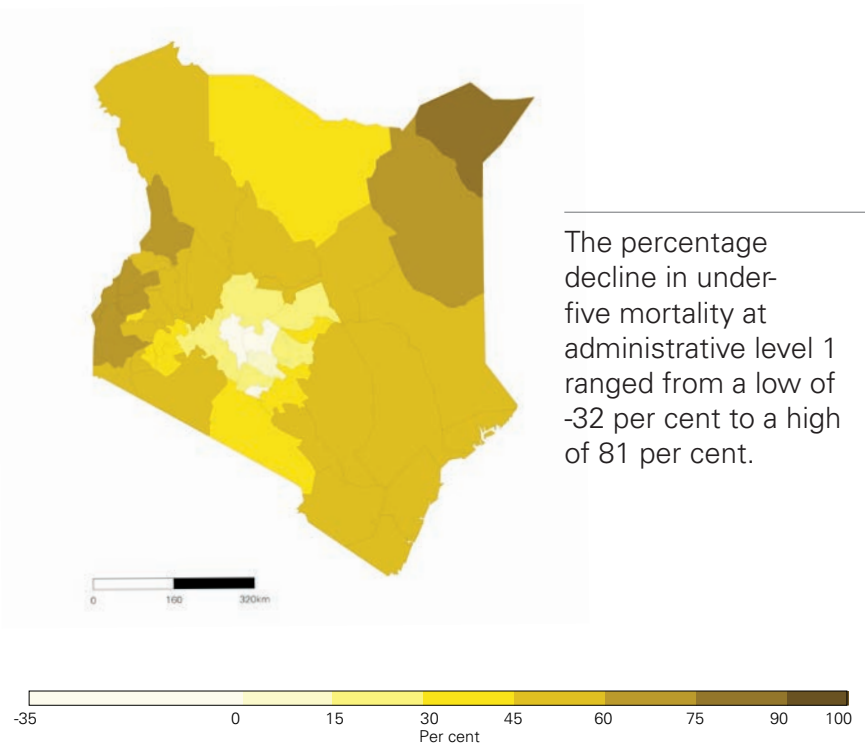


## Under-five mortality rate at administrative level 1 in Kenya, 1990–2019



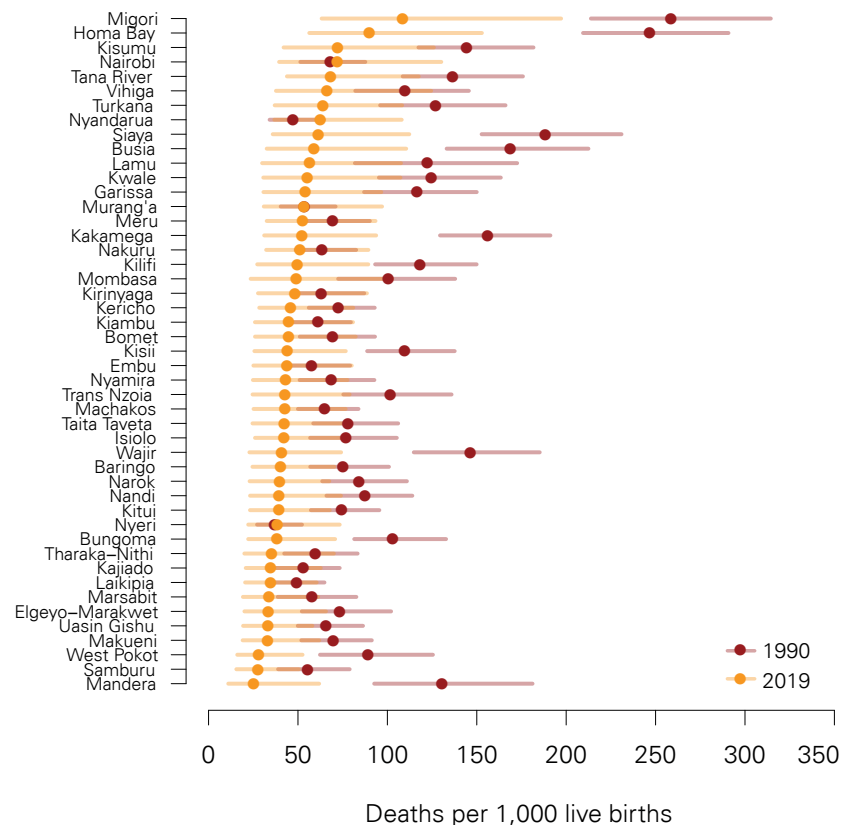


Percentage decline in under-five mortality rate at administrative level 1 in Kenya, 1990–2019



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Kenya, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 7 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 4.3 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Kenya: Demographic and Health Survey 2003; Demographic and Health Survey 2008–2009; Demographic and Health Survey 2014.

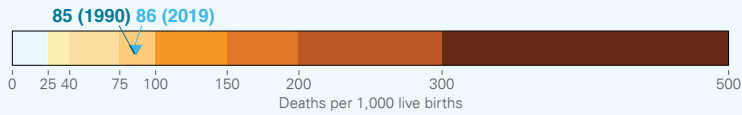
These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(District): **10**

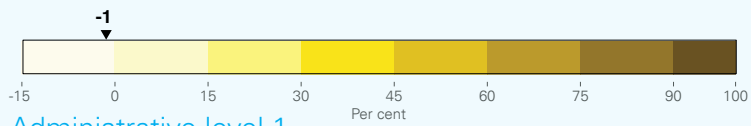
Administrative level 2: -

### National level

#### Under-five mortality rate, 1990 and 2019

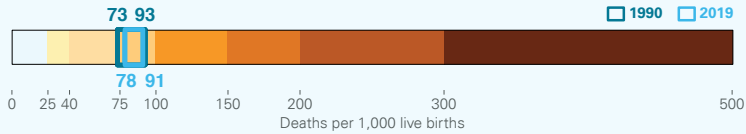


#### Percentage decline in under-five mortality rate, 1990–2019

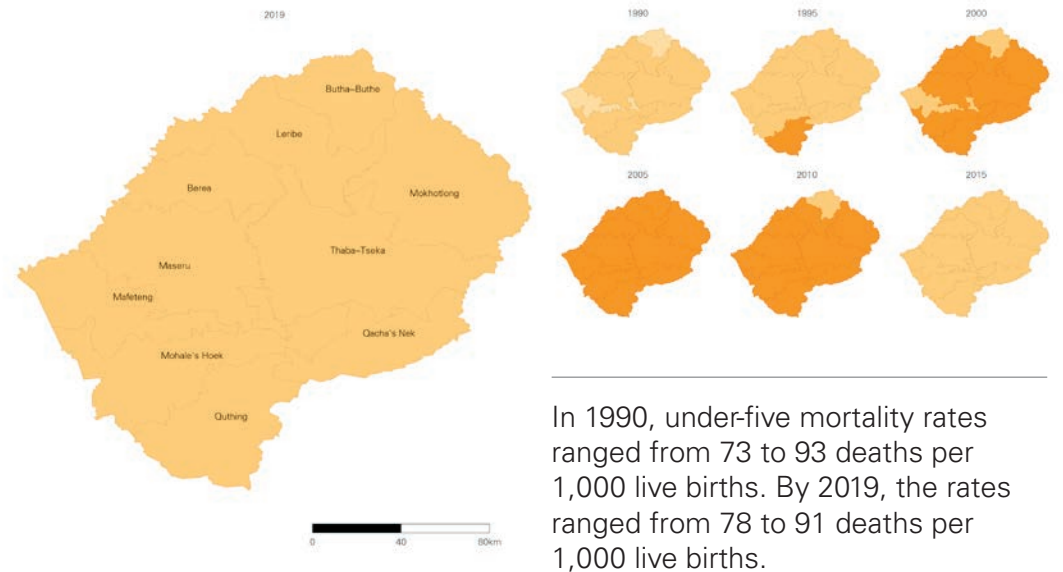
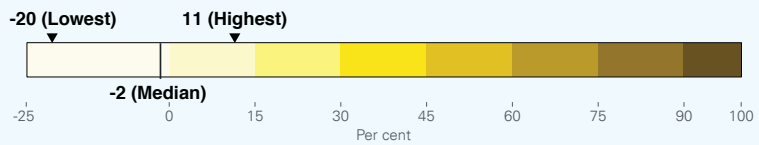


### Administrative level 1

#### Under-five mortality rate, 1990 and 2019 (range)



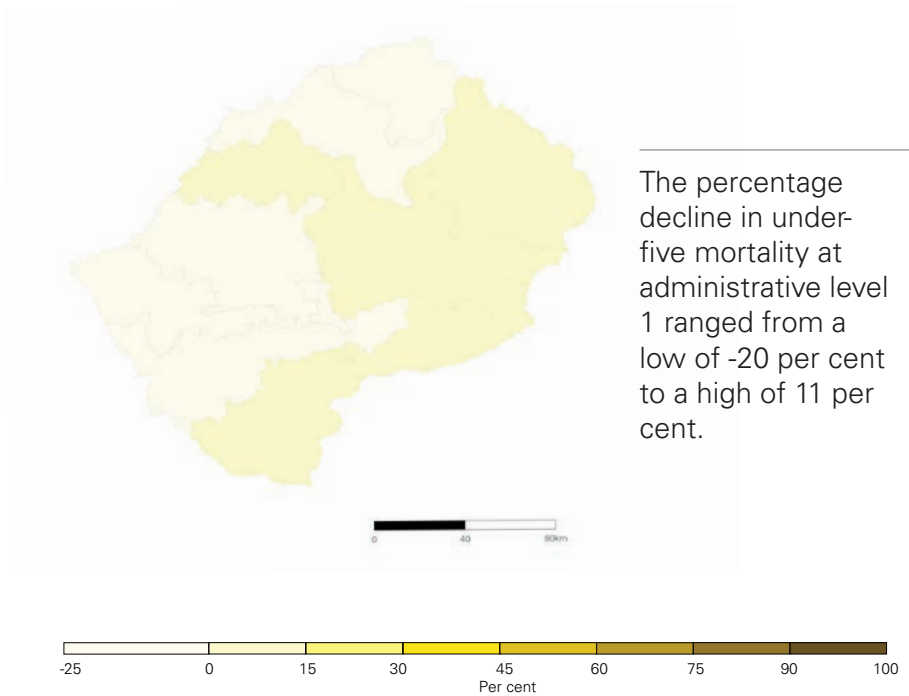
#### Percentage decline in under-five mortality rate, 1990–2019 (range)



In 1990, under-five mortality rates ranged from 73 to 93 deaths per 1,000 live births. By 2019, the rates ranged from 78 to 91 deaths per 1,000 live births.

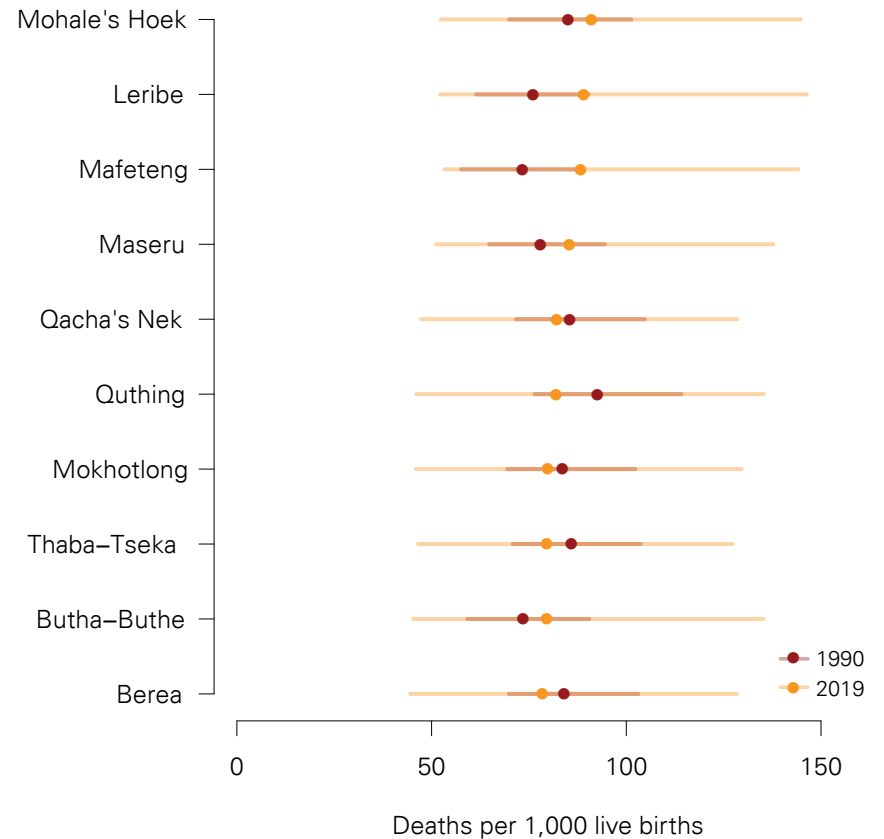


Percentage decline in under-five mortality rate at administrative level 1 in Lesotho, 1990–2019



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Lesotho, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.3 times higher than in the lowest mortality area. In 2019, U5MR in the highest mortality area was 1.2 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Lesotho: Demographic and Health Survey 2004; Demographic and Health Survey 2009; Demographic and Health Survey 2014.

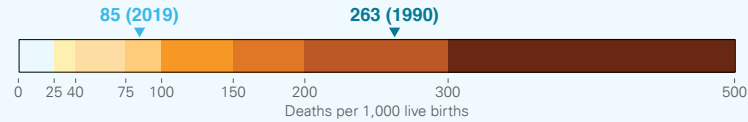
These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(County): **15**

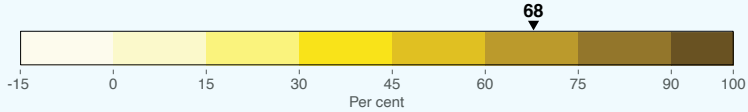
Administrative level 2  
(District): **66**

### National level

#### Under-five mortality rate, 1990 and 2019

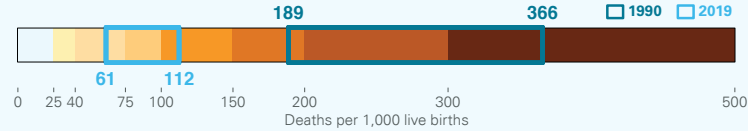


#### Percentage decline in under-five mortality rate, 1990–2019

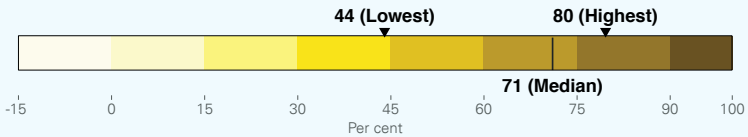


### Administrative level 1

#### Under-five mortality rate, 1990 and 2019 (range)

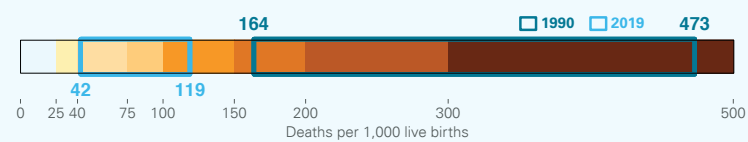


#### Percentage decline in under-five mortality rate, 1990–2019 (range)

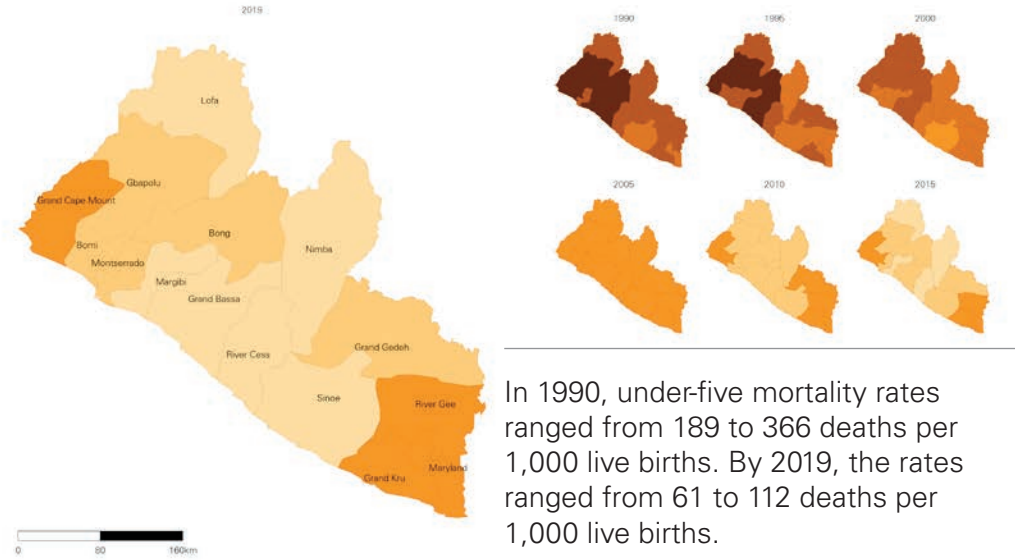
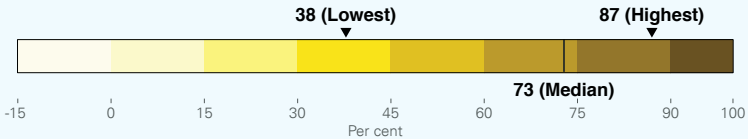


### Administrative level 2

#### Under-five mortality rate, 1990 and 2019 (range)

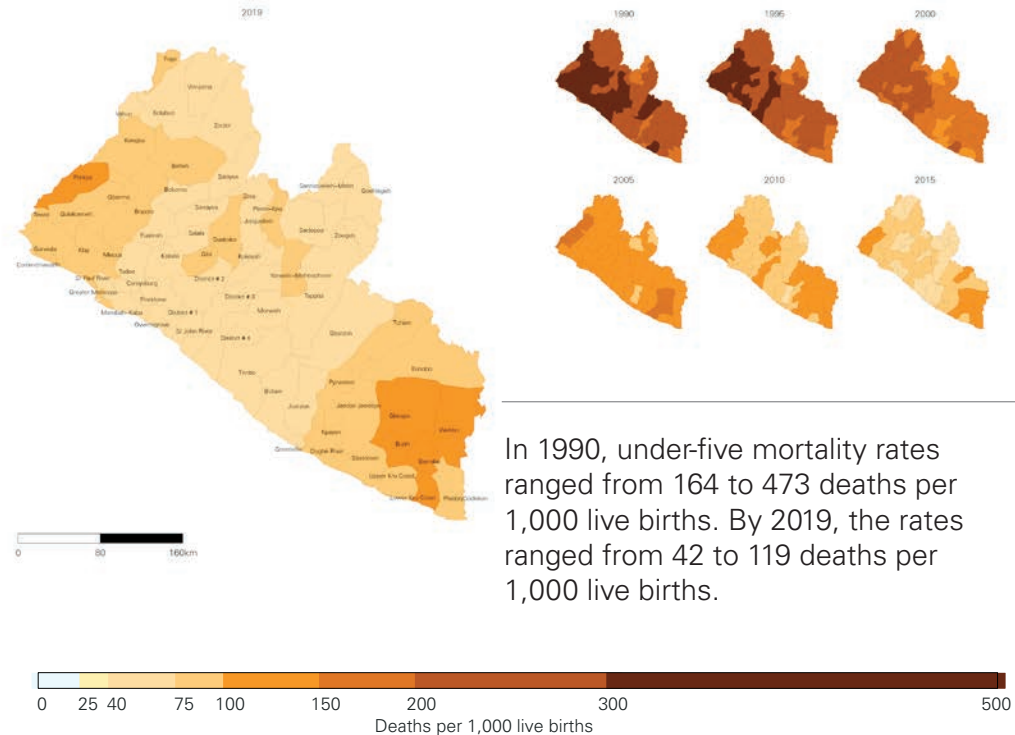


#### Percentage decline in under-five mortality rate, 1990–2019 (range)



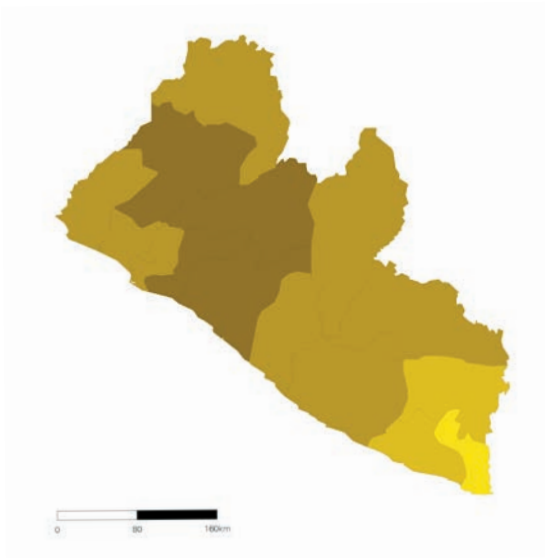
In 1990, under-five mortality rates ranged from 189 to 366 deaths per 1,000 live births. By 2019, the rates ranged from 61 to 112 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Liberia, 1990–2019



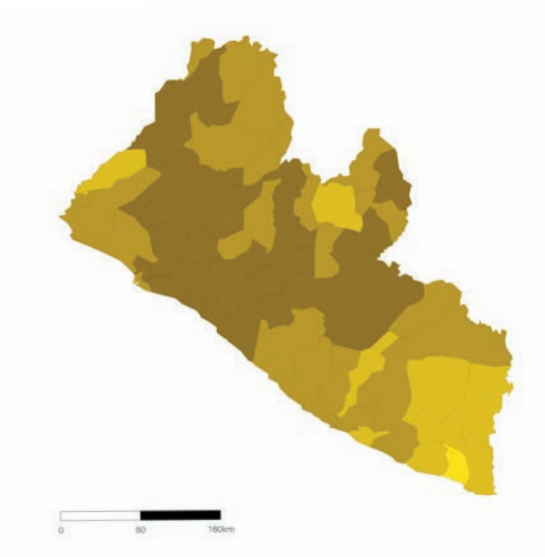
In 1990, under-five mortality rates ranged from 164 to 473 deaths per 1,000 live births. By 2019, the rates ranged from 42 to 119 deaths per 1,000 live births.

Percentage decline in under-five mortality rate at administrative level 1 in Liberia, 1990–2019

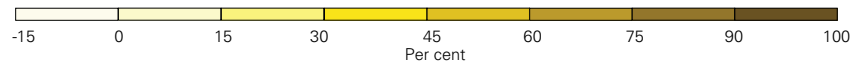


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 44 per cent to a high of 80 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Liberia, 1990–2019

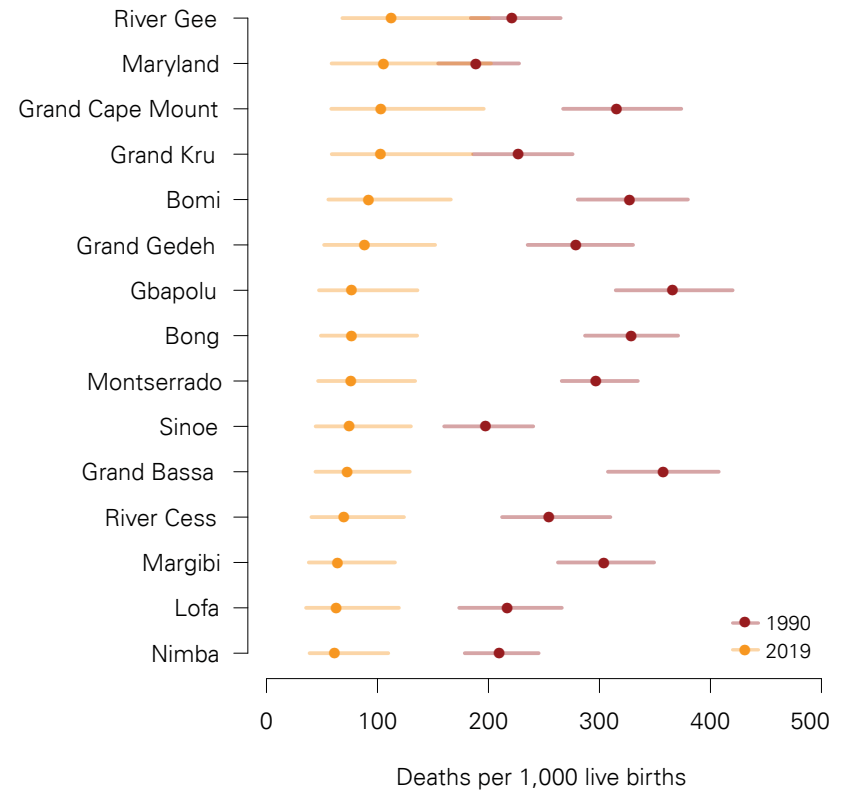


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 38 per cent to a high of 87 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Liberia, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.9 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.8 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Liberia: Demographic and Health Survey 2006–2007; Demographic and Health Survey 2013.

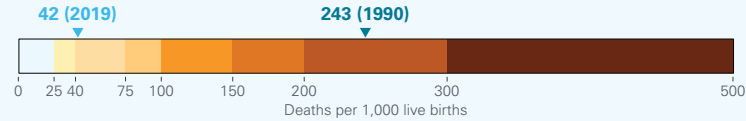
These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(Region): **3**

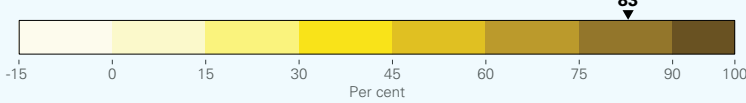
Administrative level 2  
(District): **28**

## National level

### Under-five mortality rate, 1990 and 2019

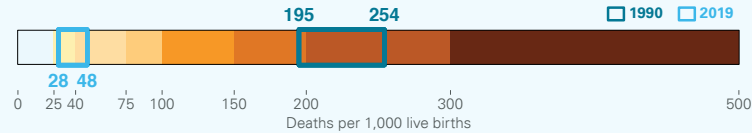


### Percentage decline in under-five mortality rate, 1990–2019

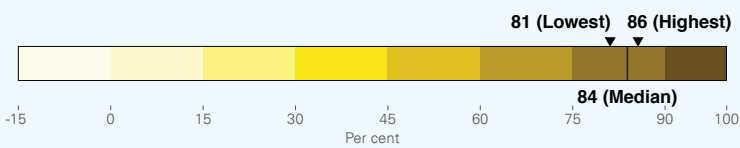


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

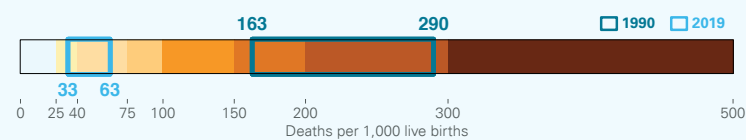


### Percentage decline in under-five mortality rate, 1990–2019 (range)

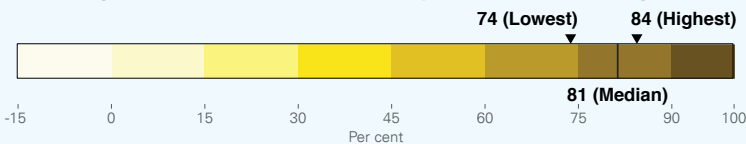


## Administrative level 2

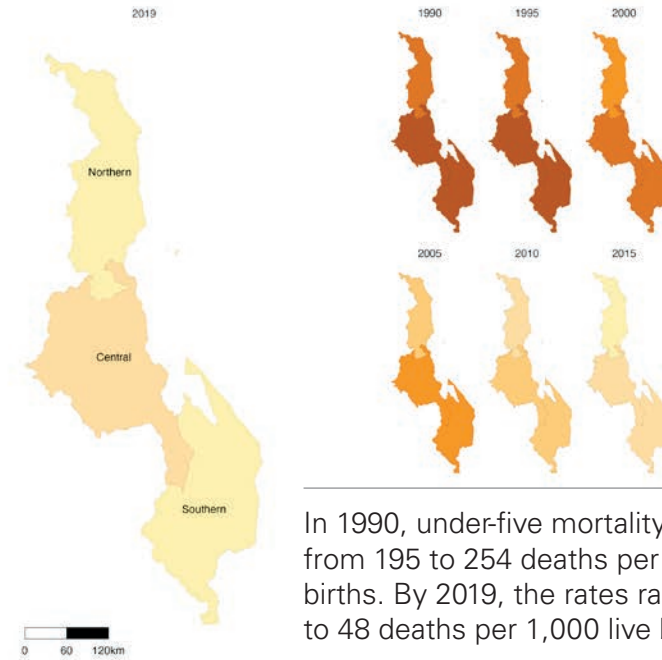
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

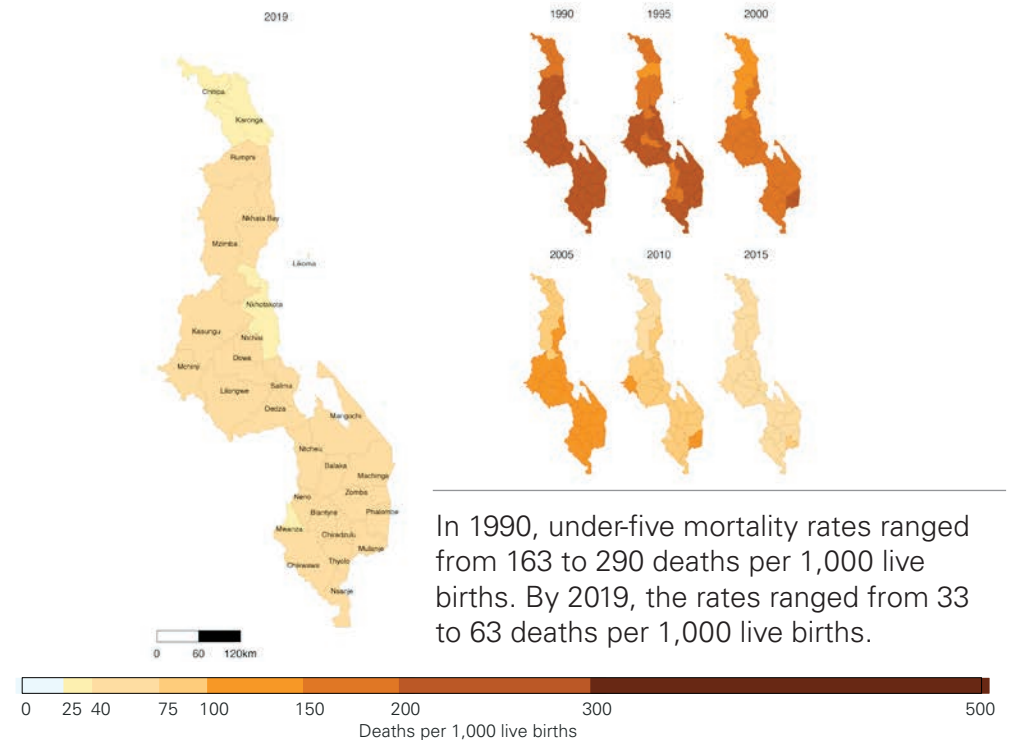


## Under-five mortality rate at administrative level 1 in Malawi, 1990–2019



In 1990, under-five mortality rates ranged from 195 to 254 deaths per 1,000 live births. By 2019, the rates ranged from 28 to 48 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Malawi, 1990–2019



In 1990, under-five mortality rates ranged from 163 to 290 deaths per 1,000 live births. By 2019, the rates ranged from 33 to 63 deaths per 1,000 live births.

Percentage decline in under-five mortality rate at administrative level 1 in Malawi, 1990–2019

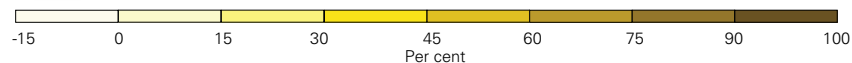


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 81 per cent to a high of 86 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Malawi, 1990–2019

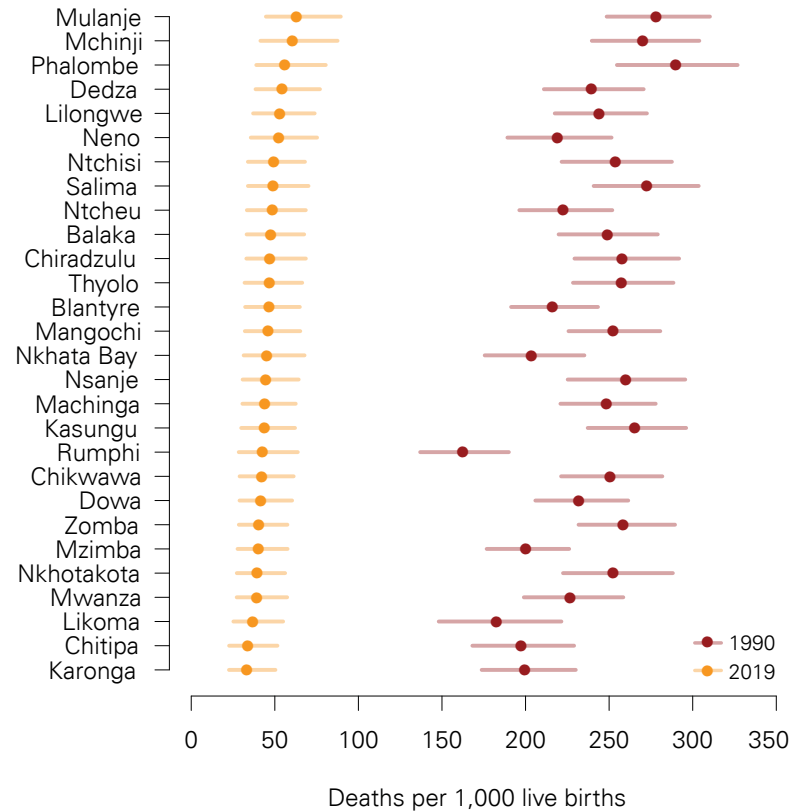


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 74 per cent to a high of 84 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 2 in Malawi, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 2 area was 1.8 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.9 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

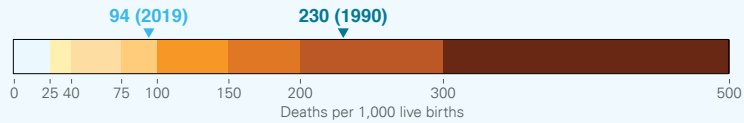
Data sources for Malawi: Demographic and Health Survey 2000; Demographic and Health Survey 2004; Demographic and Health Survey 2010; Demographic and Health Survey 2015–2016.

These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

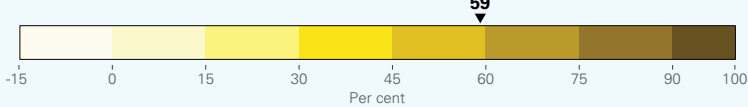
Administrative level 1 (Region/Capital District): **9** | Administrative level 2 (Cercle): **50**

## National level

### Under-five mortality rate, 1990 and 2019

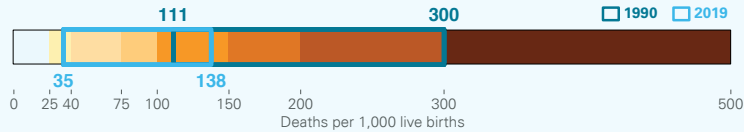


### Percentage decline in under-five mortality rate, 1990–2019

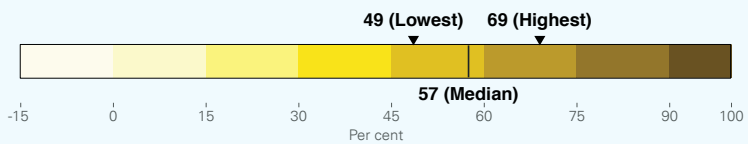


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

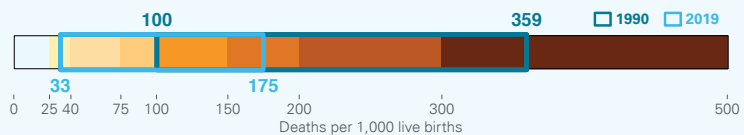


### Percentage decline in under-five mortality rate, 1990–2019 (range)

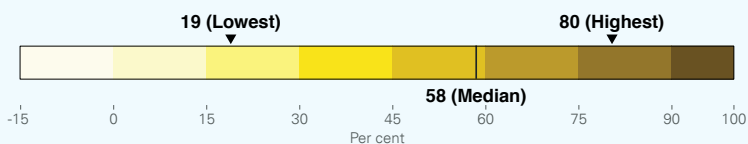


## Administrative level 2

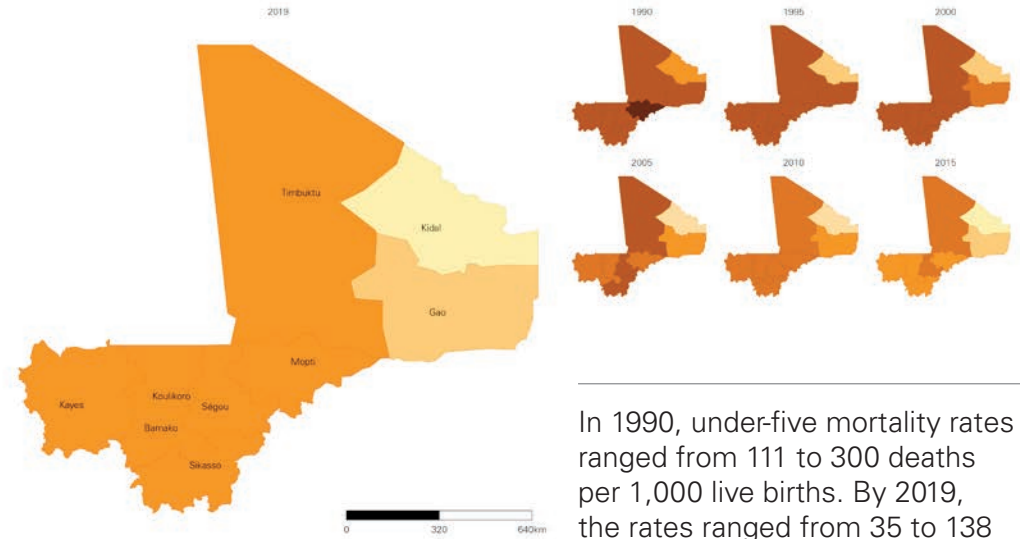
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

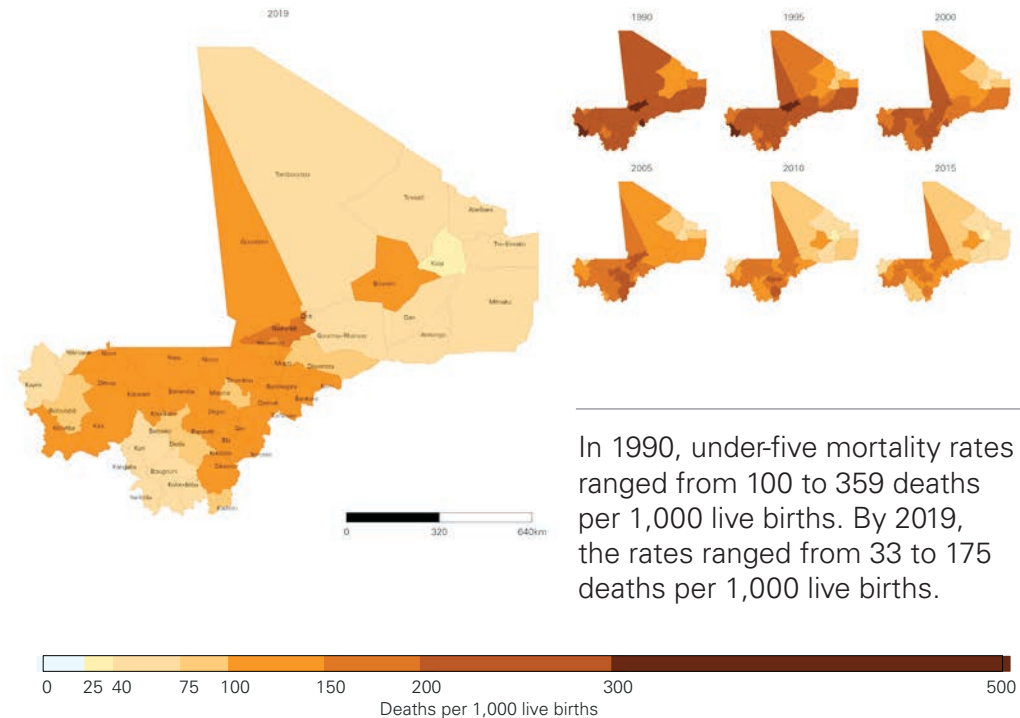


## Under-five mortality rate at administrative level 1 in Mali, 1990–2019



In 1990, under-five mortality rates ranged from 111 to 300 deaths per 1,000 live births. By 2019, the rates ranged from 35 to 138 deaths per 1,000 live births.

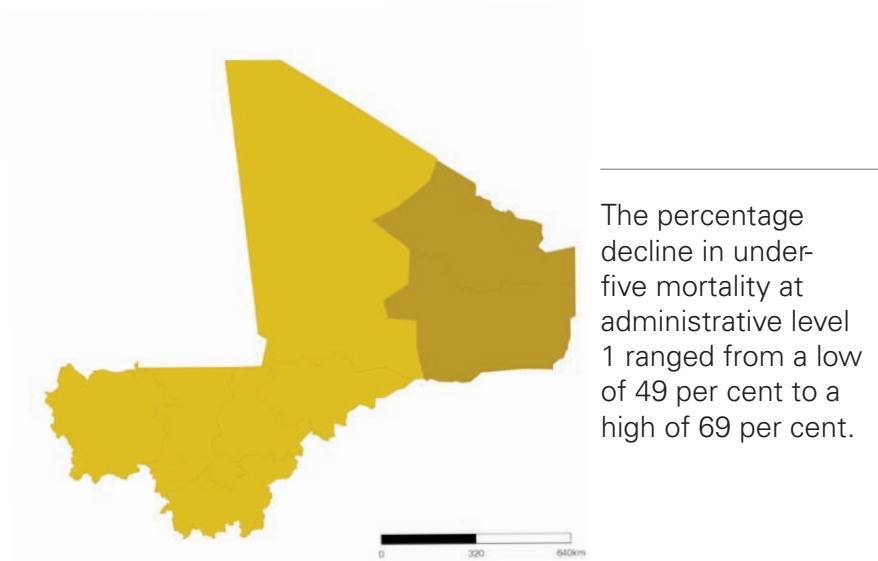
## Under-five mortality rate at administrative level 2 in Mali, 1990–2019



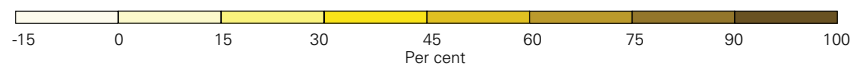
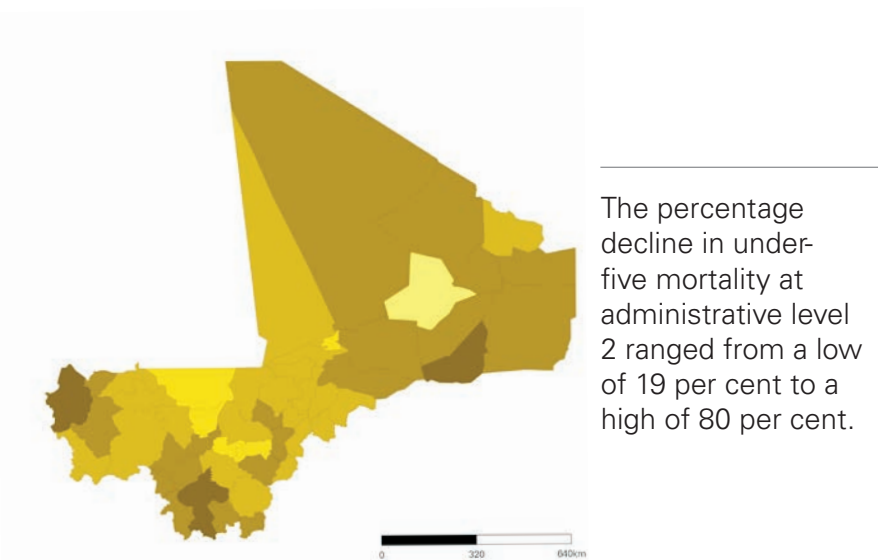
In 1990, under-five mortality rates ranged from 100 to 359 deaths per 1,000 live births. By 2019, the rates ranged from 33 to 175 deaths per 1,000 live births.



Percentage decline in under-five mortality rate at administrative level 1 in Mali, 1990–2019

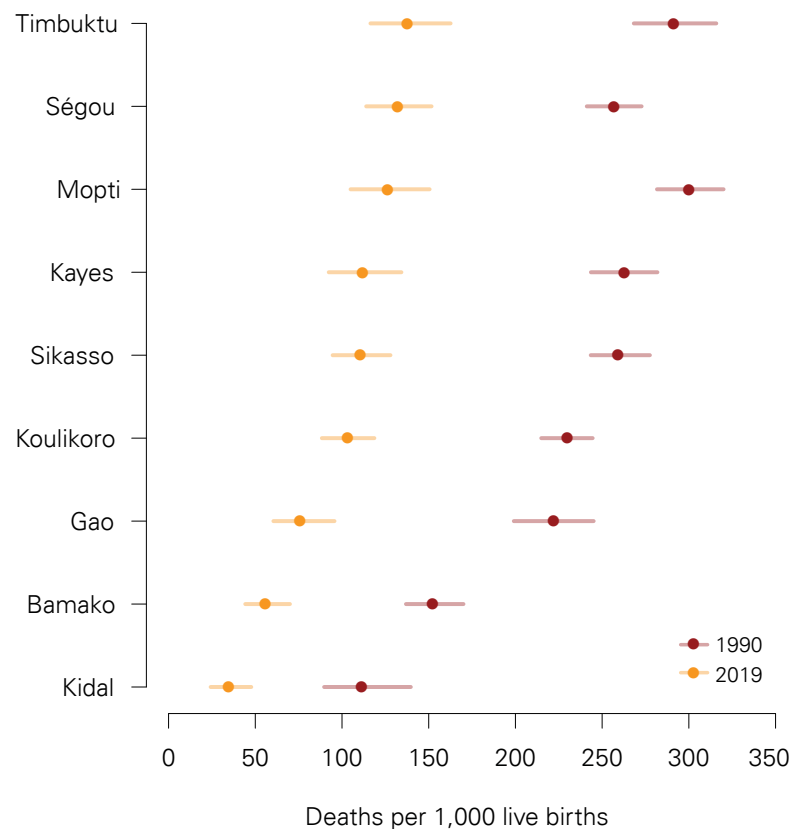


Percentage decline in under-five mortality rate at administrative level 2 in Mali, 1990–2019



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Mali, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 2.7 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 4 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Mali: Demographic and Health Survey 1995–1996; Demographic and Health Survey 2001; Demographic and Health Survey 2006; Demographic and Health Survey 2012–2013; Demographic and Health Survey 2018.

These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

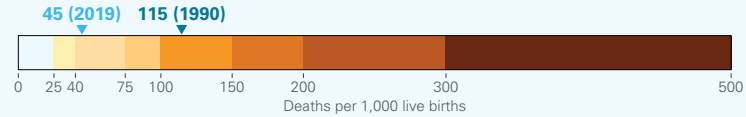
# MYANMAR

Administrative level 1  
(Region/State/Union  
Territory): **15**

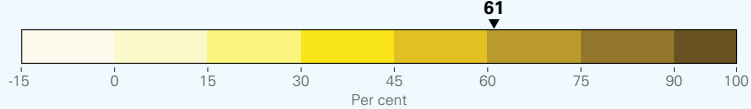
Administrative level 2  
(District): **63**

## National level

### Under-five mortality rate, 1990 and 2019

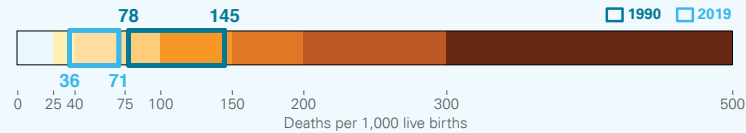


### Percentage decline in under-five mortality rate, 1990–2019

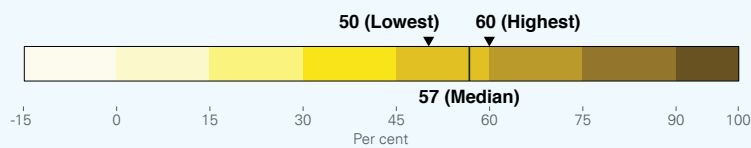


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

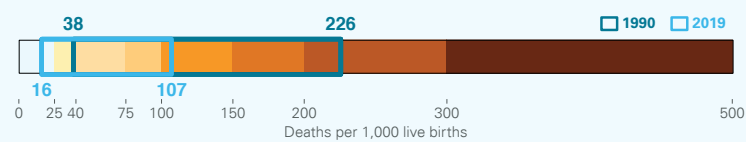


### Percentage decline in under-five mortality rate, 1990–2019 (range)

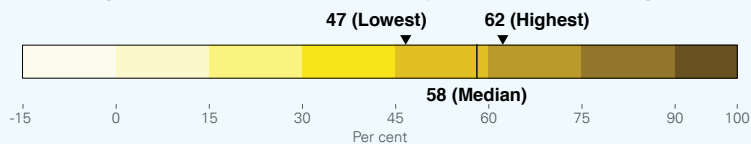


## Administrative level 2

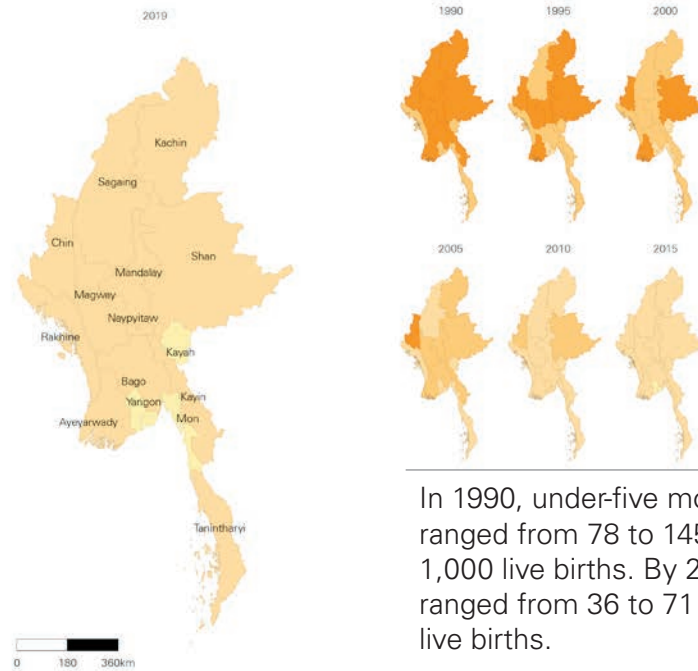
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

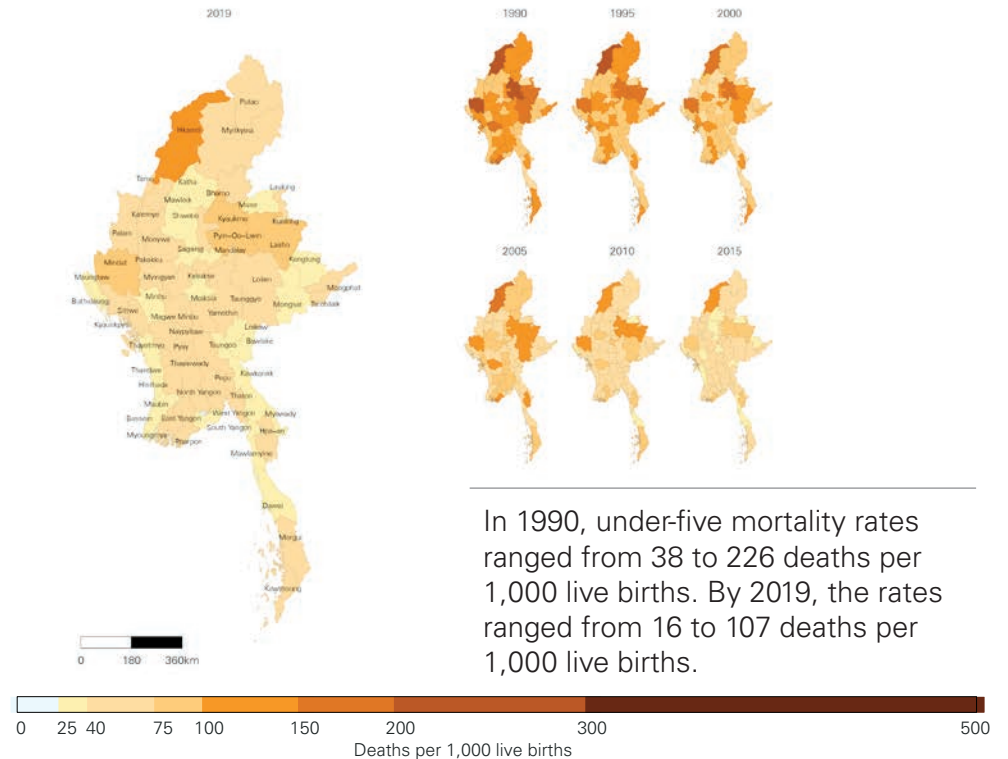


## Under-five mortality rate at administrative level 1 in Myanmar, 1990–2019



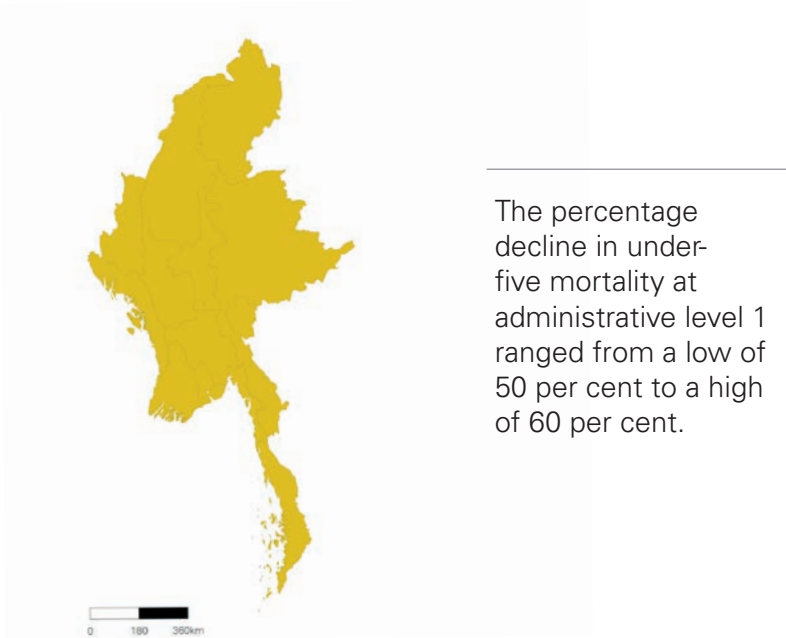
In 1990, under-five mortality rates ranged from 78 to 145 deaths per 1,000 live births. By 2019, the rates ranged from 36 to 71 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Myanmar, 1990–2019

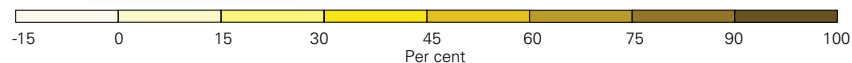
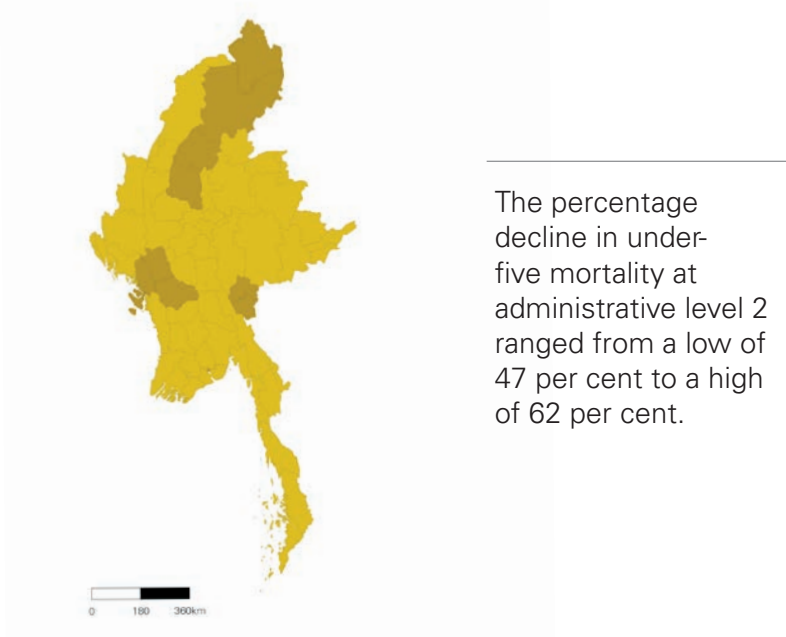


In 1990, under-five mortality rates ranged from 38 to 226 deaths per 1,000 live births. By 2019, the rates ranged from 16 to 107 deaths per 1,000 live births.

Percentage decline in under-five mortality rate at administrative level 1 in Myanmar, 1990–2019

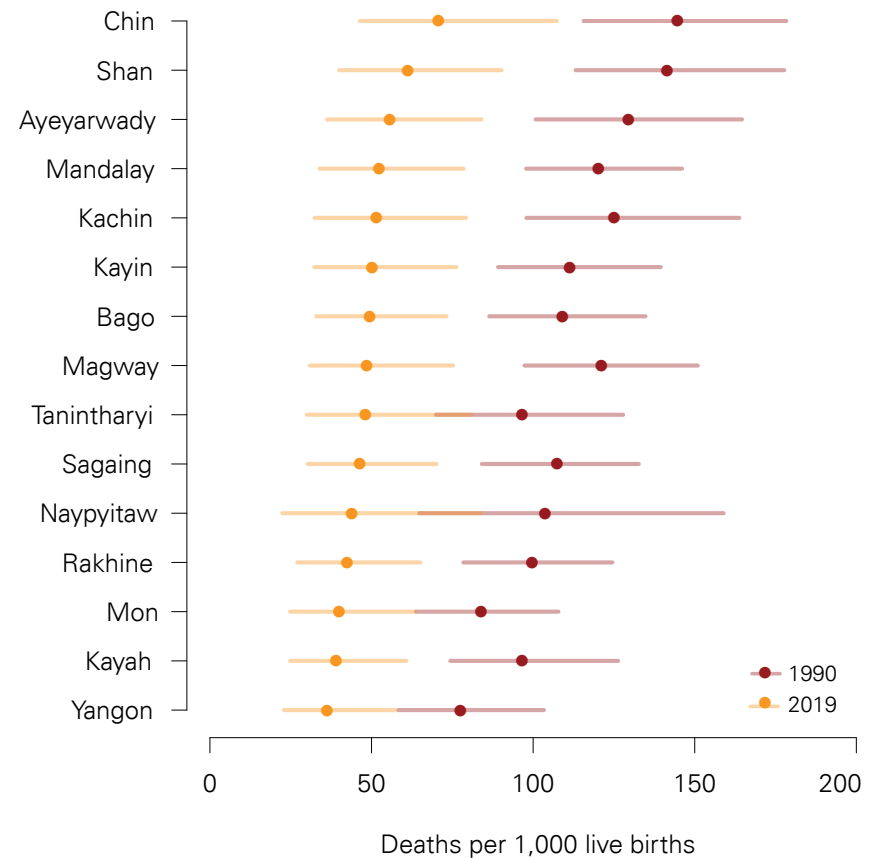


Percentage decline in under-five mortality rate at administrative level 2 in Myanmar, 1990–2019



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Myanmar, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.9 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.9 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Myanmar: Demographic and Health Survey 2015–2016.

These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(Region): **13**

Administrative level 2  
(Constituency): **107**

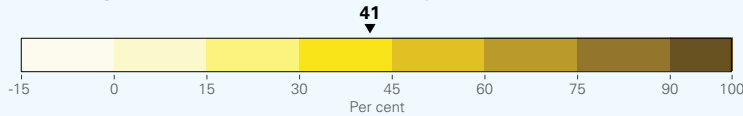
### National level

#### Under-five mortality rate, 1990 and 2019

42 (2019) 72 (1990)

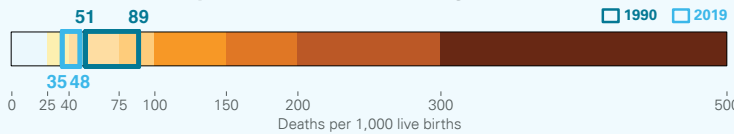


#### Percentage decline in under-five mortality rate, 1990–2019

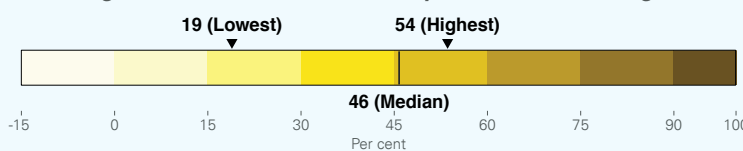


### Administrative level 1

#### Under-five mortality rate, 1990 and 2019 (range)

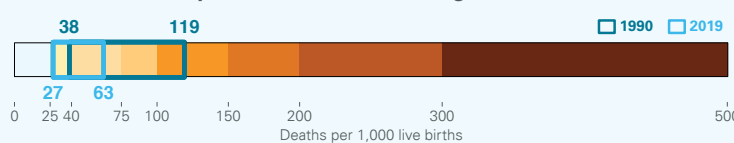


#### Percentage decline in under-five mortality rate, 1990–2019 (range)

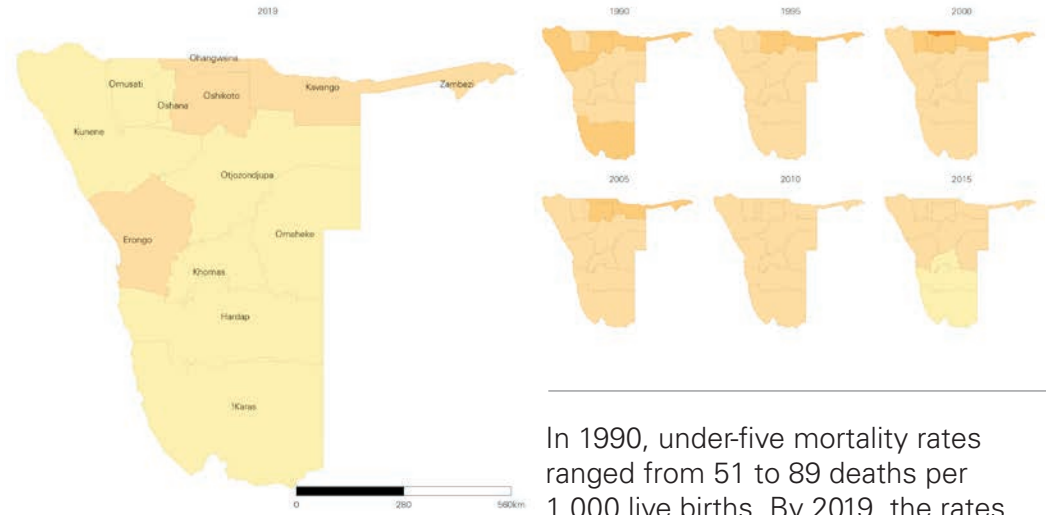
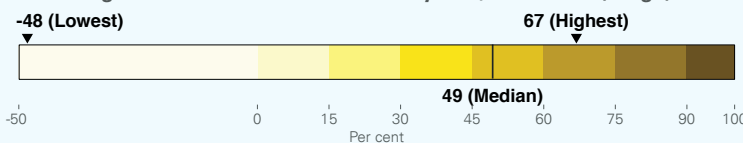


### Administrative level 2

#### Under-five mortality rate, 1990 and 2019 (range)

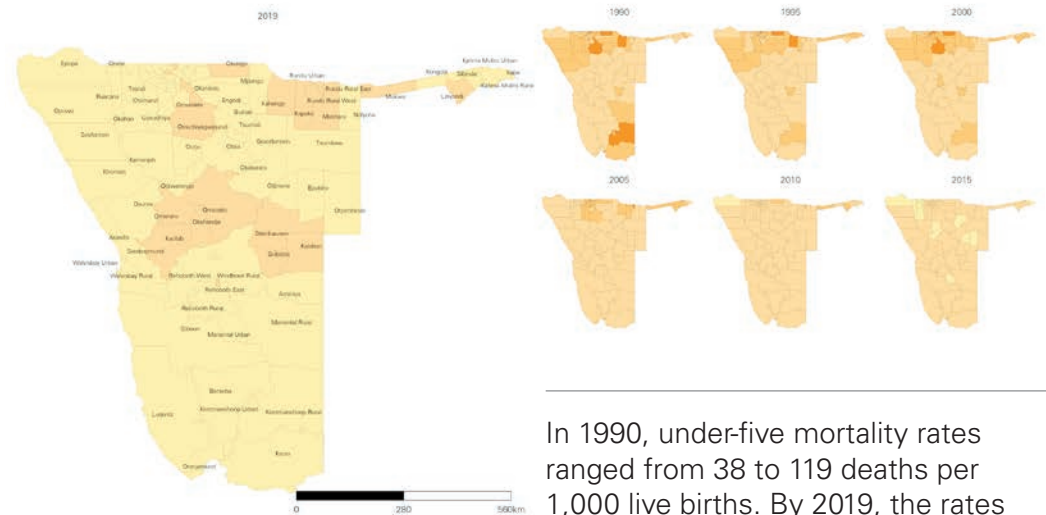


#### Percentage decline in under-five mortality rate, 1990–2019 (range)



In 1990, under-five mortality rates ranged from 51 to 89 deaths per 1,000 live births. By 2019, the rates ranged from 35 to 48 deaths per 1,000 live births.

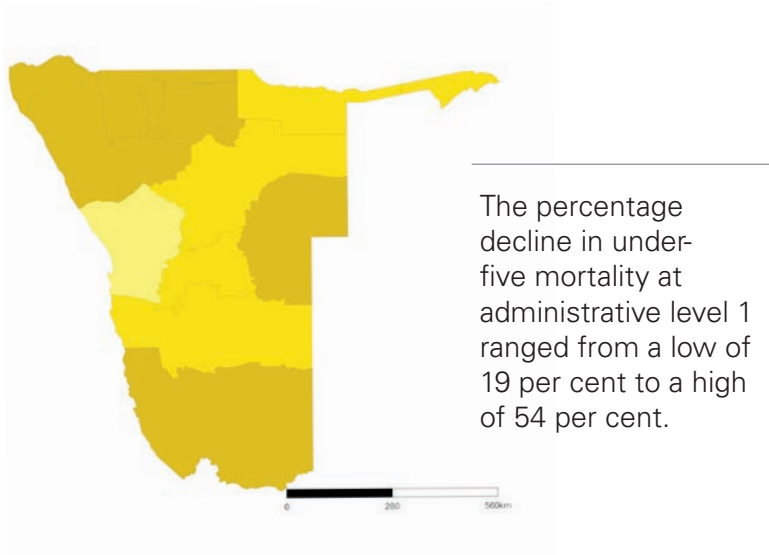
## Under-five mortality rate at administrative level 2 in Namibia, 1990–2019



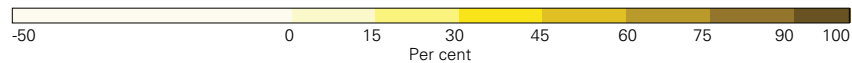
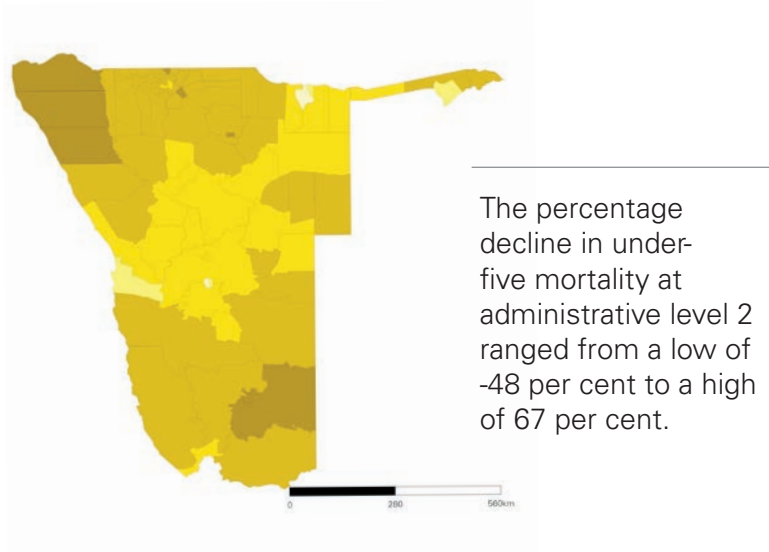
In 1990, under-five mortality rates ranged from 38 to 119 deaths per 1,000 live births. By 2019, the rates ranged from 27 to 63 deaths per 1,000 live births.



Percentage decline in under-five mortality rate at administrative level 1 in Namibia, 1990–2019

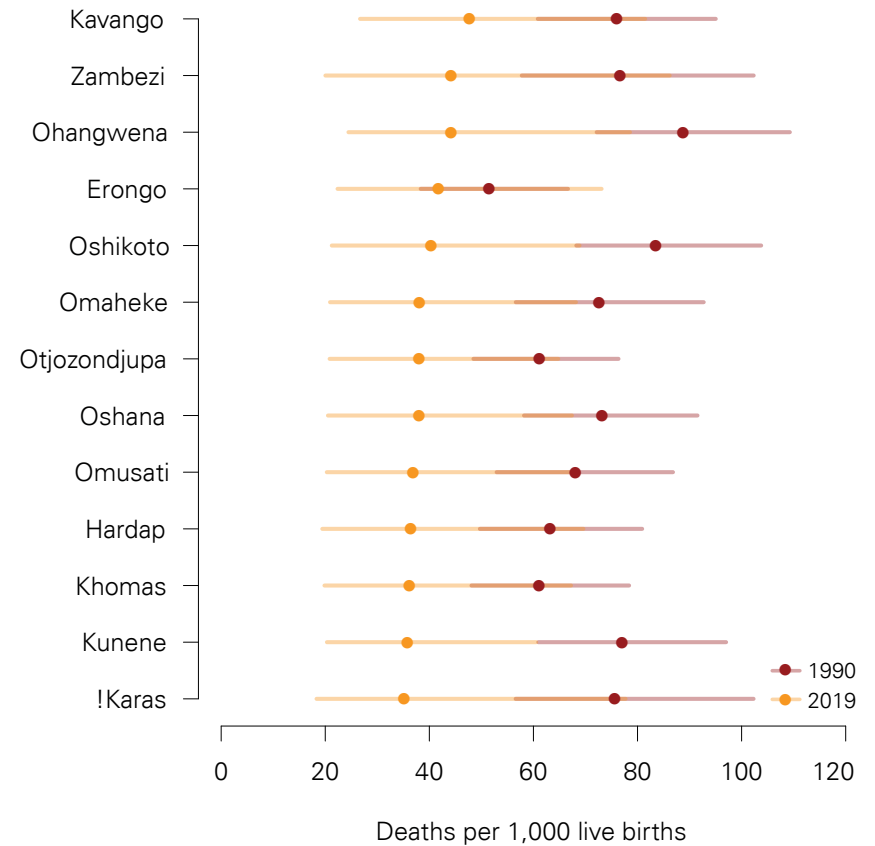


Percentage decline in under-five mortality rate at administrative level 2 in Namibia, 1990–2019



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Namibia, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.7 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.4 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

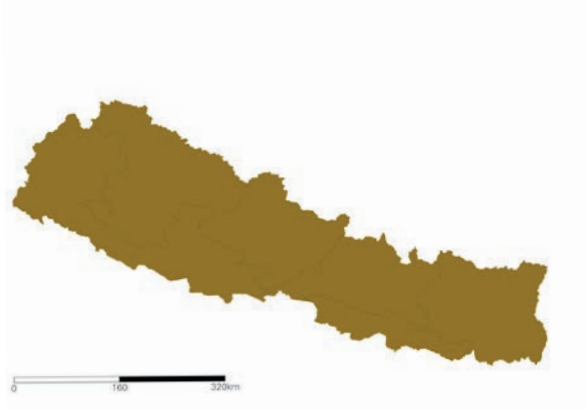
Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Namibia: Demographic and Health Survey 2000; Demographic and Health Survey 2006–2007; Demographic and Health Survey 2013.

These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

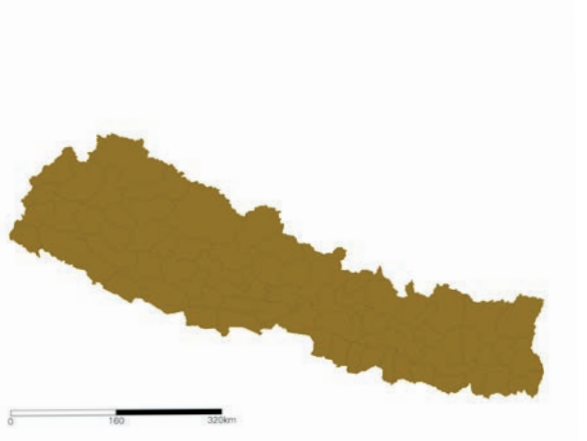


Percentage decline in under-five mortality rate at administrative level 1 in Nepal, 1990–2019

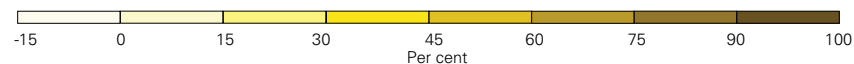


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 79 per cent to a high of 82 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Nepal, 1990–2019

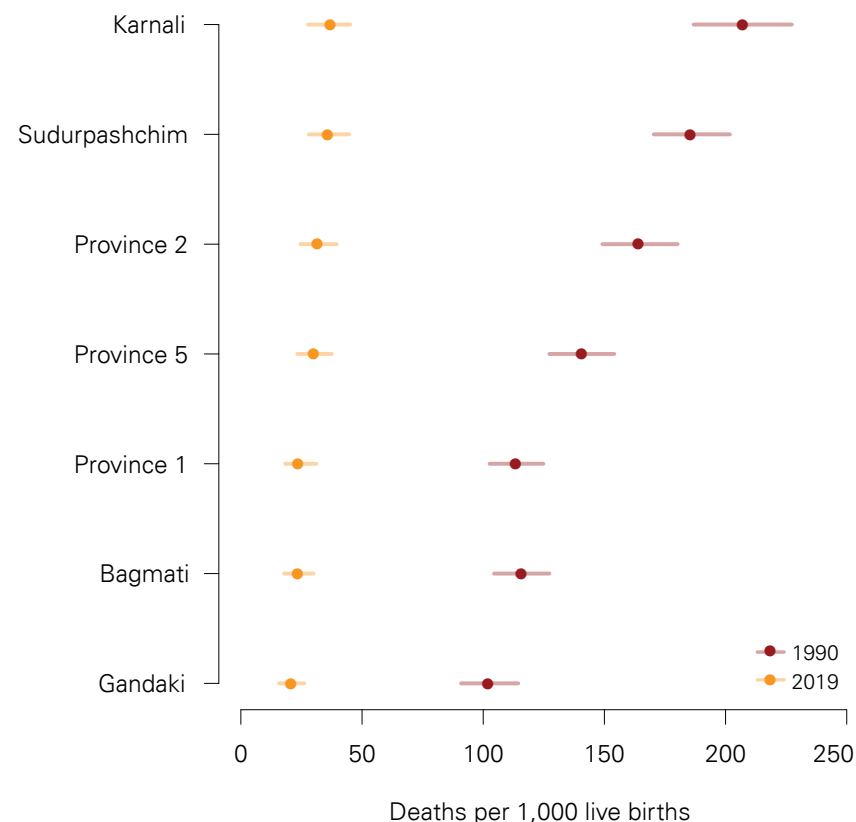


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 75 per cent to a high of 82 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Nepal, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 2 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.8 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on shapefiles from the UN Office for the Coordination of Humanitarian Affairs.

Data sources for Nepal: Demographic and Health Survey 2001; Demographic and Health Survey 2006; Demographic and Health Survey 2011; Demographic and Health Survey 2016.

These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

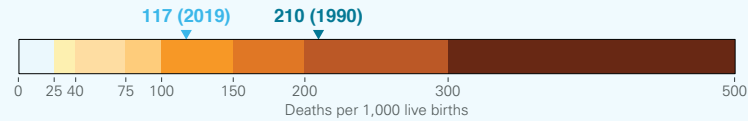
# NIGERIA

Administrative level 1  
(State/Federal Capital Territory): **37**

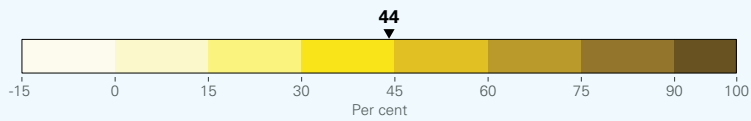
Administrative level 2: -

## National level

### Under-five mortality rate, 1990 and 2019

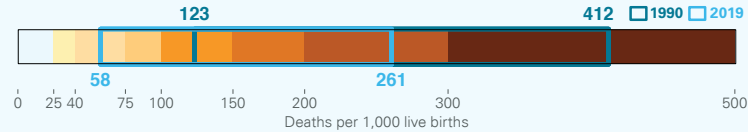


### Percentage decline in under-five mortality rate, 1990–2019

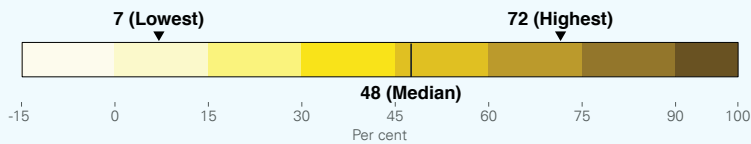


## Administrative level 1

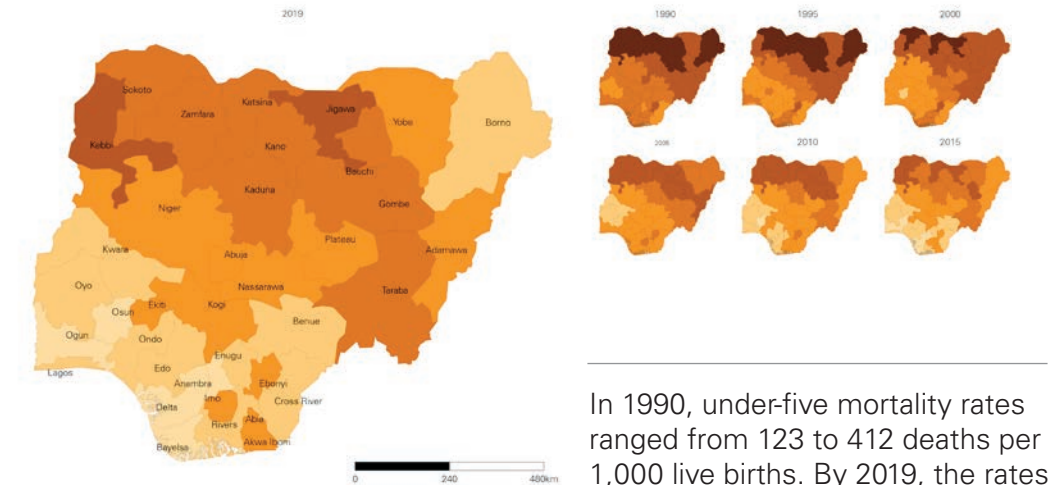
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)



## Under-five mortality rate at administrative level 1 in Nigeria, 1990–2019

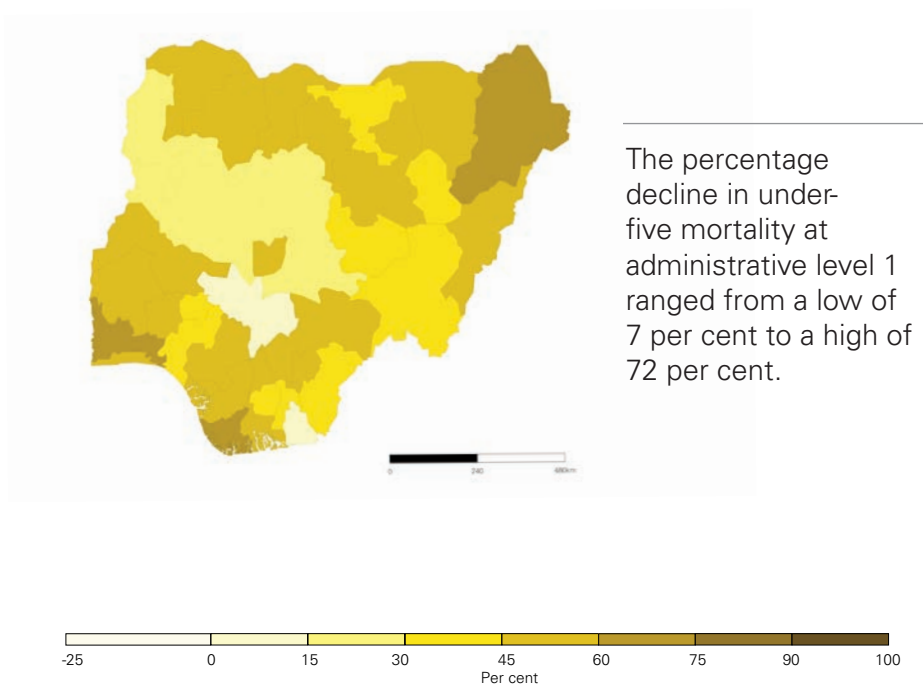


In 1990, under-five mortality rates ranged from 123 to 412 deaths per 1,000 live births. By 2019, the rates ranged from 58 to 261 deaths per 1,000 live births.



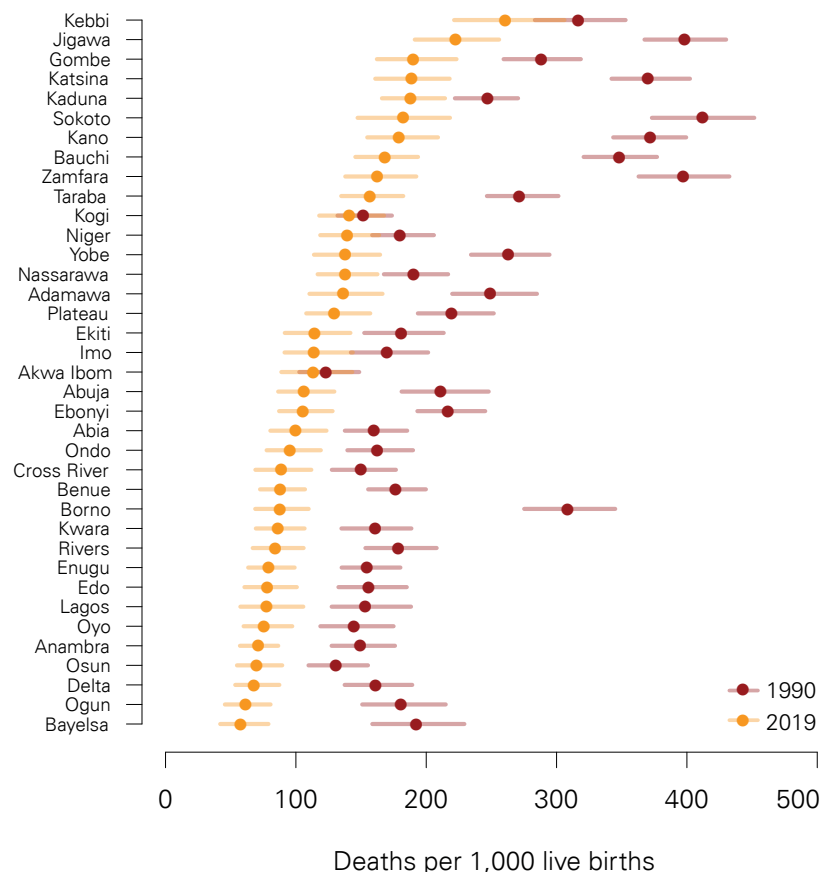


Percentage decline in under-five mortality rate at administrative level 1 in Nigeria, 1990–2019



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Nigeria, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 3.3 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 4.5 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Nigeria: Demographic and Health Survey 1990; Demographic and Health Survey 2003; Demographic and Health Survey 2008; Demographic and Health Survey 2013; Demographic and Health Survey 2018.

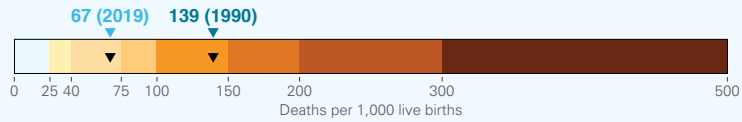
These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(Province/Federal  
territory/Territory): **6**

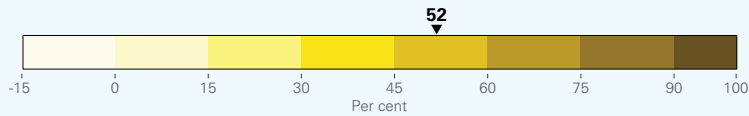
Administrative level 2: -

## National level

### Under-five mortality rate, 1990 and 2019

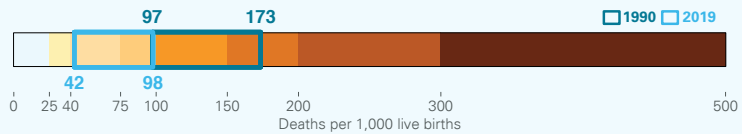


### Percentage decline in under-five mortality rate, 1990–2019

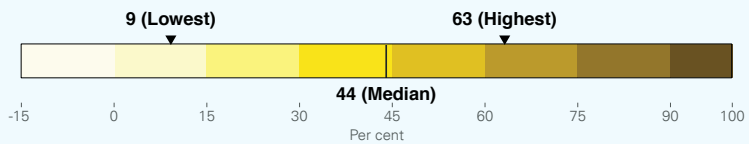


## Administrative level 1

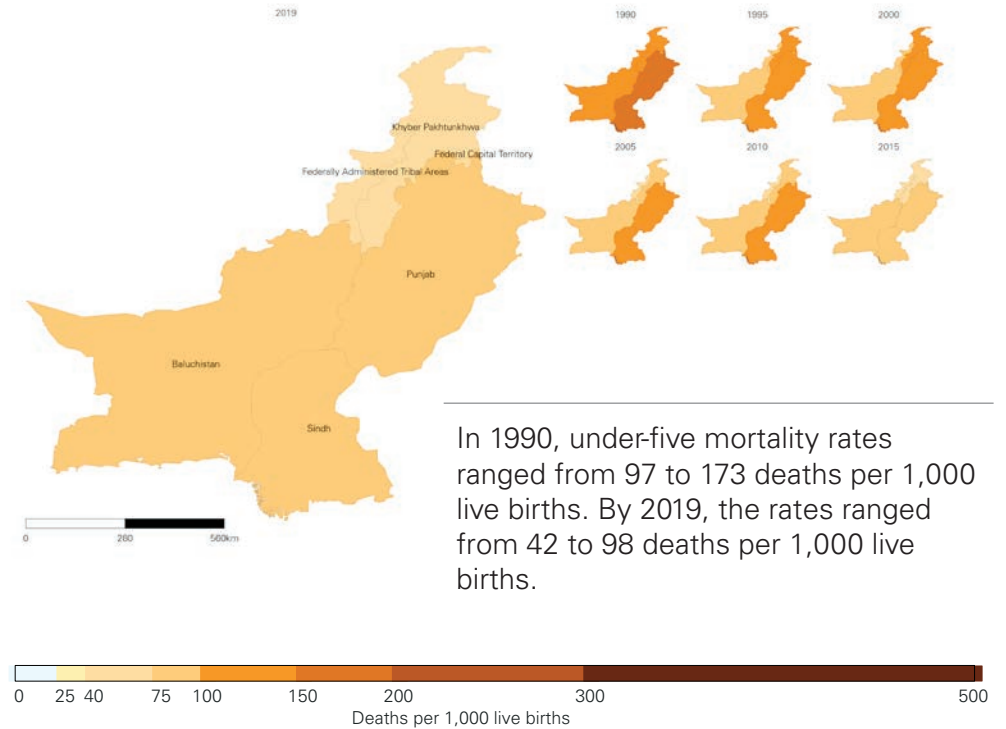
### Under-five mortality rate, 1990 and 2019 (range)



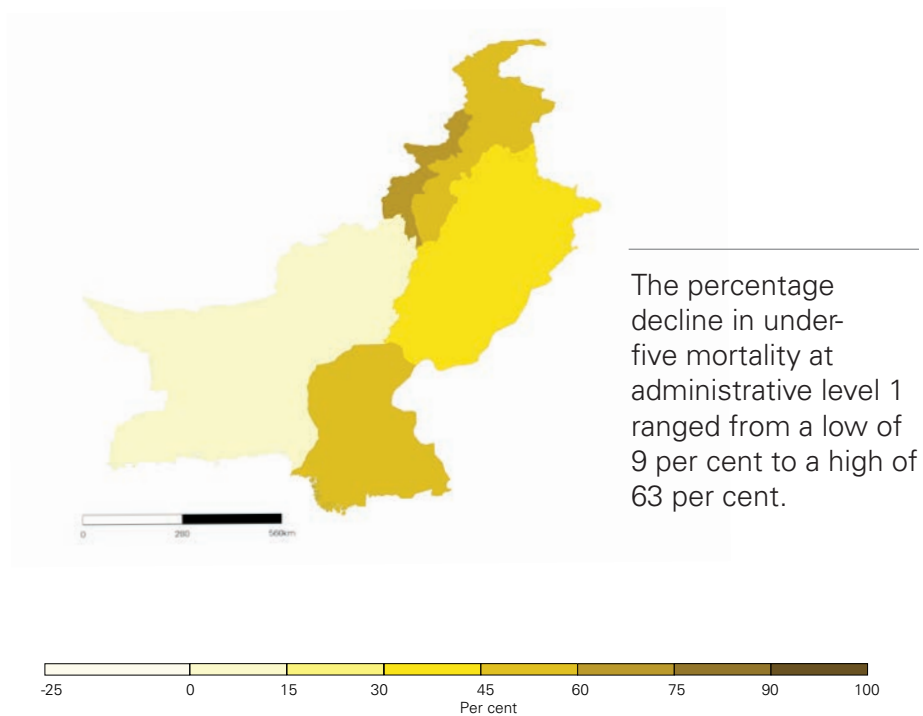
### Percentage decline in under-five mortality rate, 1990–2019 (range)



## Under-five mortality rate at administrative level 1 in Pakistan, 1990–2019

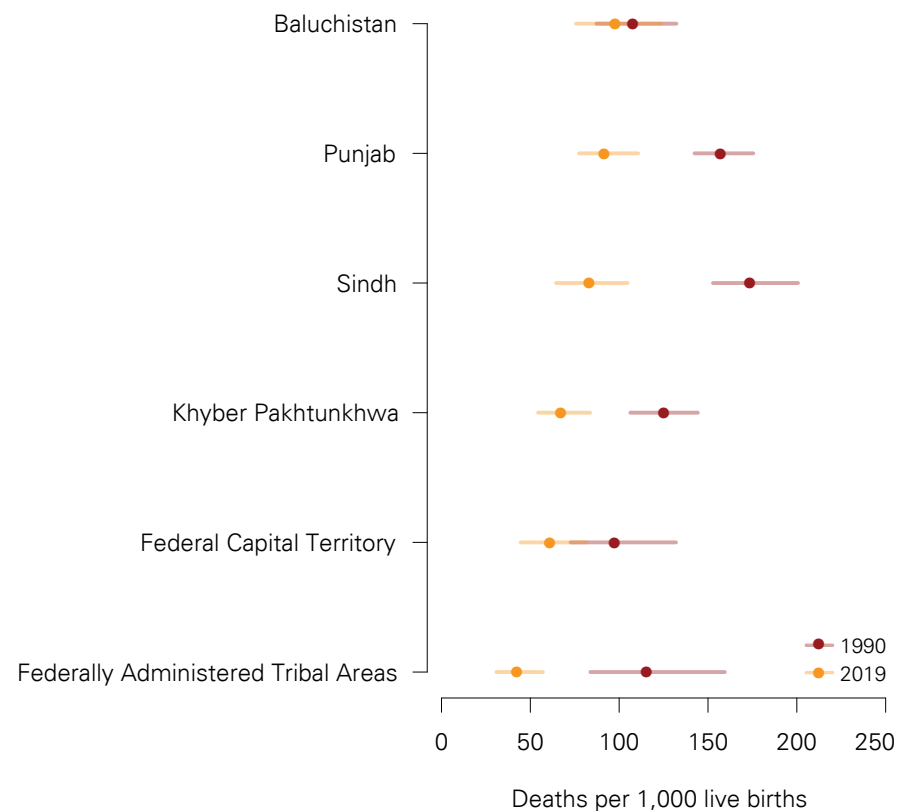


## Percentage decline in under-five mortality rate at administrative level 1 in Pakistan, 1990–2019



## Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Pakistan, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.8 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 2.3 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Pakistan: Demographic and Health Survey 2006–2007; Demographic and Health Survey 2017–2018.

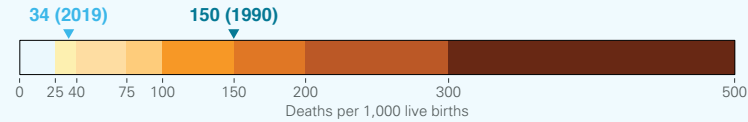
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Administrative level 1  
(Province): **5**

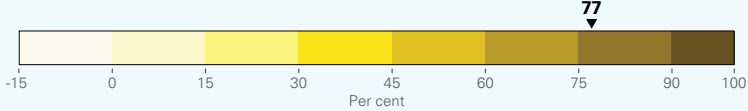
Administrative level 2  
(District): **30**

## National level

### Under-five mortality rate, 1990 and 2019

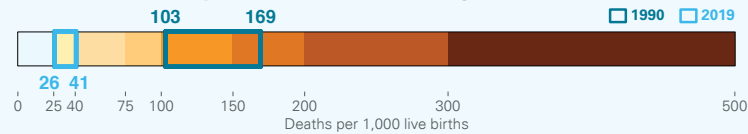


### Percentage decline in under-five mortality rate, 1990–2019

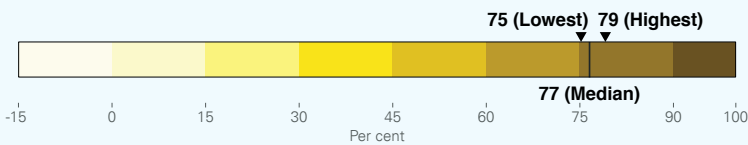


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

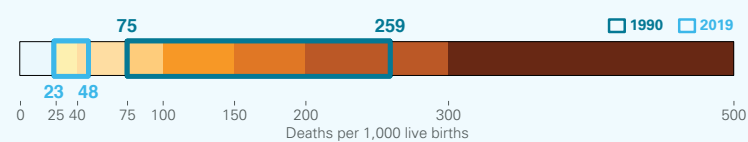


### Percentage decline in under-five mortality rate, 1990–2019 (range)

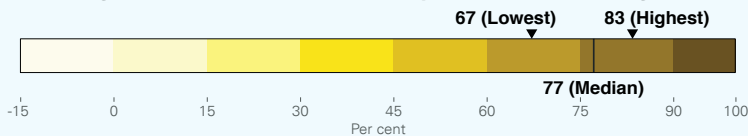


## Administrative level 2

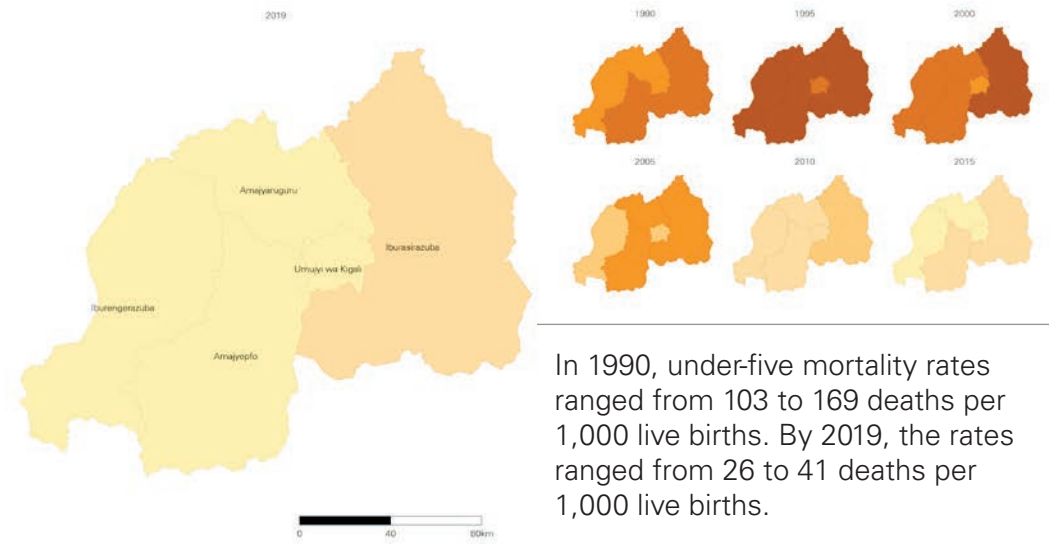
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

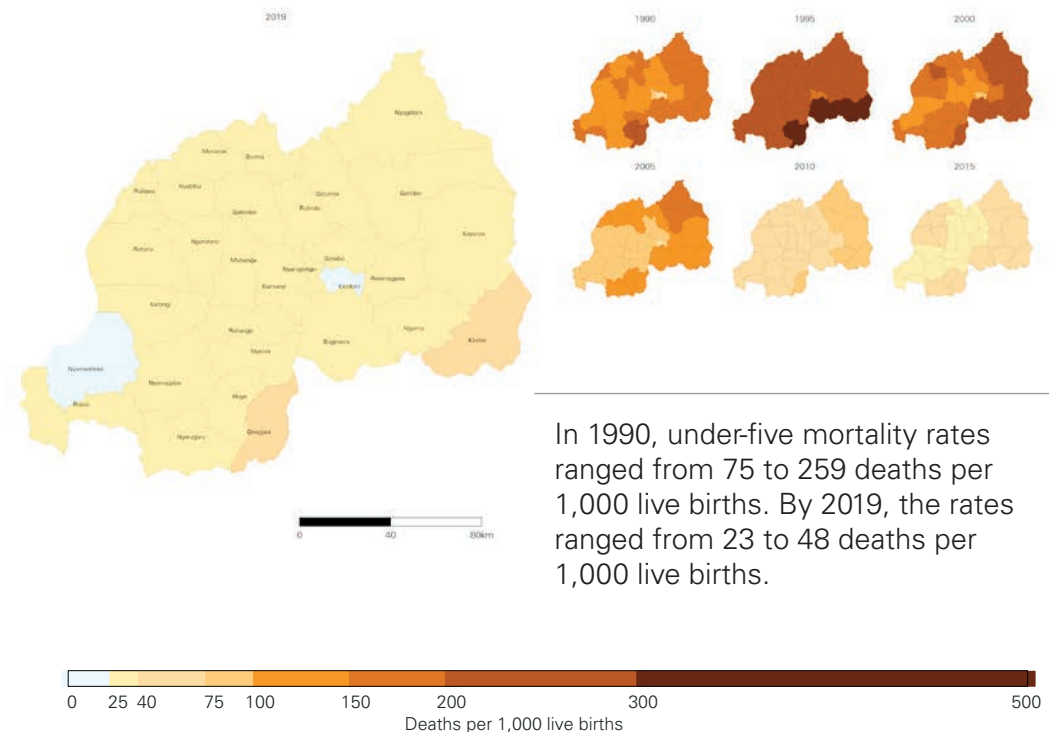


## Under-five mortality rate at administrative level 1 in Rwanda, 1990–2019



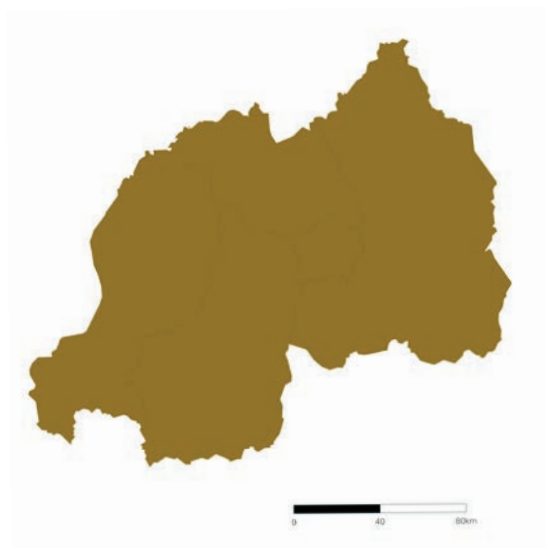
In 1990, under-five mortality rates ranged from 103 to 169 deaths per 1,000 live births. By 2019, the rates ranged from 26 to 41 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Rwanda, 1990–2019



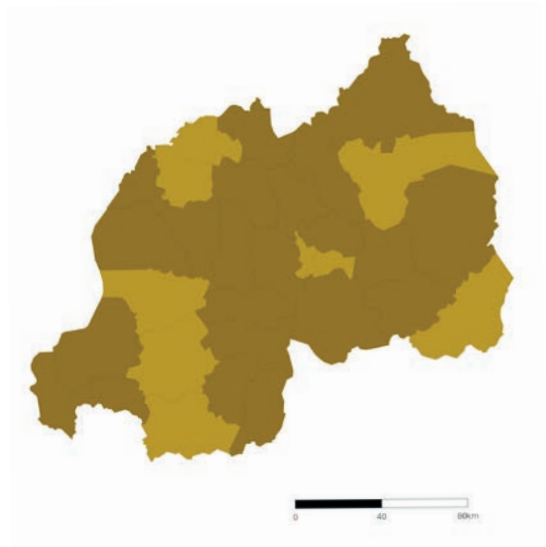
In 1990, under-five mortality rates ranged from 75 to 259 deaths per 1,000 live births. By 2019, the rates ranged from 23 to 48 deaths per 1,000 live births.

Percentage decline in under-five mortality rate at administrative level 1 in Rwanda, 1990–2019

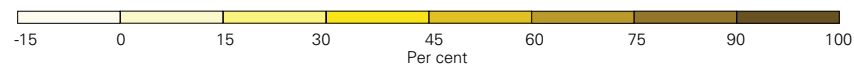


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 75 per cent to a high of 79 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Rwanda, 1990–2019

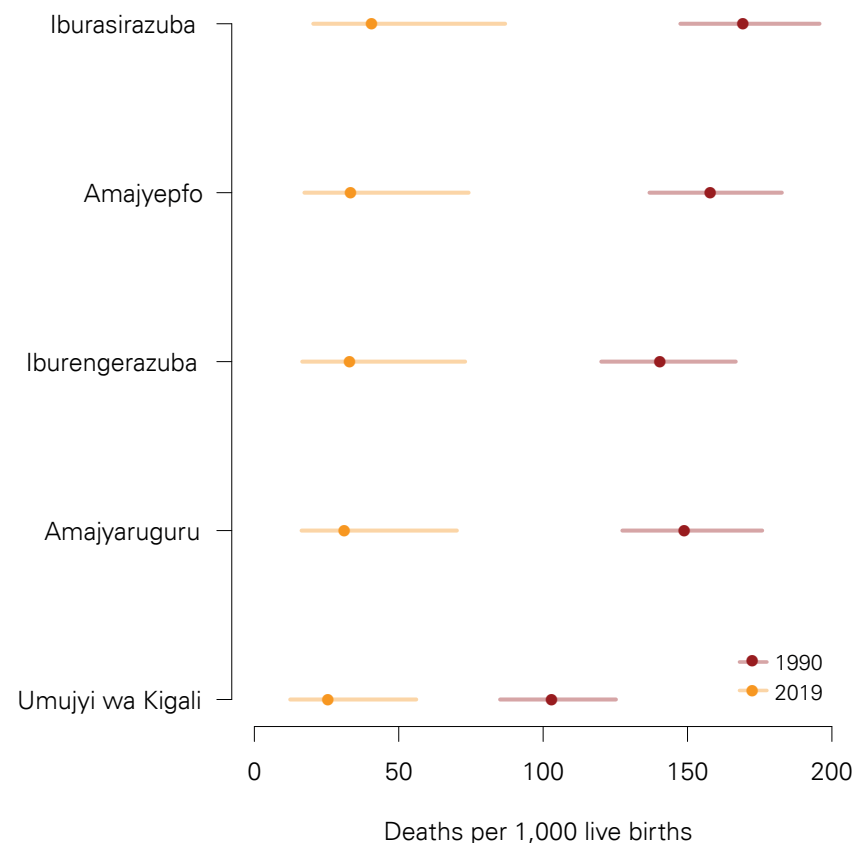


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 67 per cent to a high of 83 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Rwanda, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.6 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.6 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Rwanda: Demographic and Health Survey 2005; Demographic and Health Survey 2007–2008; Demographic and Health Survey 2010; Demographic and Health Survey 2014–2015.

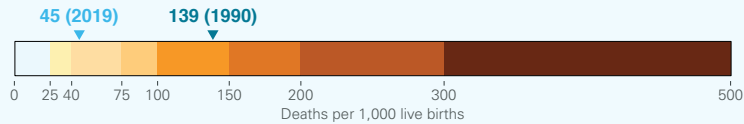
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Administrative level 1  
(Région): **14**

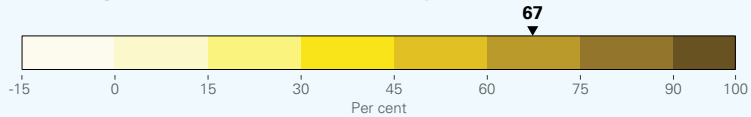
Administrative level 2  
(Département): **45**

### National level

#### Under-five mortality rate, 1990 and 2019

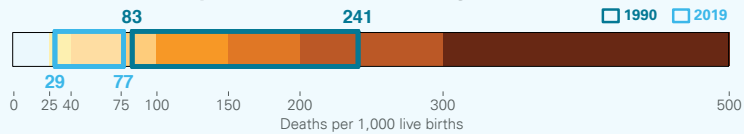


#### Percentage decline in under-five mortality rate, 1990–2019

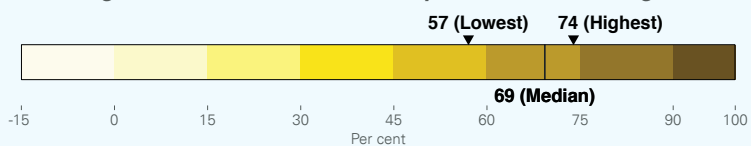


### Administrative level 1

#### Under-five mortality rate, 1990 and 2019 (range)

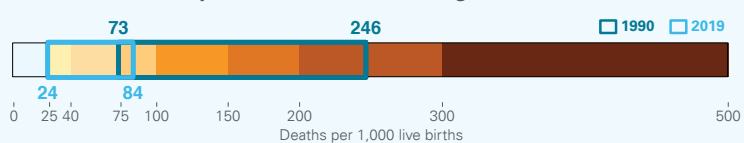


#### Percentage decline in under-five mortality rate, 1990–2019 (range)

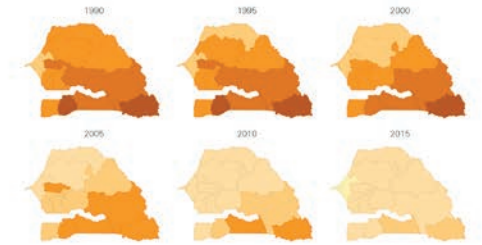
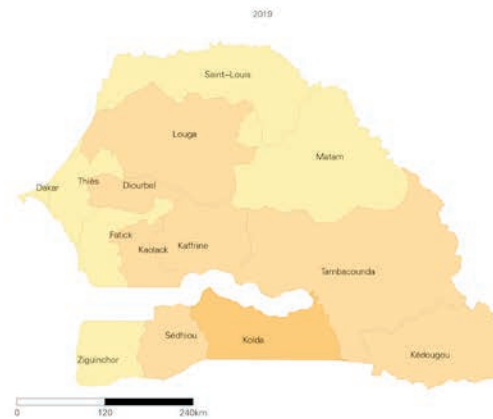
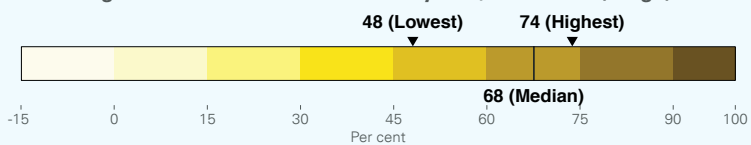


### Administrative level 2

#### Under-five mortality rate, 1990 and 2019 (range)

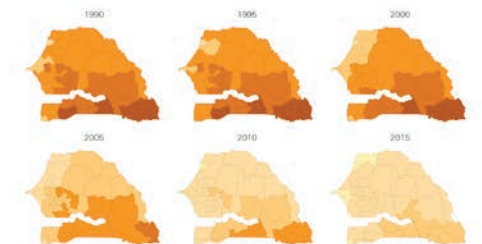
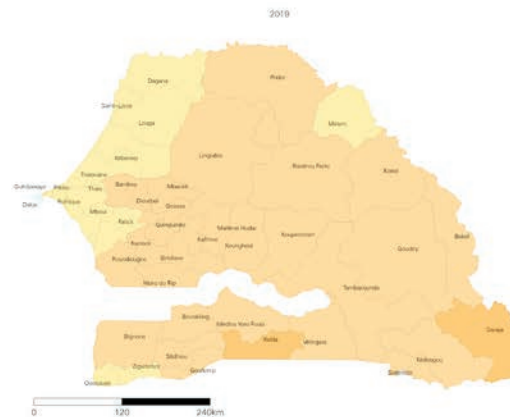


#### Percentage decline in under-five mortality rate, 1990–2019 (range)



In 1990, under-five mortality rates ranged from 83 to 241 deaths per 1,000 live births. By 2019, the rates ranged from 29 to 77 deaths per 1,000 live births.

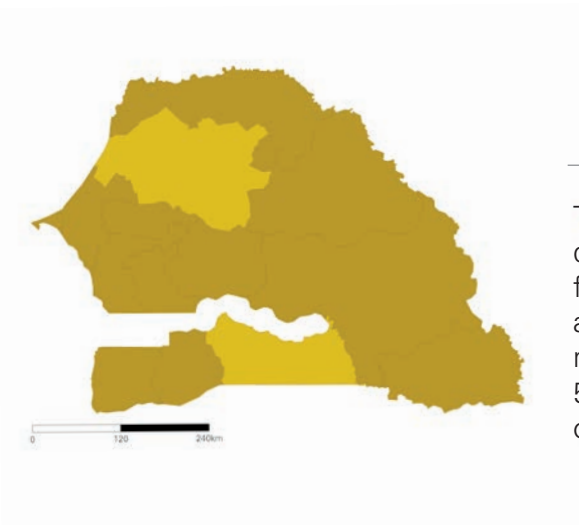
## Under-five mortality rate at administrative level 2 in Senegal, 1990–2019



In 1990, under-five mortality rates ranged from 73 to 246 deaths per 1,000 live births. By 2019, the rates ranged from 24 to 84 deaths per 1,000 live births.

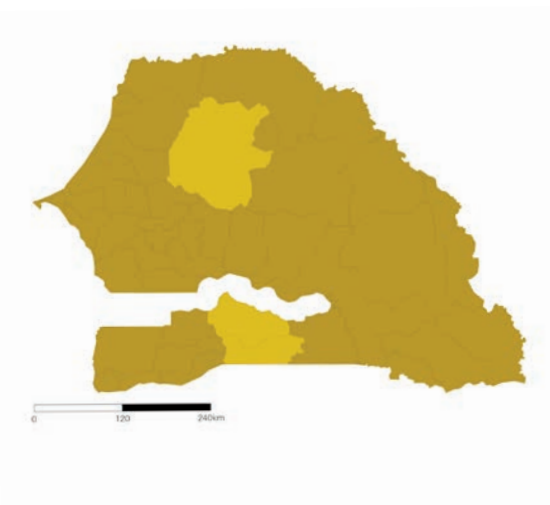


Percentage decline in under-five mortality rate at administrative level 1 in Senegal, 1990–2019

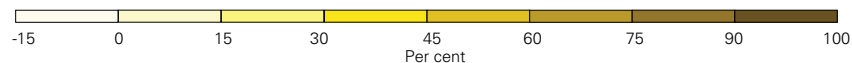


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 57 per cent to a high of 74 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Senegal, 1990–2019

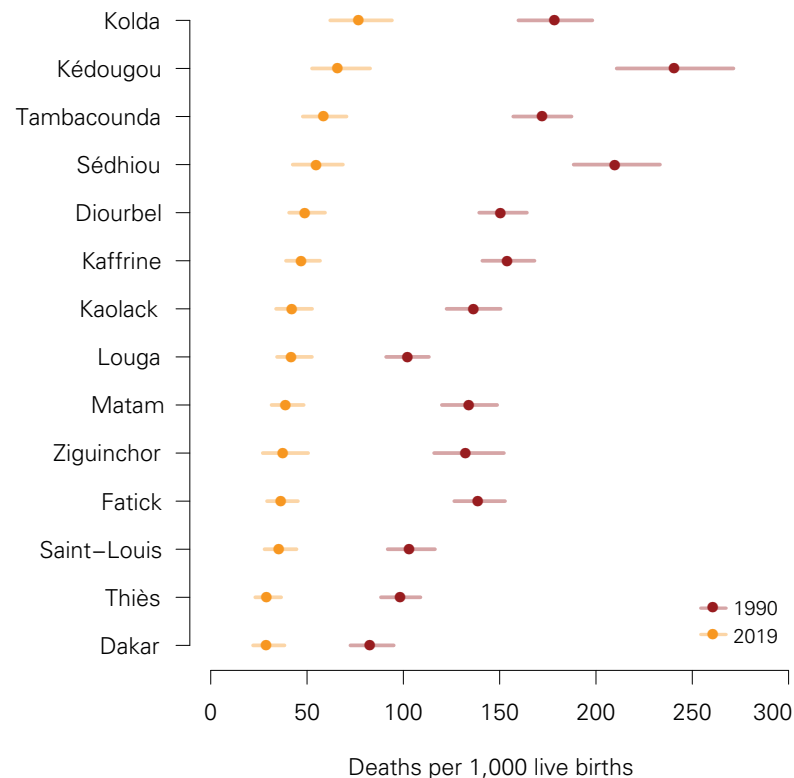


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 48 per cent to a high of 74 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Senegal, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 2.9 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 2.7 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Senegal: Demographic and Health Survey 1992–1993; Demographic and Health Survey 1997; Demographic and Health Survey 2005; Demographic and Health Survey 2010–2011; Demographic and Health Survey 2012–2013; Demographic and Health Survey 2014; Demographic and Health Survey 2015; Demographic and Health Survey 2016; Demographic and Health Survey 2019.

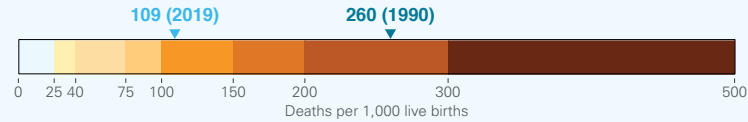
These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(Province/Area): **5**

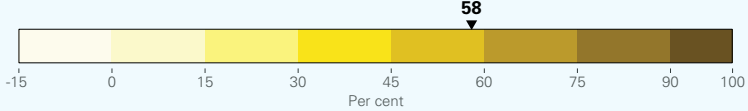
Administrative level 2  
(District): **16**

## National level

### Under-five mortality rate, 1990 and 2019

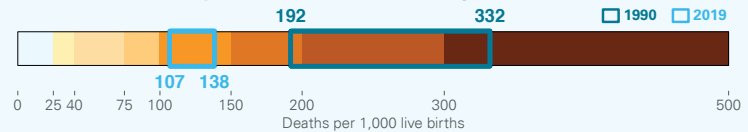


### Percentage decline in under-five mortality rate, 1990–2019

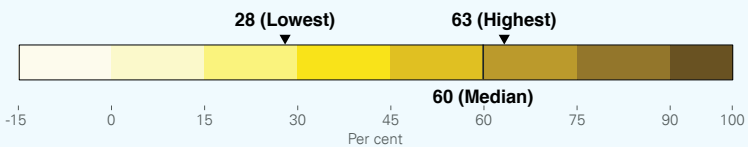


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

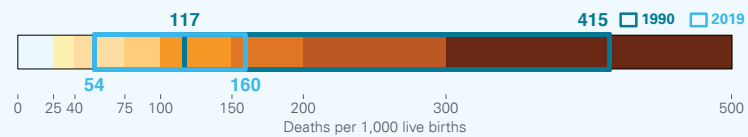


### Percentage decline in under-five mortality rate, 1990–2019 (range)

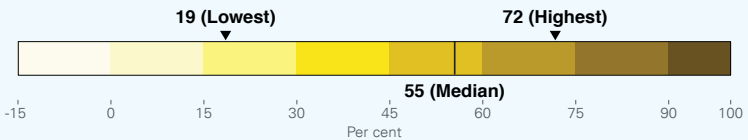


## Administrative level 2

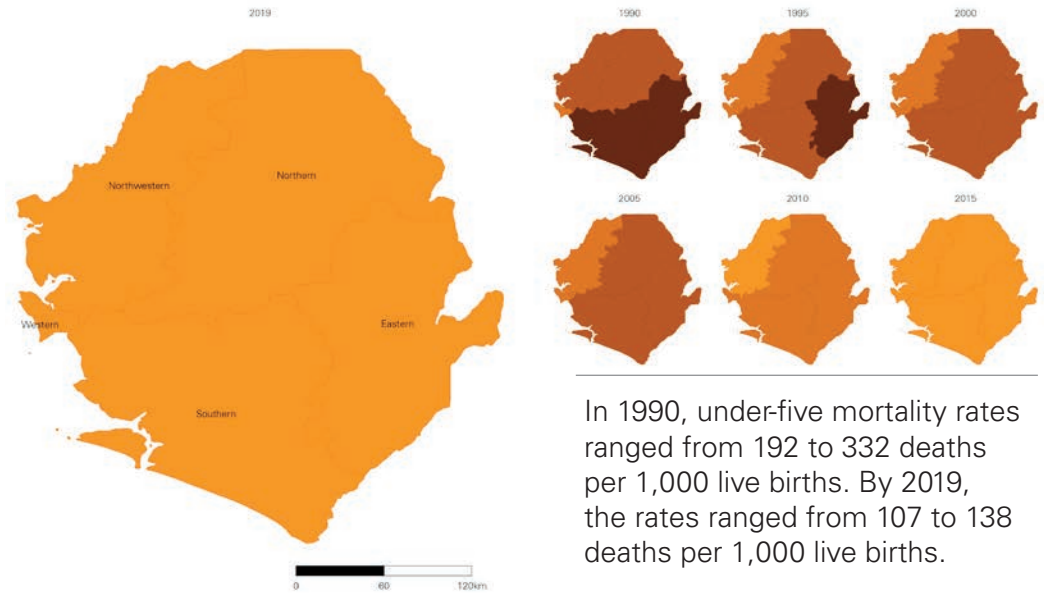
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

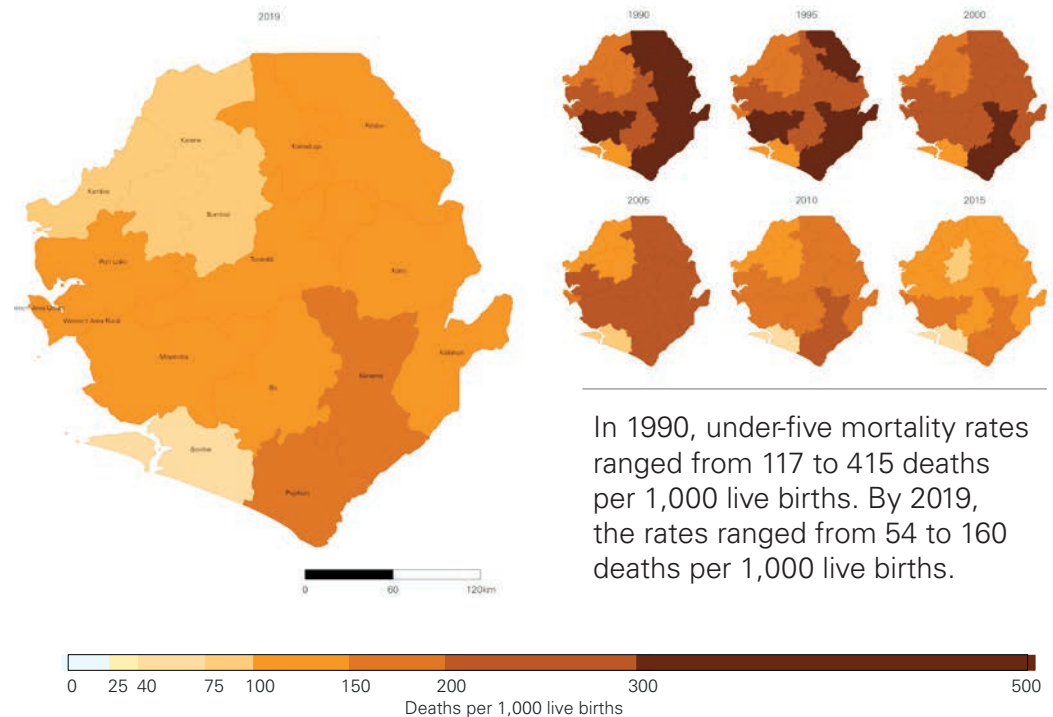


## Under-five mortality rate at administrative level 1 in Sierra Leone, 1990–2019



In 1990, under-five mortality rates ranged from 192 to 332 deaths per 1,000 live births. By 2019, the rates ranged from 107 to 138 deaths per 1,000 live births.

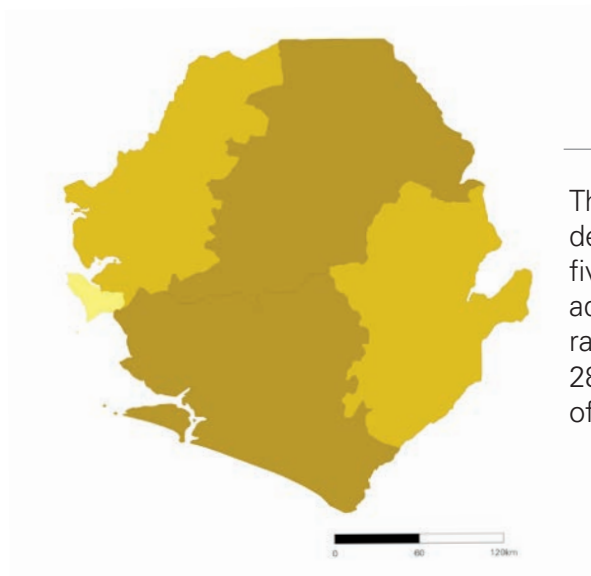
## Under-five mortality rate at administrative level 2 in Sierra Leone, 1990–2019



In 1990, under-five mortality rates ranged from 117 to 415 deaths per 1,000 live births. By 2019, the rates ranged from 54 to 160 deaths per 1,000 live births.

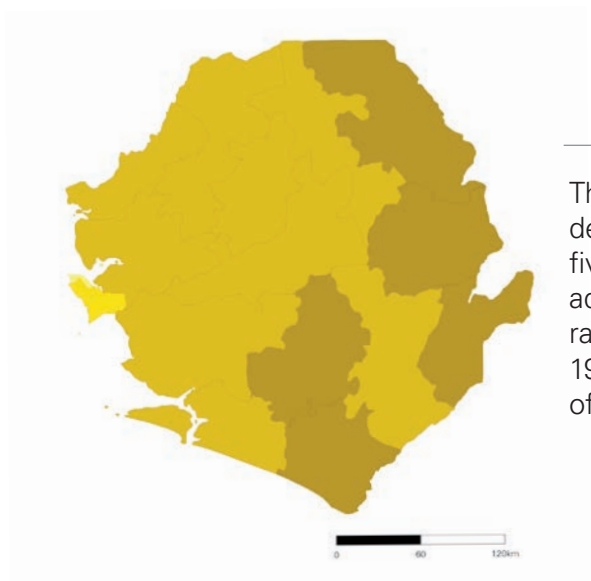


Percentage decline in under-five mortality rate at administrative level 1 in Sierra Leone, 1990–2019

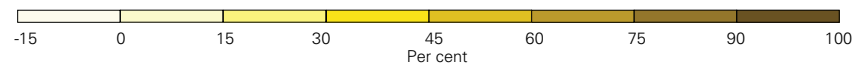


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 28 per cent to a high of 63 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Sierra Leone, 1990–2019

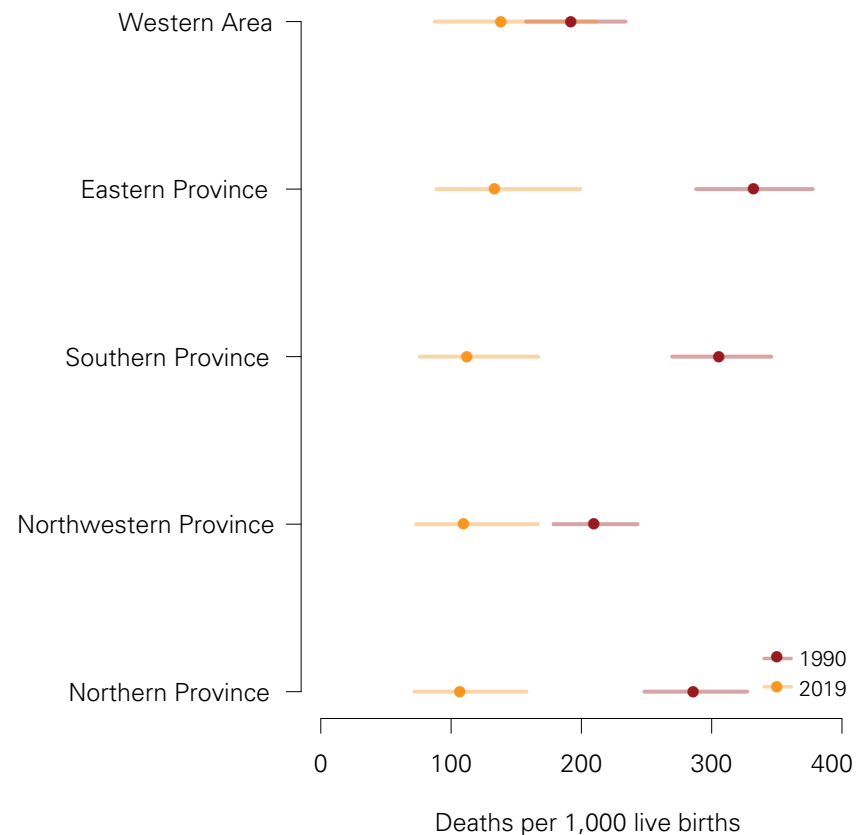


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 19 per cent to a high of 72 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Sierra Leone, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.7 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.3 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on shapefiles provided during the country consultation process.

Data sources for Sierra Leone: Demographic and Health Survey 2013.

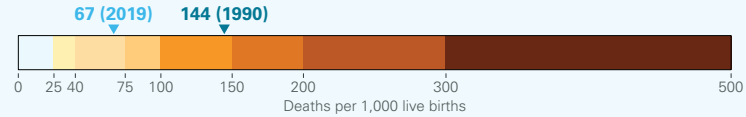
These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(Région): **5**

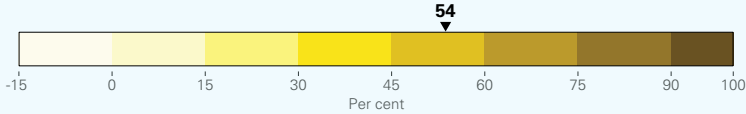
Administrative level 2: -

## National level

### Under-five mortality rate, 1990 and 2019

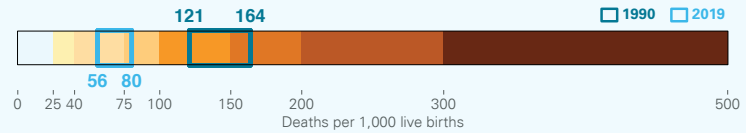


### Percentage decline in under-five mortality rate, 1990–2019

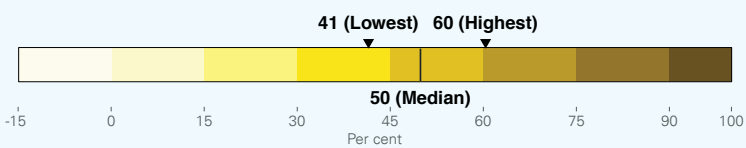


## Administrative level 1

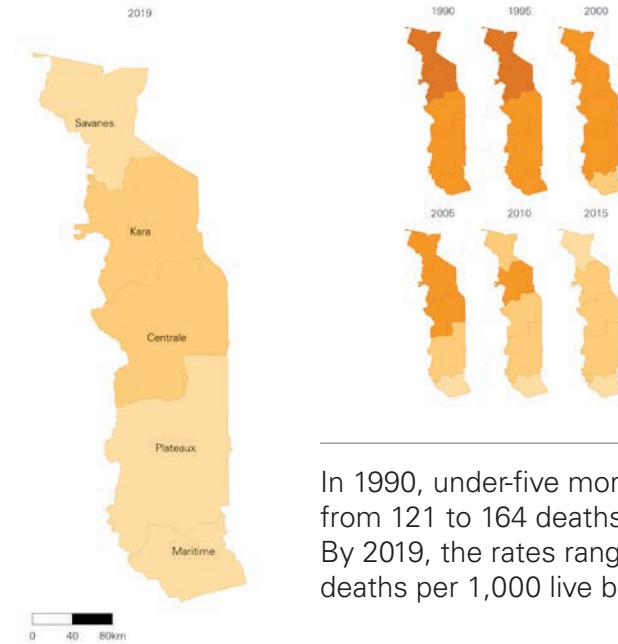
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)



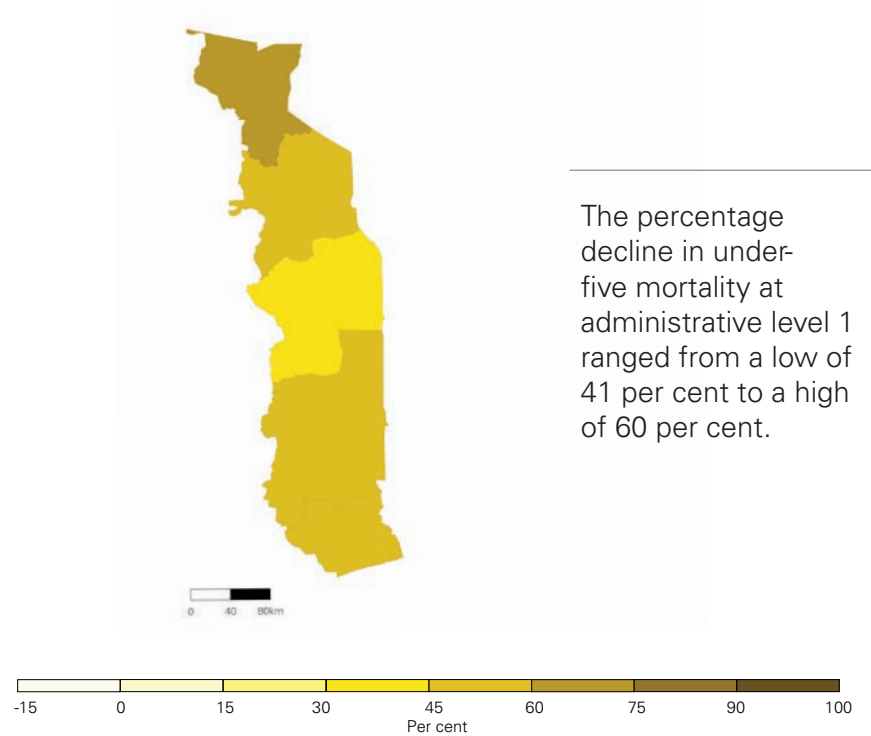
## Under-five mortality rate at administrative level 1 in Togo, 1990–2019



In 1990, under-five mortality rates ranged from 121 to 164 deaths per 1,000 live births. By 2019, the rates ranged from 56 to 80 deaths per 1,000 live births.

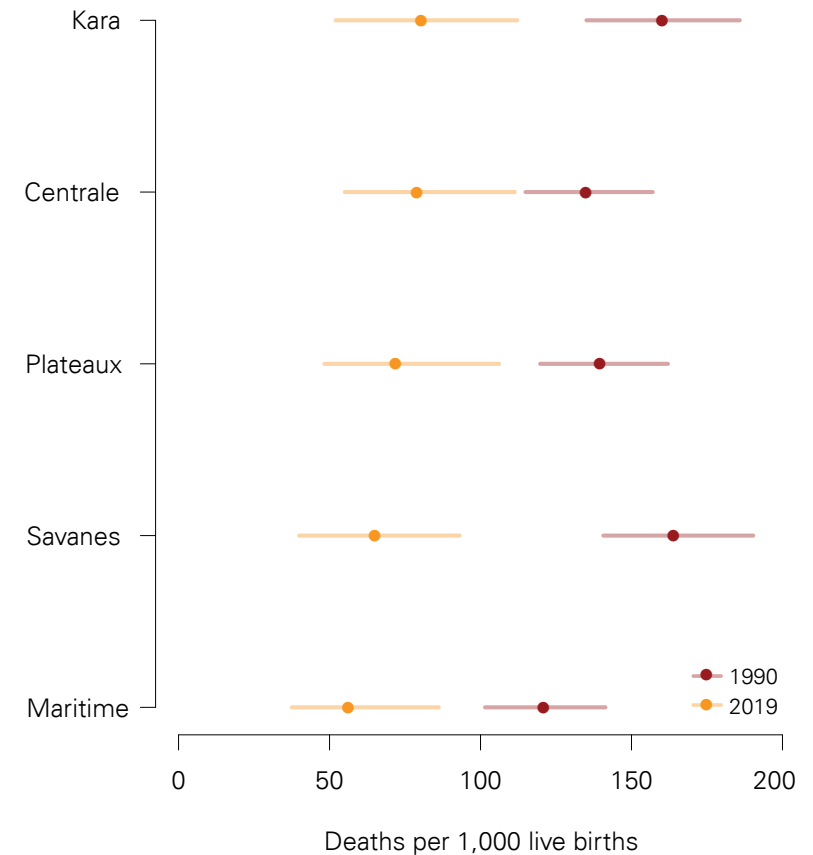


Percentage decline in under-five mortality rate at administrative level 1 in Togo, 1990–2019



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Togo, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.4 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.4 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Togo: Demographic and Health Survey 1998; Demographic and Health Survey 2013–2014.

These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

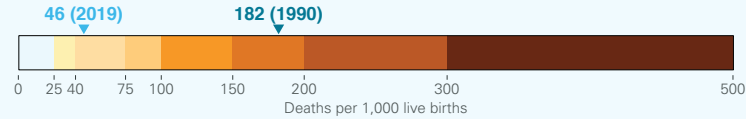
# UGANDA

Administrative level 1  
(Region): 4

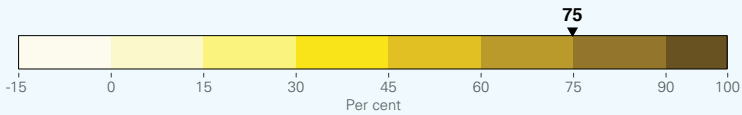
Administrative level 2  
(District): 135

## National level

### Under-five mortality rate, 1990 and 2019

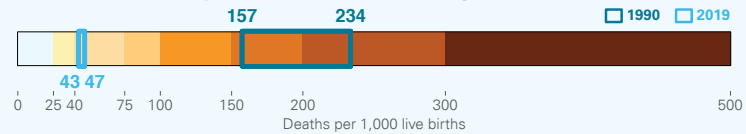


### Percentage decline in under-five mortality rate, 1990–2019

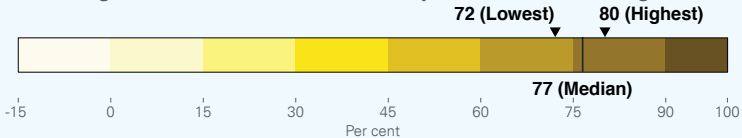


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

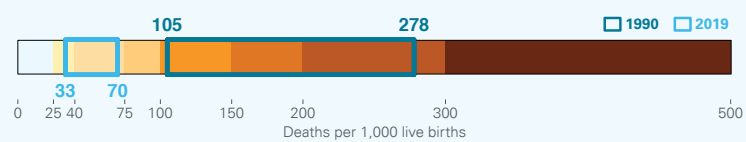


### Percentage decline in under-five mortality rate, 1990–2019 (range)

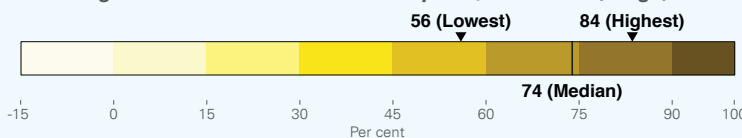


## Administrative level 2

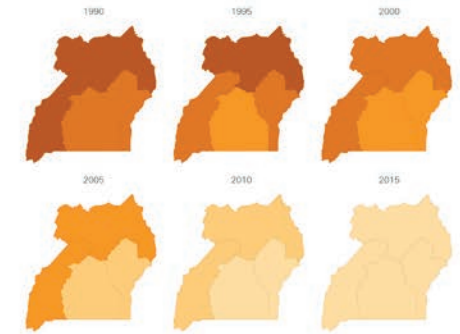
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

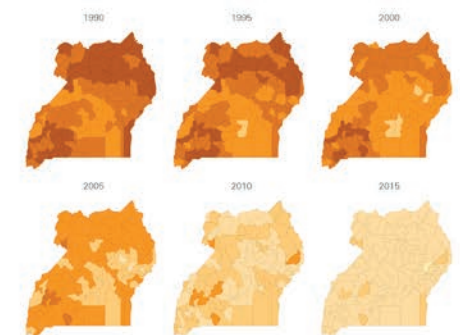


## Under-five mortality rate at administrative level 1 in Uganda, 1990–2019



In 1990, under-five mortality rates ranged from 157 to 234 deaths per 1,000 live births. By 2019, the rates ranged from 43 to 47 deaths per 1,000 live births.

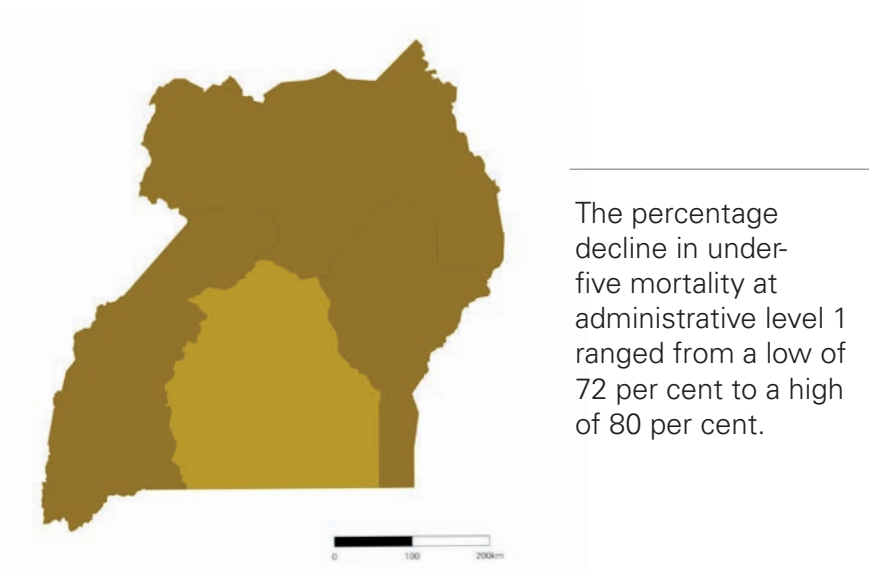
## Under-five mortality rate at administrative level 2 in Uganda, 1990–2019



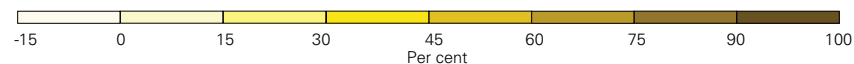
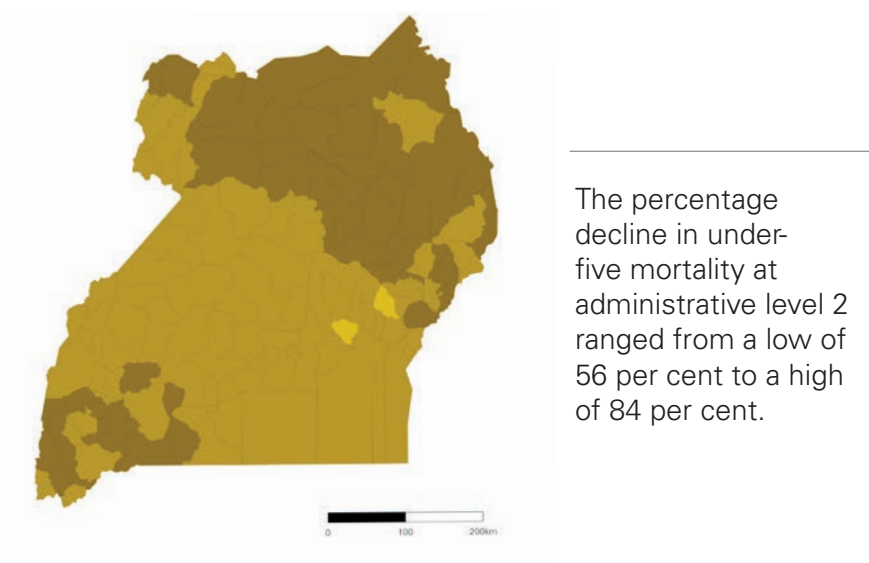
In 1990, under-five mortality rates ranged from 105 to 278 deaths per 1,000 live births. By 2019, the rates ranged from 33 to 70 deaths per 1,000 live births.



## Percentage decline in under-five mortality rate at administrative level 1 in Uganda, 1990–2019

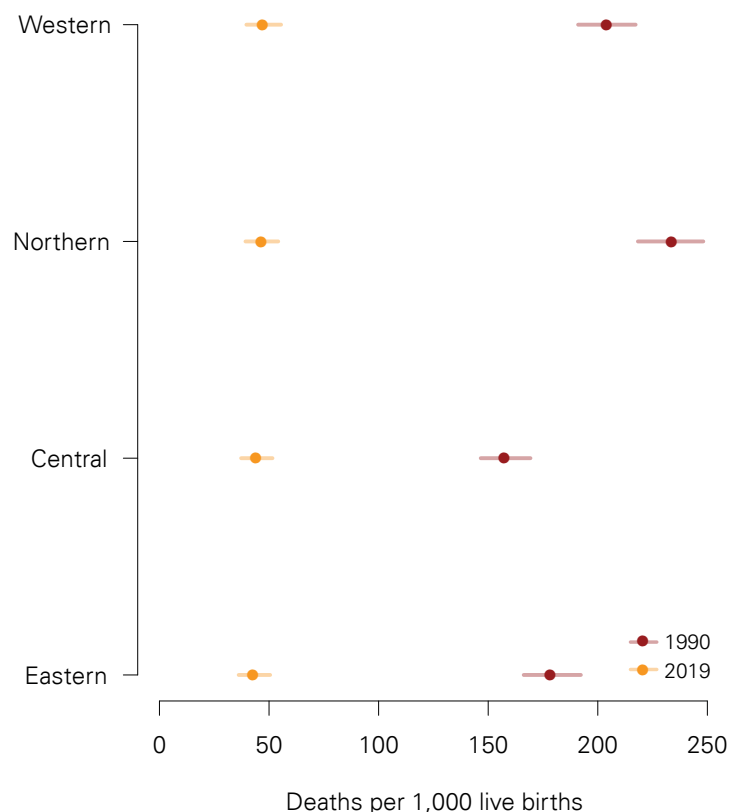


## Percentage decline in under-five mortality rate at administrative level 2 in Uganda, 1990–2019



## Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Uganda, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.5 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.1 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on shapefiles from the UN Office for the Coordination of Humanitarian Affairs.

Data sources for Uganda: Demographic and Health Survey 2000–2001; Demographic and Health Survey 2006; Demographic and Health Survey 2011; Demographic and Health Survey 2016.

These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

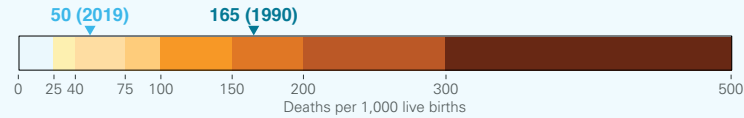
# UNITED REPUBLIC OF TANZANIA

Administrative level 1  
(Region): **30**

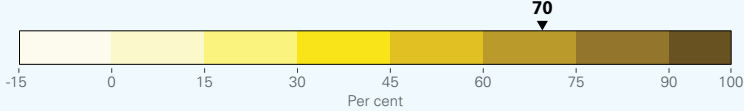
Administrative level 2  
(District): **169**

## National level

### Under-five mortality rate, 1990 and 2019

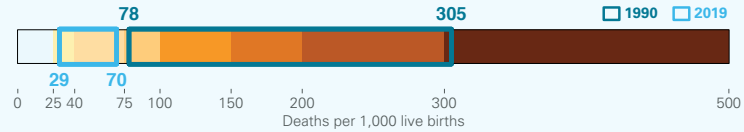


### Percentage decline in under-five mortality rate, 1990–2019

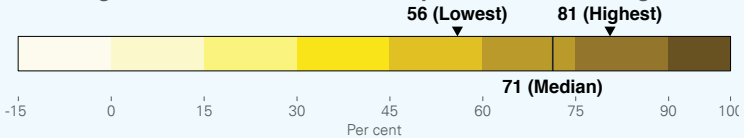


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

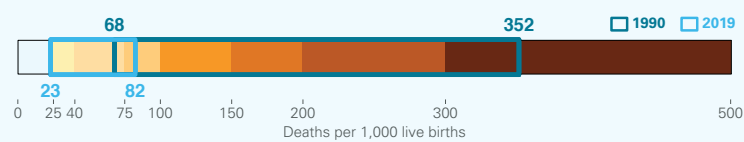


### Percentage decline in under-five mortality rate, 1990–2019 (range)

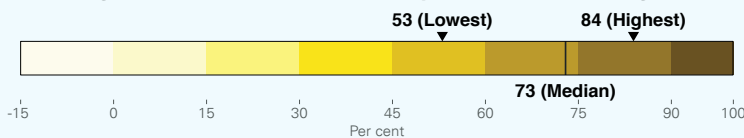


## Administrative level 2

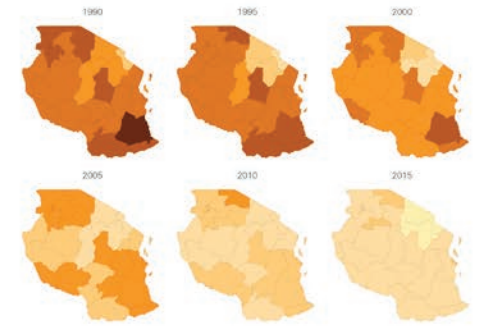
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

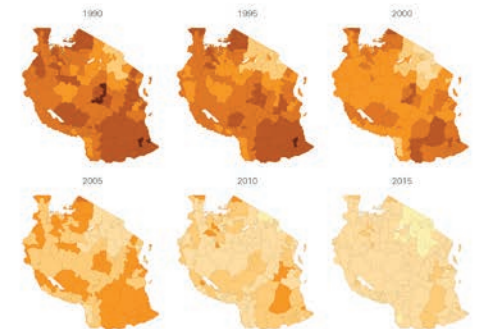


## Under-five mortality rate at administrative level 1 in United Republic of Tanzania, 1990–2019

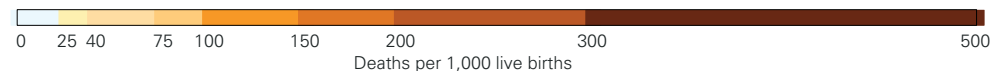


In 1990, under-five mortality rates ranged from 78 to 305 deaths per 1,000 live births. By 2019, the rates ranged from 29 to 70 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in United Republic of Tanzania, 1990–2019



In 1990, under-five mortality rates ranged from 68 to 352 deaths per 1,000 live births. By 2019, the rates ranged from 23 to 82 deaths per 1,000 live births.



Percentage decline in under-five mortality rate at administrative level 1 in United Republic of Tanzania, 1990–2019

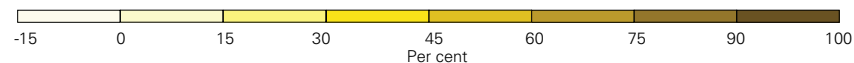


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 56 per cent to a high of 81 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in United Republic of Tanzania, 1990–2019

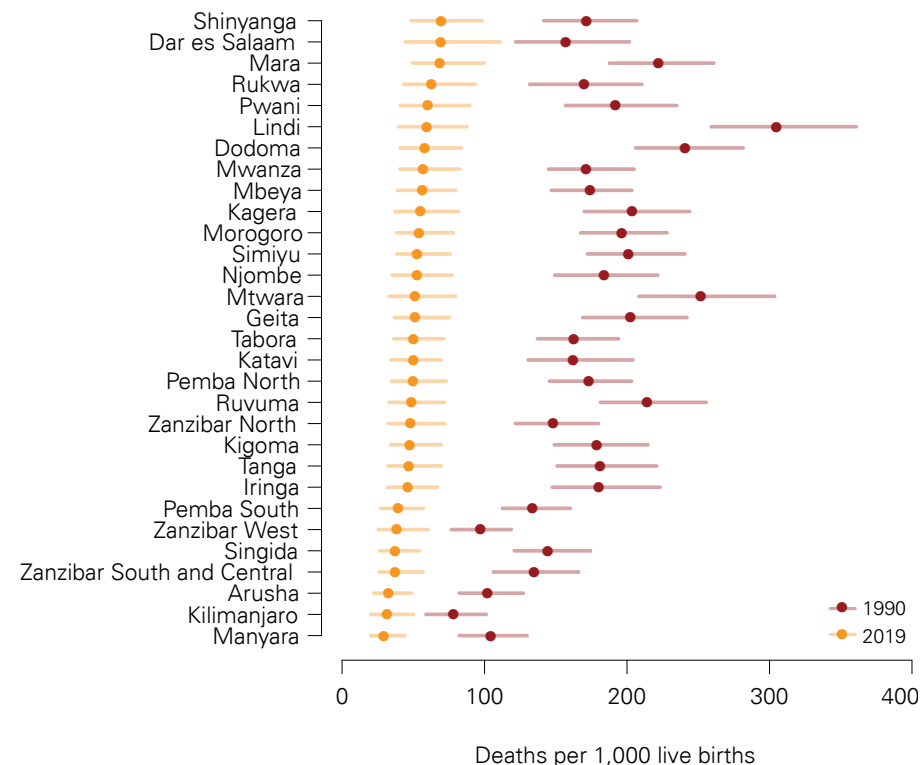


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 53 per cent to a high of 84 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in United Republic of Tanzania, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 3.9 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 2.4 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for United Republic of Tanzania: Demographic and Health Survey 1999; Demographic and Health Survey 2010; Demographic and Health Survey 2015–2016.

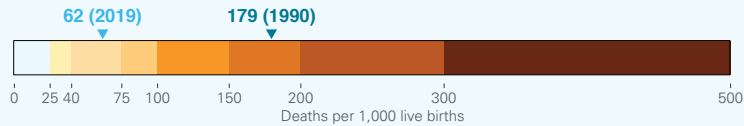
These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(Province): **10**

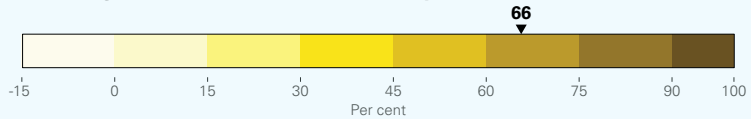
Administrative level 2  
(District): **72**

### National level

#### Under-five mortality rate, 1990 and 2019

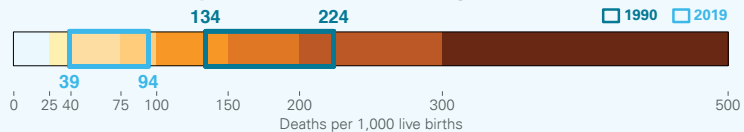


#### Percentage decline in under-five mortality rate, 1990–2019

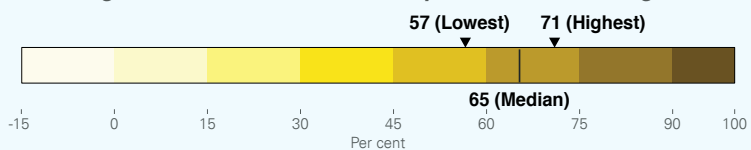


### Administrative level 1

#### Under-five mortality rate, 1990 and 2019 (range)

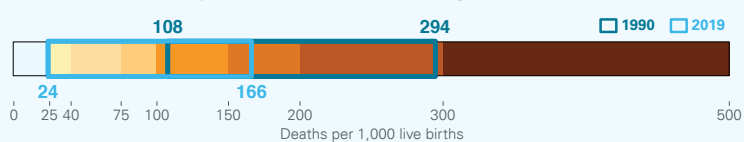


#### Percentage decline in under-five mortality rate, 1990–2019 (range)

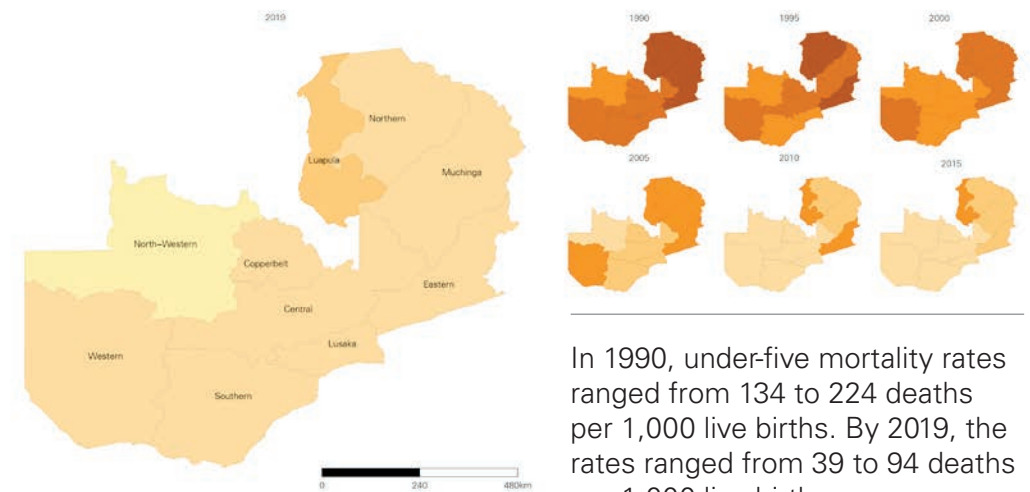
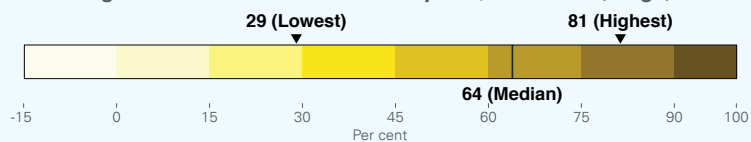


### Administrative level 2

#### Under-five mortality rate, 1990 and 2019 (range)

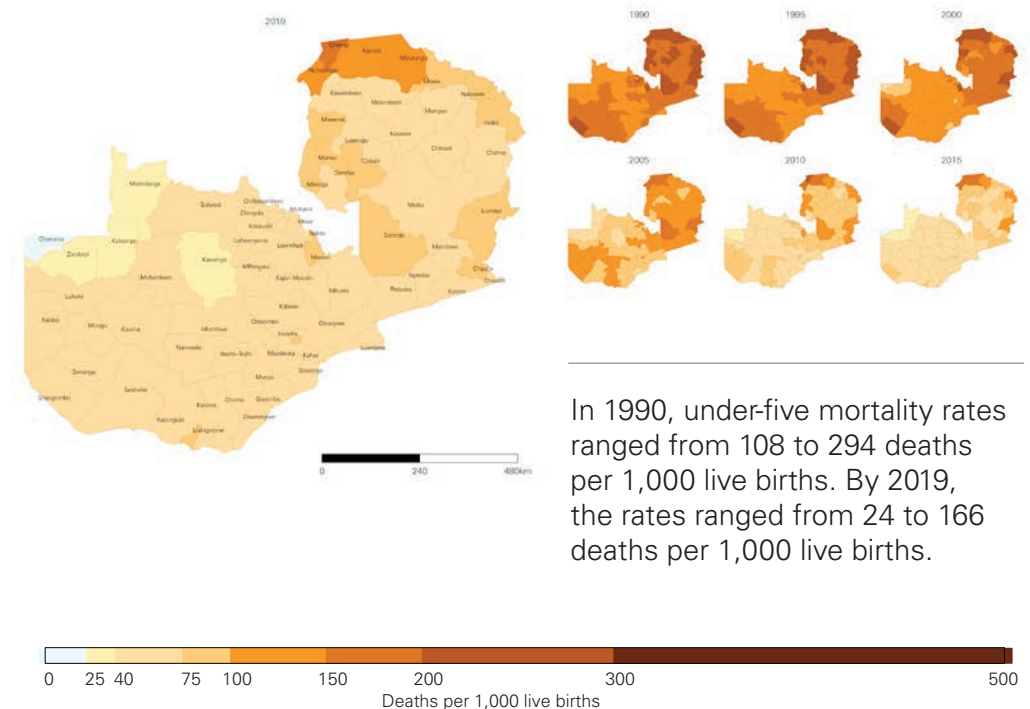


#### Percentage decline in under-five mortality rate, 1990–2019 (range)



In 1990, under-five mortality rates ranged from 134 to 224 deaths per 1,000 live births. By 2019, the rates ranged from 39 to 94 deaths per 1,000 live births.

## Under-five mortality rate at administrative level 2 in Zambia, 1990–2019



In 1990, under-five mortality rates ranged from 108 to 294 deaths per 1,000 live births. By 2019, the rates ranged from 24 to 166 deaths per 1,000 live births.

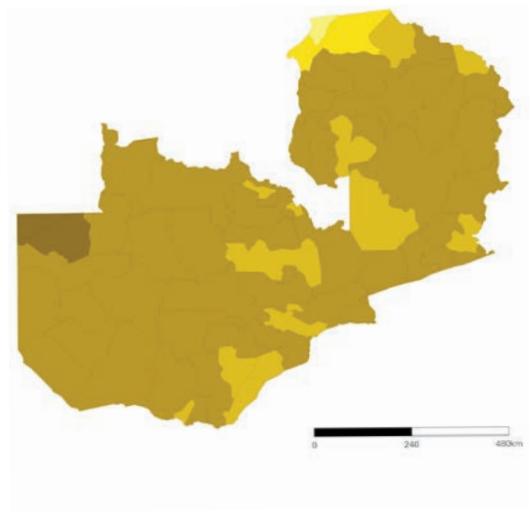


Percentage decline in under-five mortality rate at administrative level 1 in Zambia, 1990–2019

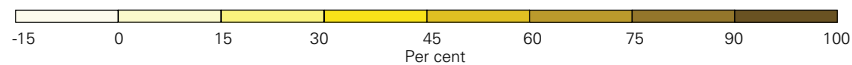


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 57 per cent to a high of 71 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Zambia, 1990–2019

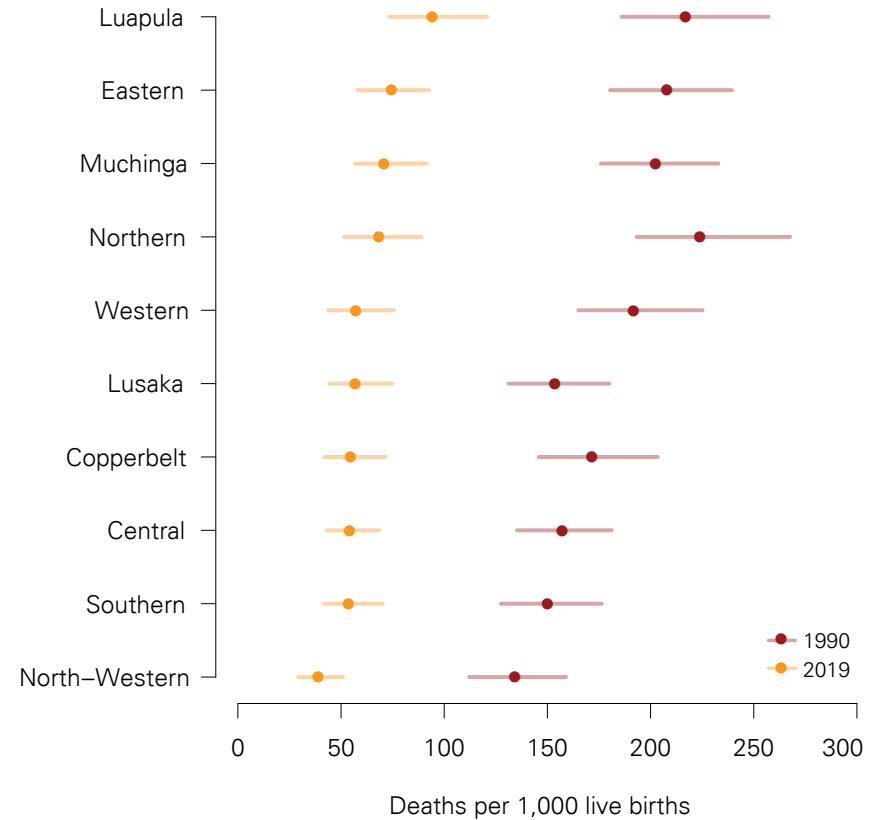


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 29 per cent to a high of 81 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Zambia, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 1.7 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 2.4 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Zambia: Demographic and Health Survey 2007; Demographic and Health Survey 2013–2014; Demographic and Health Survey 2018.

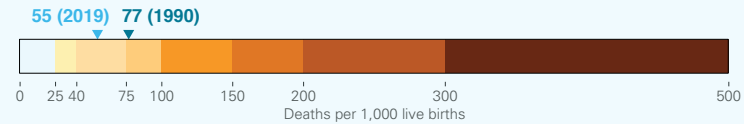
These maps do not reflect a position by UNICEF or UN IGME on the legal status of any country, territory, or administrative division or the delimitation of any frontiers.

Administrative level 1  
(Province): **10**

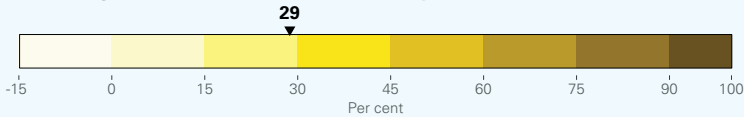
Administrative level 2  
divisions (District): **60**

## National level

### Under-five mortality rate, 1990 and 2019

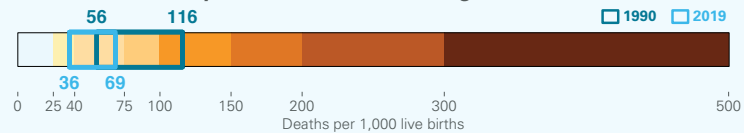


### Percentage decline in under-five mortality rate, 1990–2019

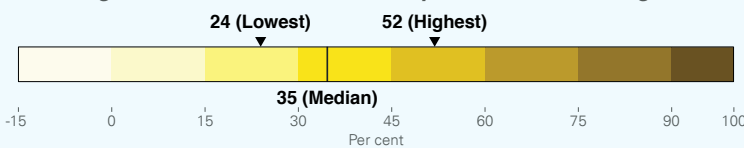


## Administrative level 1

### Under-five mortality rate, 1990 and 2019 (range)

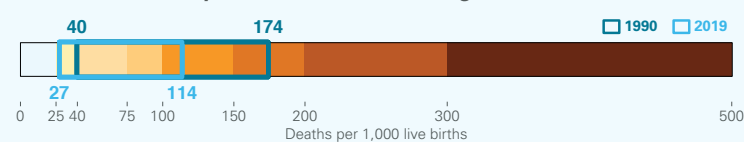


### Percentage decline in under-five mortality rate, 1990–2019 (range)

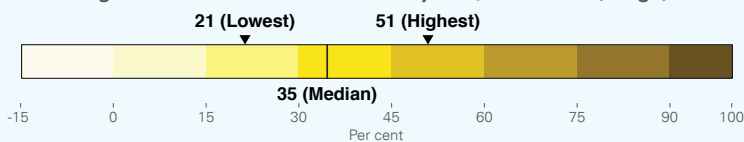


## Administrative level 2

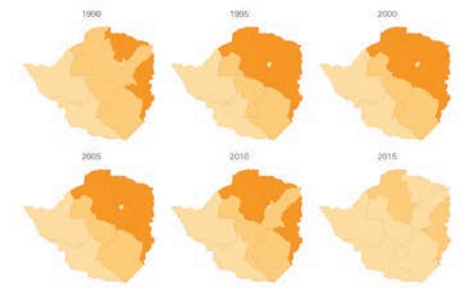
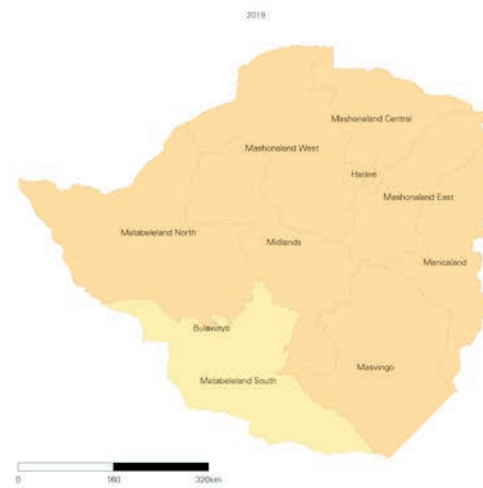
### Under-five mortality rate, 1990 and 2019 (range)



### Percentage decline in under-five mortality rate, 1990–2019 (range)

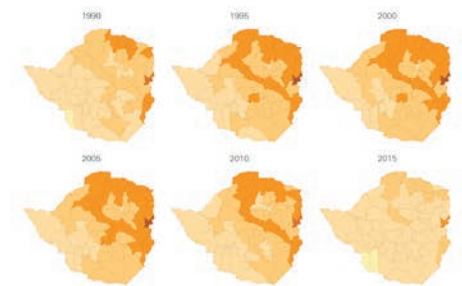
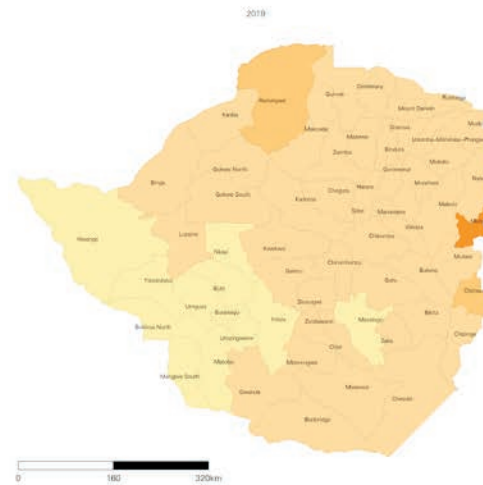


## Under-five mortality rate at administrative level 1 in Zimbabwe, 1990–2019



In 1990, under-five mortality rates ranged from 56 to 116 deaths per 1,000 live births. By 2019, the rates ranged from 36 to 69 deaths per 1,000 live births.

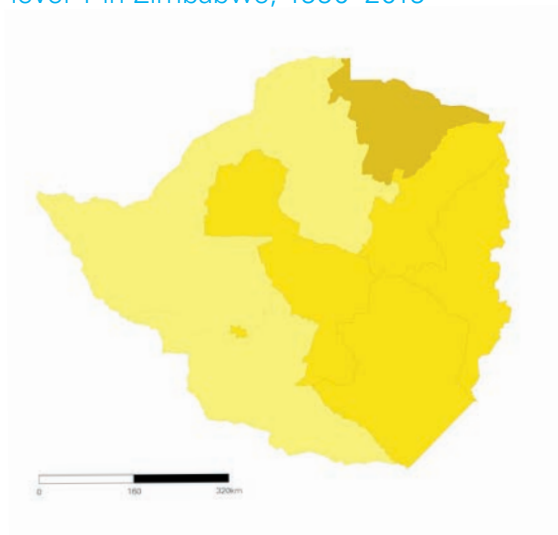
## Under-five mortality rate at administrative level 2 in Zimbabwe, 1990–2019



In 1990, under-five mortality rates ranged from 40 to 174 deaths per 1,000 live births. By 2019, the rates ranged from 27 to 114 deaths per 1,000 live births.

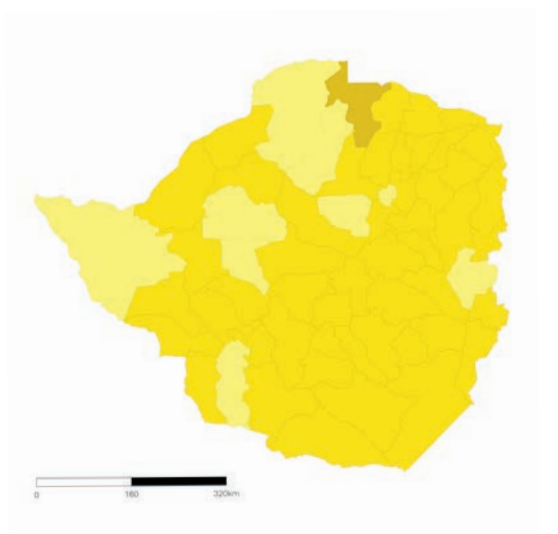


Percentage decline in under-five mortality rate at administrative level 1 in Zimbabwe, 1990–2019

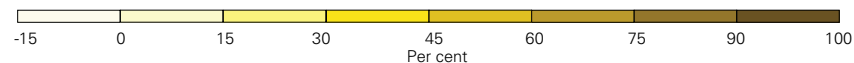


The percentage decline in under-five mortality at administrative level 1 ranged from a low of 24 per cent to a high of 52 per cent.

Percentage decline in under-five mortality rate at administrative level 2 in Zimbabwe, 1990–2019

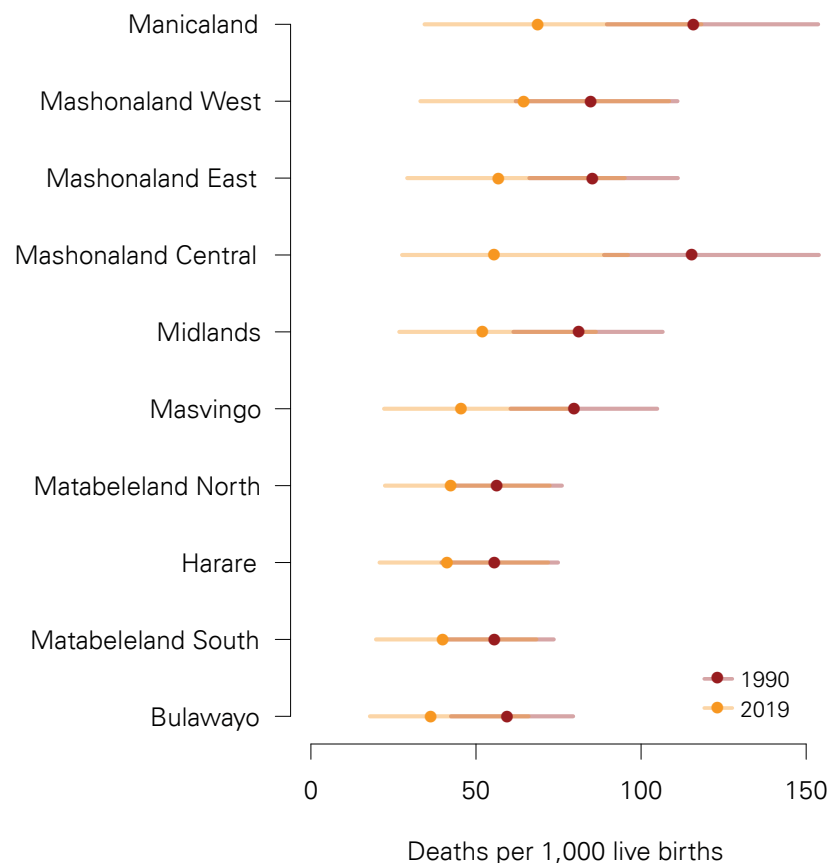


The percentage decline in under-five mortality at administrative level 2 ranged from a low of 21 per cent to a high of 51 per cent.



Under-five mortality rate with 90 per cent uncertainty intervals (shaded bar) at administrative level 1 in Zimbabwe, 1990 and 2019

In 1990, the risk of dying before reaching age 5 for a child born in the highest mortality administrative level 1 area was 2.1 times higher than in the lowest mortality area. In 2019, the under-five mortality rate in the highest mortality area was 1.9 times higher than in the lowest.



Note: The dots represent the median estimates, and the lines represent the 90 per cent uncertainty intervals.

Administrative boundaries are based on the GADM database of Global Administrative Areas, version 3.6, available at <<https://gadm.org/>>.

Data sources for Zimbabwe: Demographic and Health Survey 1999; Demographic and Health Survey 2010–2011; Demographic and Health Survey 2015.

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# Technical notes

## Subnational Estimation of Under-five Mortality: The BB8 Model

Estimating subnational variation in under-five mortality is of great importance. It pinpoints areas with high mortality rates and enables tracking of progress towards targets such as the Sustainable Development Goals, which explicitly mention monitoring subnational child mortality. In the absence of vital registration systems, obtaining estimates at subnational levels—national level is denoted by Administrative level 0, with increasingly granular subnational levels being denoted Administrative level 1, Administrative level 2, and so on—is a challenge, because the most reliable data come from household surveys, which are not generally designed to collect sufficient clusters to characterize the under-five mortality rate (U5MR) at administrative level 2, which is the level at which health interventions and decisions on resource allocation are typically made.

Subnational U5MR is estimated using a beta-binomial sampling model with:

1. Cluster-level modelling
2. Space-time smoothing
3. Country-specific models
4. Bayesian inference
5. Overdispersion
6. Benchmarking to UN IGME national U5MR estimates
7. HIV adjustment
8. Informative visualization

Hence, the model is referred to as BB8.

To overcome sparse data problems, U5MR is modelled at the cluster level directly using a Bayesian space-time model. Subnational U5MR is estimated using household survey data from Demographic and Health Surveys (DHS), which typically use stratified two-stage cluster sampling with strata that are urban/rural crossed with some set of geographical (often administrative level 1) areas.

Mortality risk is assumed to be similar at locations that are close together because of shared risk factors, thus the risk of mortality is assumed to have spatial structure. The model contains spatial terms to account for such structure.

The beta-binomial distribution is used in the model since it appropriately characterizes the binary outcome (non-death/death) distribution and has an additional parameter to accommodate overdispersion, also known as excess binomial variation.

The model for deaths at a generic age is,

$$Y_c | p_c \sim \text{Beta-binomial}(n_c, p_c, d), \text{ for } c=1, \dots, C$$

where  $Y_c$  is the number of deaths out of  $n_c$  months at risk, and  $p_c = p(s_c)$  is the probability of a death at location  $s_c$  for  $c=1, \dots, C$  clusters. The parameter  $d$  allows for overdispersion and is related to the within-cluster correlation between the  $n_c$  different individuals in the same cluster.

The probability is modeled as,

$$p(s_c) = \text{expit}(\alpha + S_{c[i]} + e_{c[i]})$$

where  $S_{c[i]}$  and  $e_{c[i]}$  are spatial and independent random effects, respectively, specified at administrative level 2, which is indexed by  $i$ ; the notation  $c[i]$  here should be read as the administrative level 2 area  $i$  that cluster  $c$  resides in. Hence, all clusters in the administrative level 2 area  $i$  receive the same random effects. The spatial terms are assumed to follow an intrinsic conditional autoregressive (ICAR) model.<sup>1</sup> The latter is the most popular model for disease mapping in epidemiology, since it is straightforward to fit and has been shown in a multitude of studies to provide reliable estimates. The model is fit using the fast and accurate integrated nested Laplace approximation (INLA) approach.<sup>2</sup>

Aggregation of the cluster probabilities to administrative level 2 area  $i$  is aided by the assumption of a constant spatial term within each administrative level 2 area. Specifically, the probability of a neonatal death in administrative level 2 area  $i$  is

$$p_i = \text{expit}(\alpha + S_i + e_i)$$

For the U5MR estimation over time, the model is more complex since it is necessary to consider how the risks change over time and with age, in addition to space.

As with previous work,<sup>3,4</sup> and as used by the DHS, a discrete hazards model is assumed with six hazards for each of the age groups (in months): 0–1, 2–11, 12–23, 24–35, 36–47, 48–59. A flexible random walk of order 2 (RW2) as the main temporal term is also assumed, with separate random walks for the age groups 0–1, 2–11, 12–59. This model carries out local linear smoothing using the previous two time periods (which correspond to years in the model). For the main spatial term an ICAR model is assumed. A space-time interaction is also assumed. Depending on the country, either a RW2 and ICAR model are combined, or an autoregressive of order 1 (AR1) model and an ICAR are combined. The RW2, ICAR and AR1 models are described in more detail elsewhere.<sup>5</sup> The interaction terms allow local deviations from the main spatial and temporal patterns.

Survey data are adjusted to account for mothers who have died from AIDS-related illnesses, and whose children are at greater risk of death using the same method used to generate national U5MR estimates.

In general, the B3 model uses more data (e.g., from censuses and vital registration systems, when available), thus the estimates are benchmarked to the B3 estimates at the national level,<sup>6</sup> for consistency.

The model is fitted in the R programming environment using the SUMMER package.<sup>7</sup>

There are numerous ways to present and visualize summaries of the administrative level 2 estimates over time. It should be noted here that the subnational estimates also have uncertainty intervals via Bayesian inference, however they are not well conveyed on colour-coded maps. Estimates for all areas with uncertainty can be found at the UN IGME web portal, <[www.childmortality.org](http://www.childmortality.org)>.

UN IGME under-five mortality rates by subnational areas are produced in consultation with countries.

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<sup>1</sup> Besag, Julian, Jeremy York and Annie Mollié, 'Bayesian Image Restoration with Two Applications in Spatial Statistics,' *Annals of the Institute of Statistics and Mathematics*, vol. 43, March 1991, pp. 1–59.

<sup>2</sup> Rue, Håvard, Sara Martino and Nicolas Chopin, 'Approximate Bayesian Inference for Latent Gaussian Models by Using Integrated Nested Laplace Approximations,' *Journal of the Royal Statistical Society: Series B*, vol. 71, 6 April 2009, pp. 319–392.

<sup>3</sup> Li, Zehang, et al., 'Changes in the Spatial Distribution of the Under Five Mortality Rate: Small-area analysis of 122 DHS surveys in 262 subregions of 35 countries in Africa,' *PLoS One*, 22 January 2019.

<sup>4</sup> Wakefield, Jon, et al., 'Estimating Under-five Mortality in Space and Time in a Developing World Context,' *Statistical Methods in Medical Research*, vol. 28, no. 9, 1 September 2019, pp. 2614–2634.

<sup>5</sup> Rue, Håvard, and Leonhard Held, *Gaussian Markov Random Fields: Theory and applications*, Chapman and Hall/CRC Press, Boca Raton, 2005.

<sup>6</sup> United Nations Inter-agency Group for Child Mortality Estimation, *Levels & Trends in Child Mortality: Report 2020, Estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation*, United Nations Children's Fund, New York, 2020.

<sup>7</sup> SUMMER: Spatio-Temporal Under-Five Mortality Methods for Estimation, see <<https://cran.r-project.org/web/packages/SUMMER/index.html>>.