

# Country Summary: Benin

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## 1 Intro

These estimates are created using the BB8 model with Admin 2 estimates using a RW1xICAR interaction model with area-specific random slopes.

Benin has 12 Admin 1 areas and 76 Admin 2 areas.

All uncertainty intervals displayed in subsequent figures are 95% intervals.



Figure 1: Top: The neighborhood structure of Admin 2 areas. Bottom: The names of Admin 2 areas.

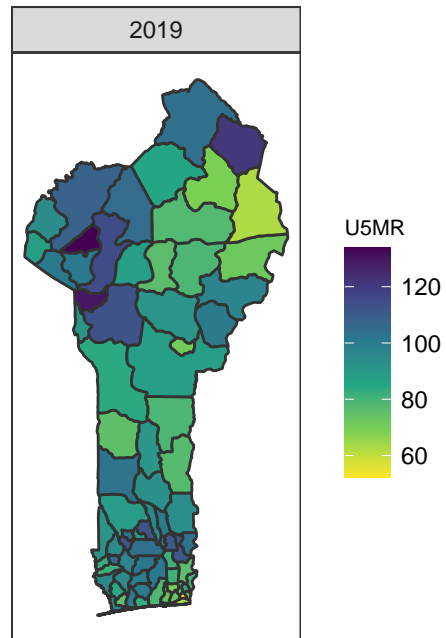


Figure 2: Median estimates of U5MR (deaths per 1000 children) in 2019.

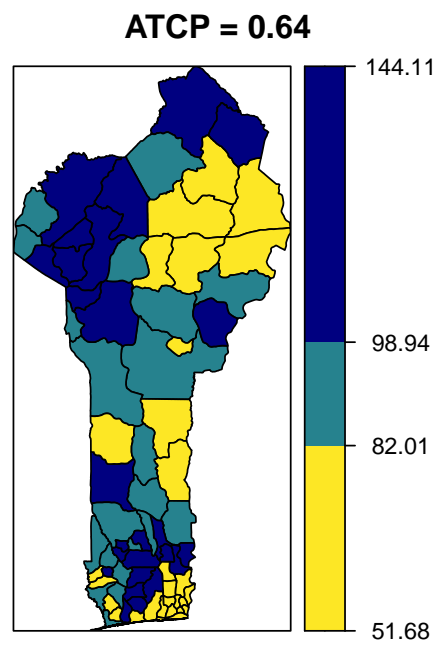
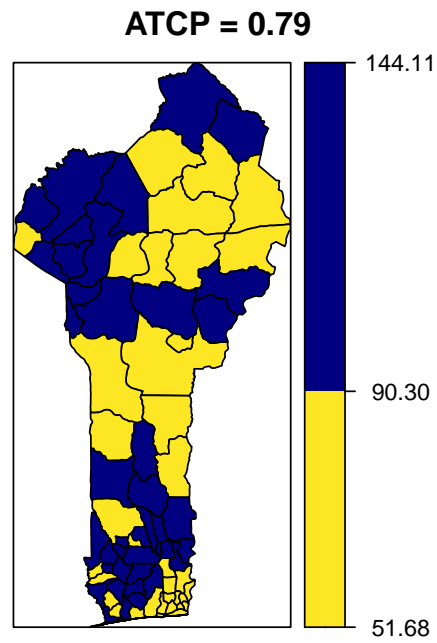


Figure 3: Expression of uncertainty of U5MR (deaths per 1000 children) based on the average true classification probability (ATCP) in 2019.

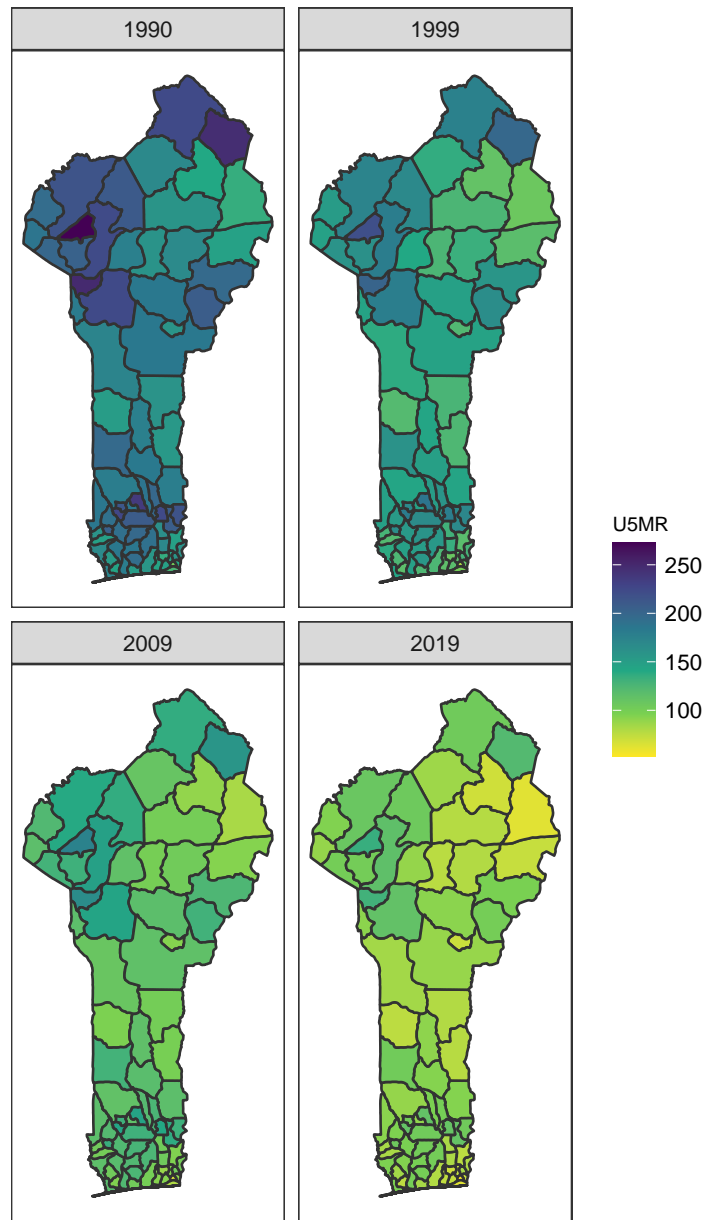
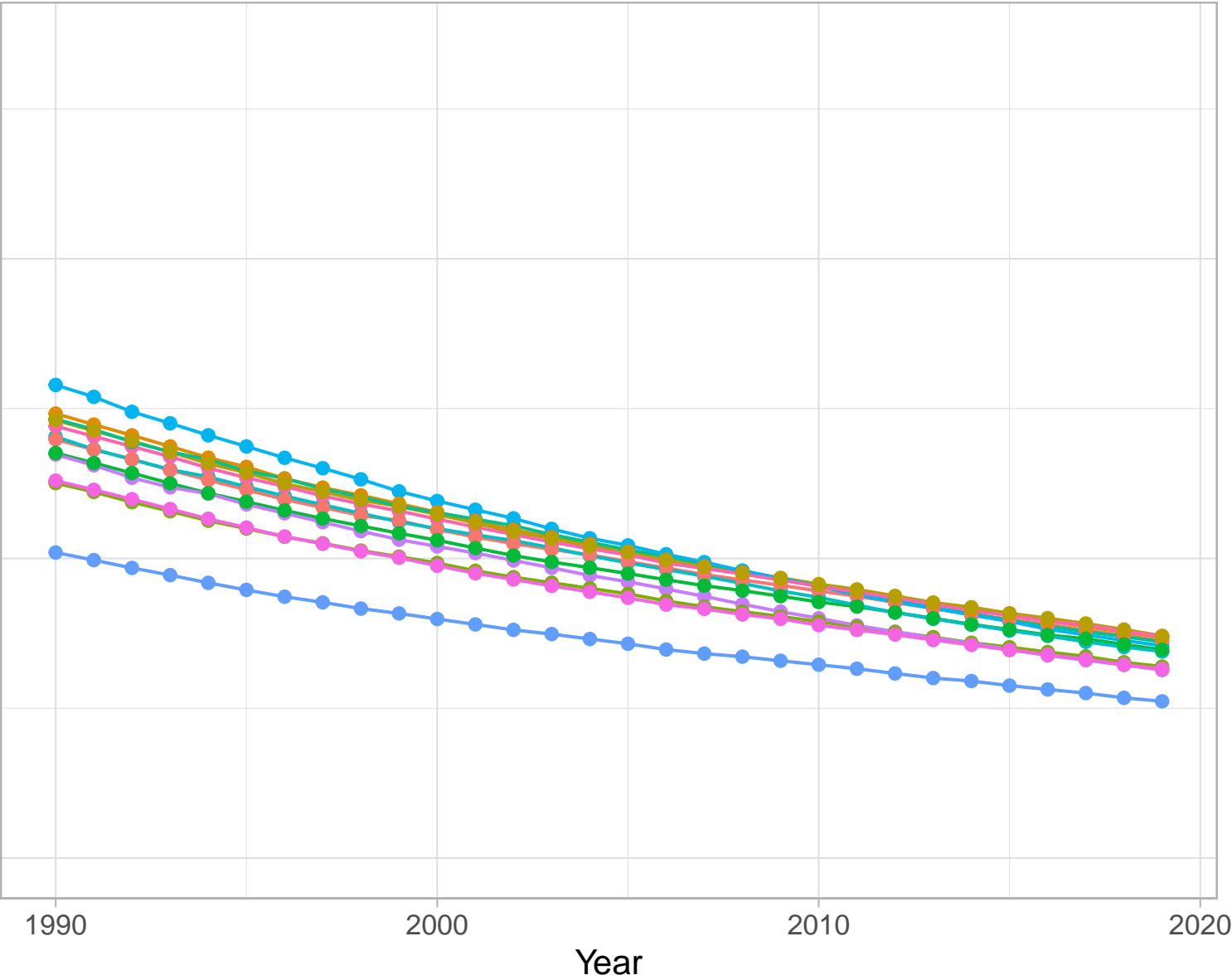


Figure 4: Median estimates for selected years.

# Benin

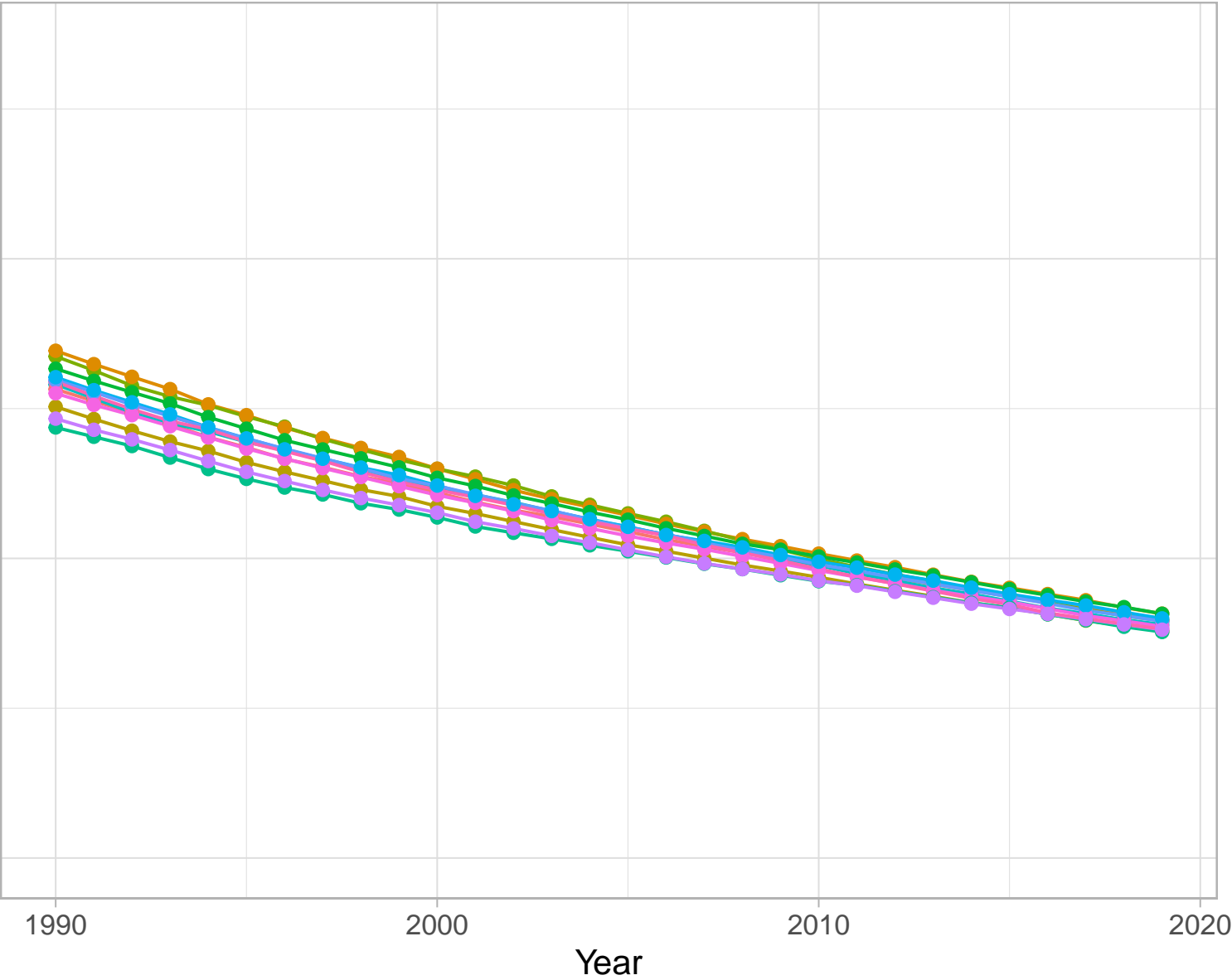
U5MR: deaths per 1000 live births



- Adjarra, Ouémé
- Aguégués, Ouémé
- Akpro-Missérété, Ouémé
- Cotonou, Littoral
- Dangbo, Ouémé
- Kalalé, Borgou
- Kandi, Alibori
- Parakou, Borgou
- Porto-Novo, Ouémé
- Segbana, Alibori
- Sèmè-Kpodji, Ouémé
- Sô-Ava, Atlantique

# Benin

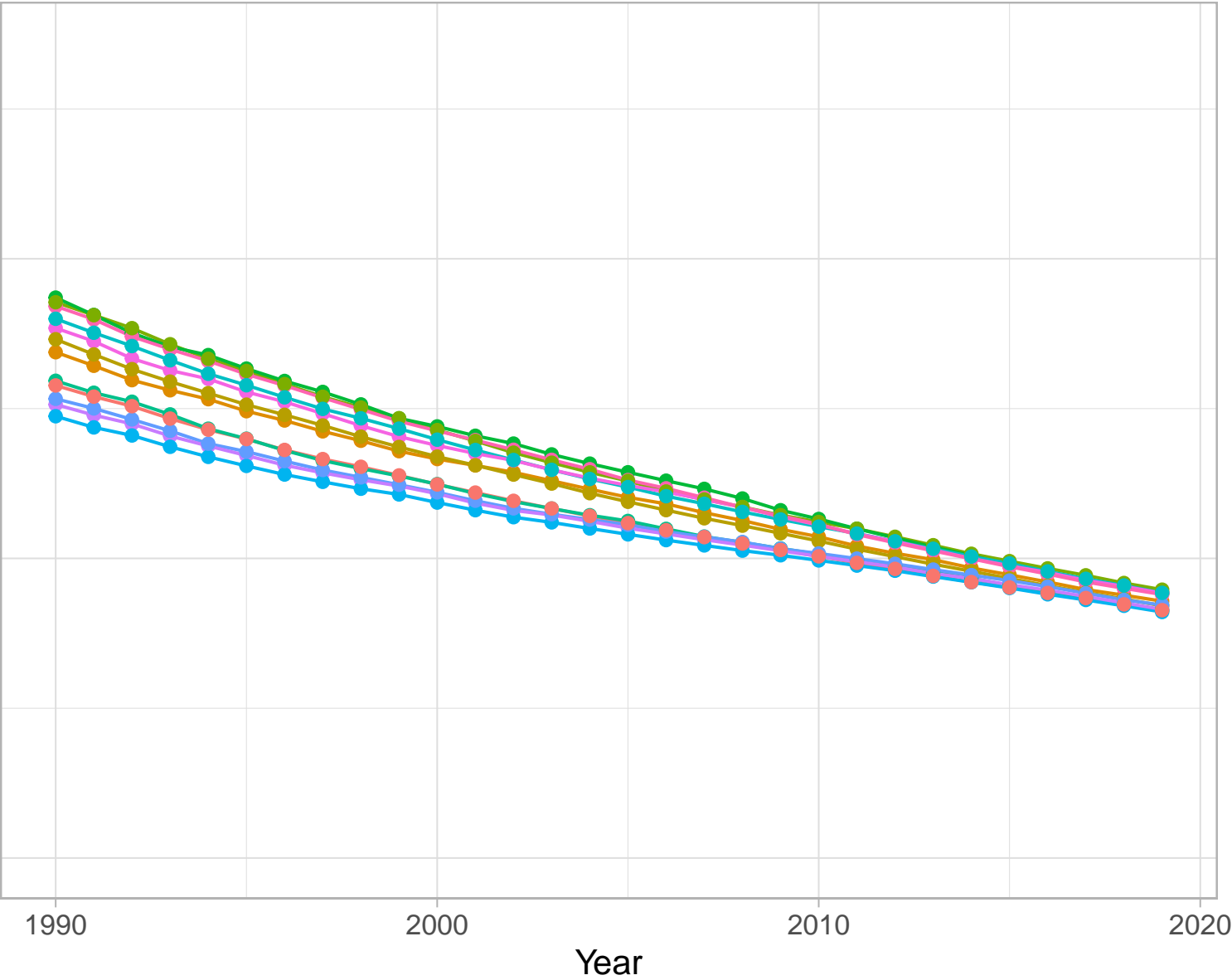
U5MR: deaths per 1000 live births



- |                           |                   |                  |
|---------------------------|-------------------|------------------|
| Abomey-Calavi, Atlantique | Bonou, Ouémé      | Ouèssè, Collines |
| Adjohoun, Ouémé           | Comè, Mono        | Sakété, Plateau  |
| Bantè, Collines           | Gogounou, Alibori | Savè, Collines   |
| Bembéréké, Borgou         | Ifangni, Plateau  | Sinendé, Borgou  |

# Benin

U5MR: deaths per 1000 live births

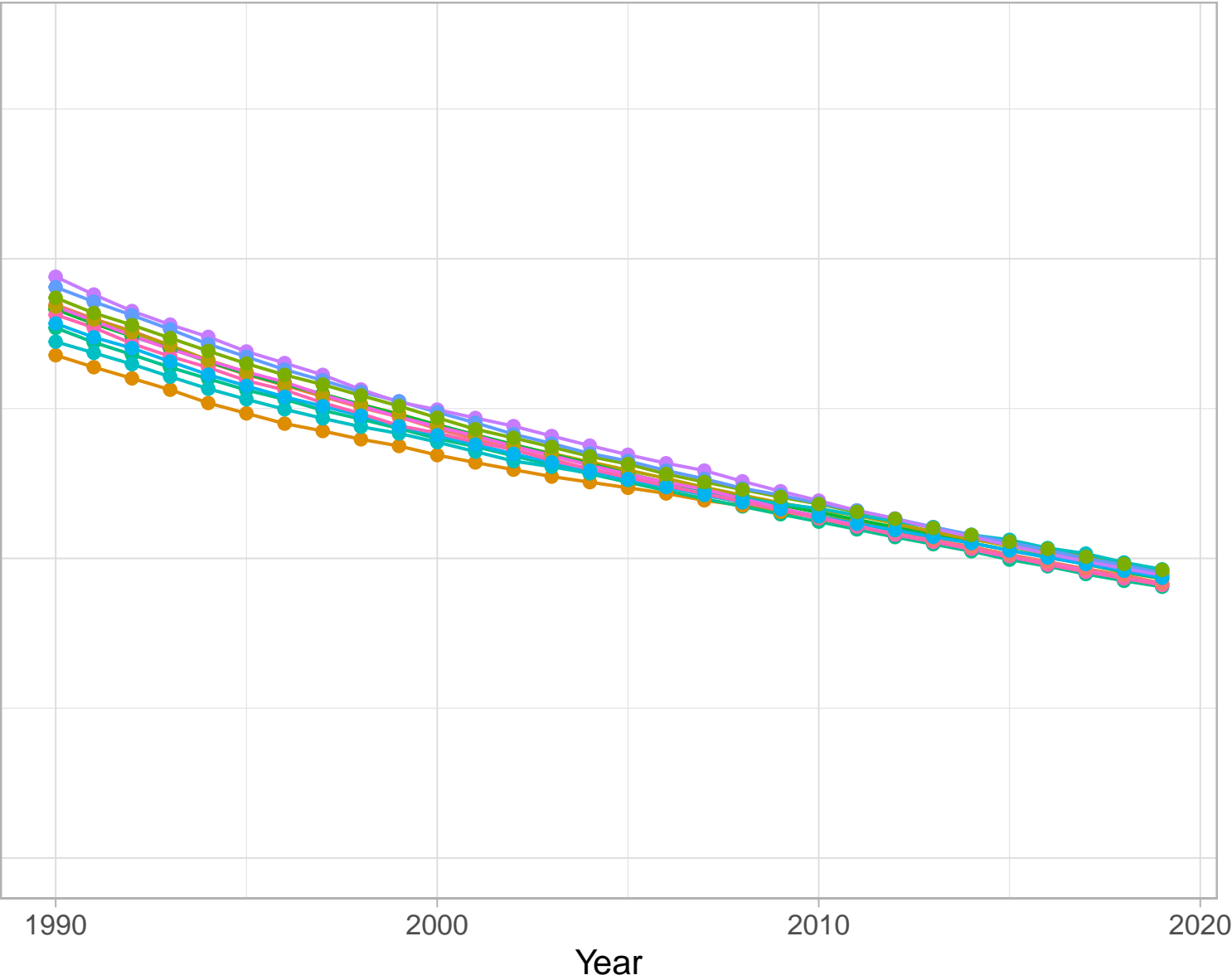


- Avrankou, Ouémé
- Banikoara, Alibori
- Bassila, Donga
- Bohicon, Zou
- Coby, Atakora
- Djakotomey, Kouffo
- Djidja, Zou
- Dogbo, Kouffo
- Houéyogbé, Mono
- Ouidah, Atlantique
- Péhunco, Atakora
- Tchaourou, Borgou



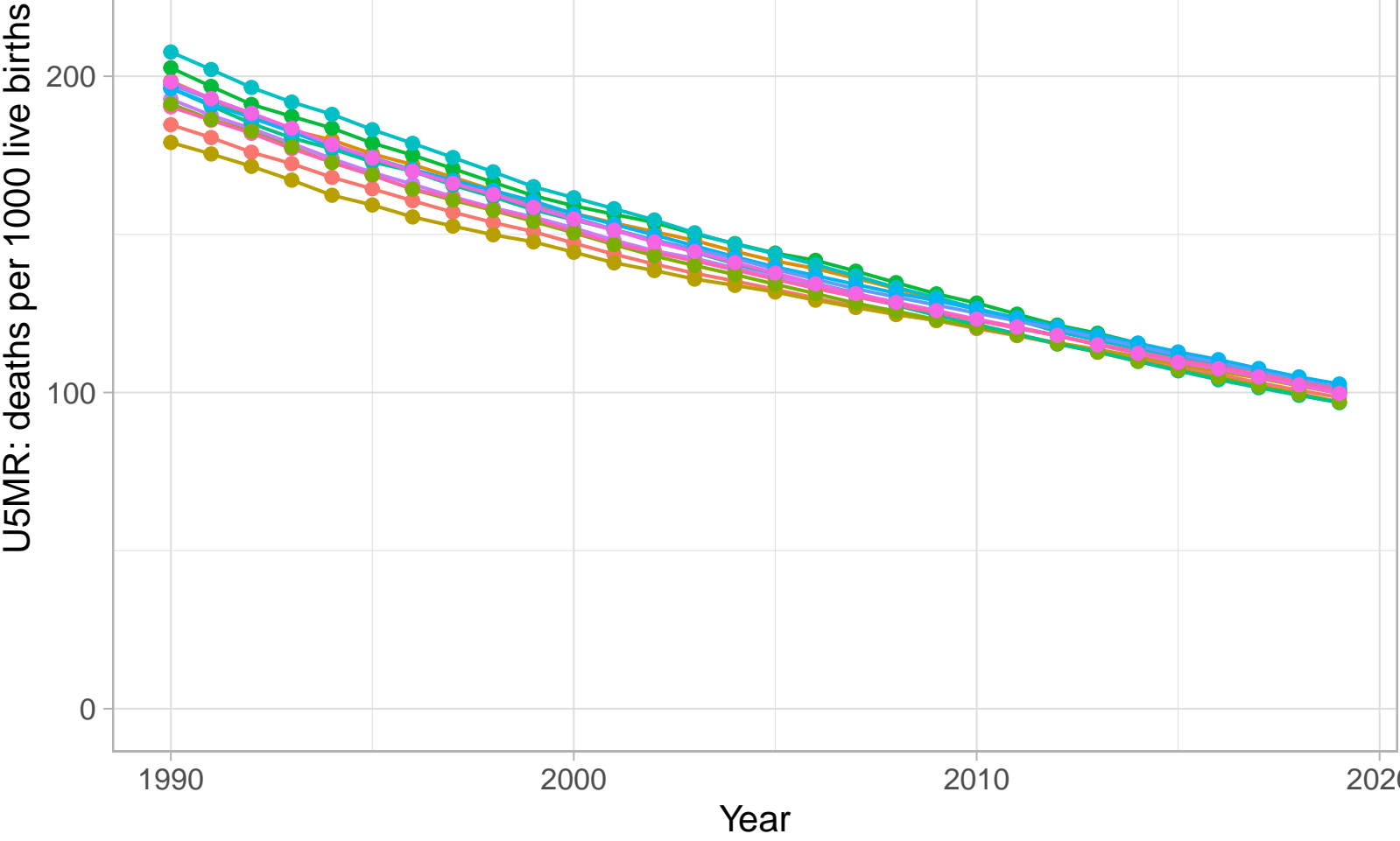
# Benin

U5MR: deaths per 1000 live births



- |                      |                           |                        |
|----------------------|---------------------------|------------------------|
| —●— Aplahoué, Kouffo | —●— Dassa-Zoumè, Collines | —●— Klouékanmè, Kouffo |
| —●— Athiémé, Mono    | —●— Glazoué, Collines     | —●— Matéri, Atakora    |
| —●— Bopa, Mono       | —●— Grand-Popo, Mono      | —●— N'Dali, Borgou     |
| —●— Covè, Zou        | —●— Kétou, Plateau        | —●— Ouaké, Donga       |

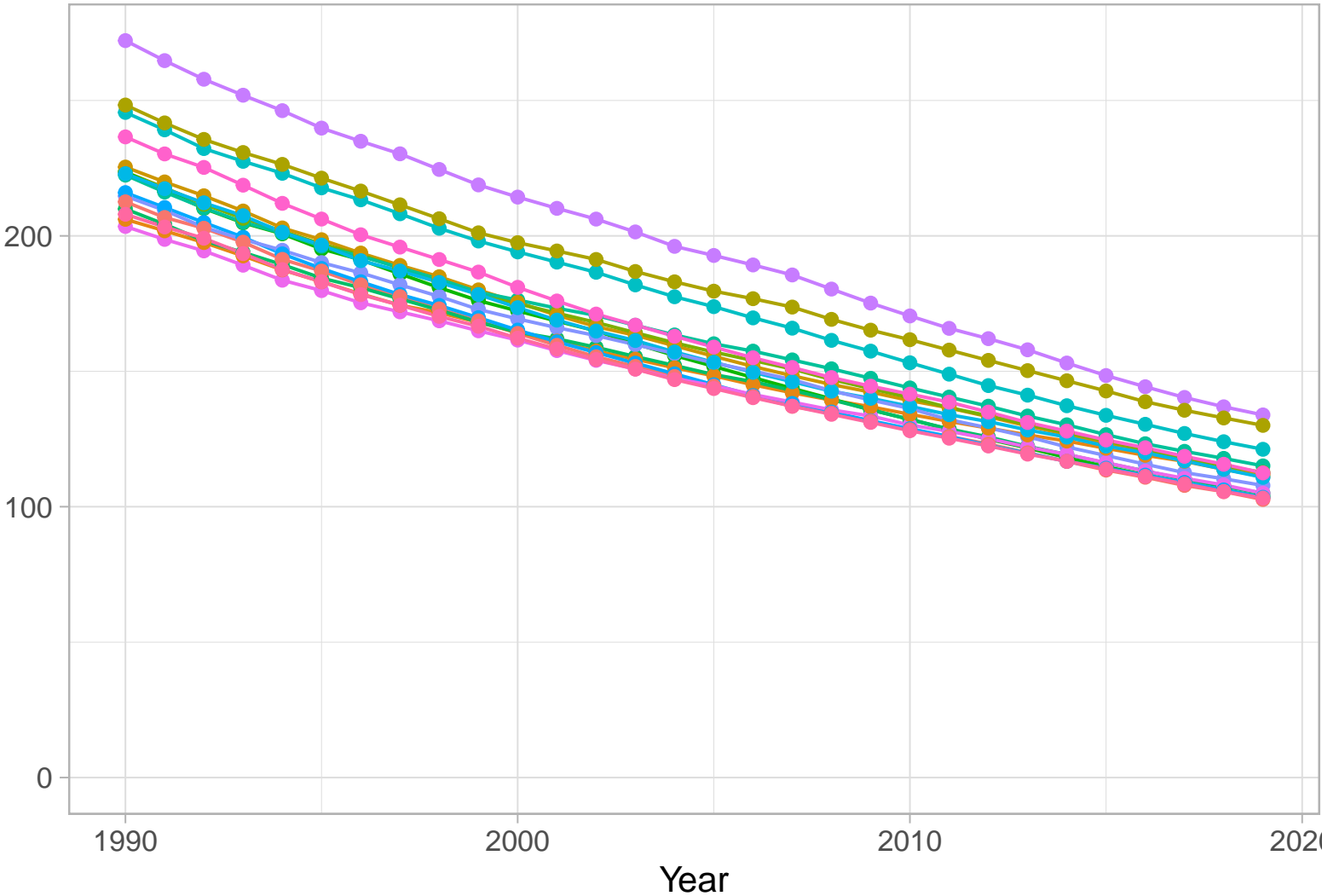
# Benin



- Allada, Atlantique
- Boukoubé, Atakora
- Kpomassè, Atlantique
- Lalo, Kouffo
- Natitingou, Atakora
- Nikki, Borgou
- Pèrèrè, Borgou
- Savalou, Collines
- Toffo, Atlantique
- Tori-Bossito, Atlantique
- Zagnanado, Zou
- Zè, Atlantique

# Benin

U5MR: deaths per 1000 live births



- Abomey, Zou
- Adja-Ouèrè, Plateau
- Agbangnizoun, Zou
- Copargo, Donga
- Djougou, Donga
- Karimama, Alibori
- Kérou, Atakora
- Kouandé, Atakora
- Malanville, Alibori
- Ouinhi, Zou
- Pobè, Plateau
- Tanguiéta, Atakora
- Toucountouna, Atakora
- Toviklin, Kouffo
- Za-Kpota, Zou
- Zogbodomey, Zou

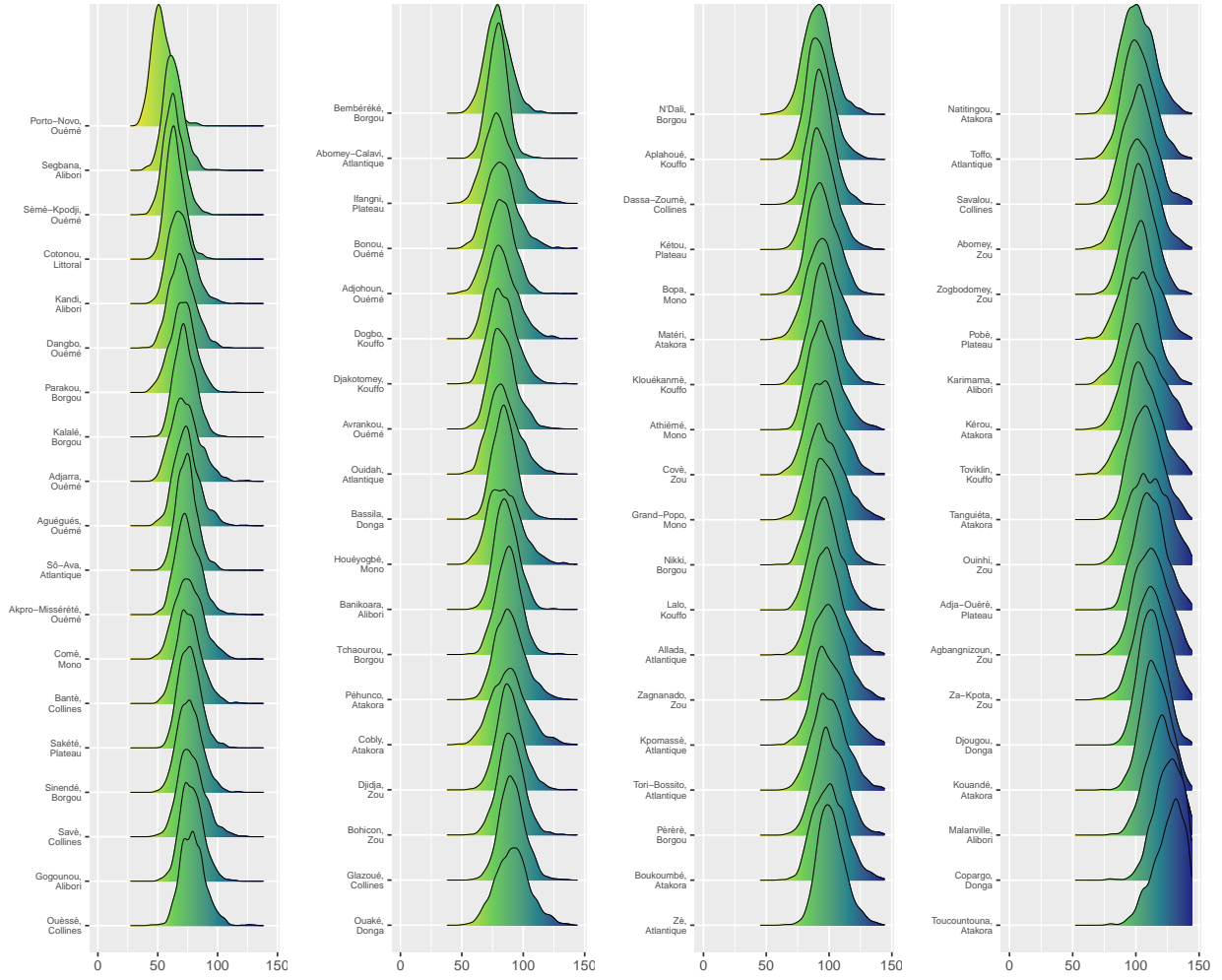


Figure 5: Posterior distributions of U5MR (deaths per 1000 children) in 2019. Areas are ordered by median estimated U5MR in 2019.

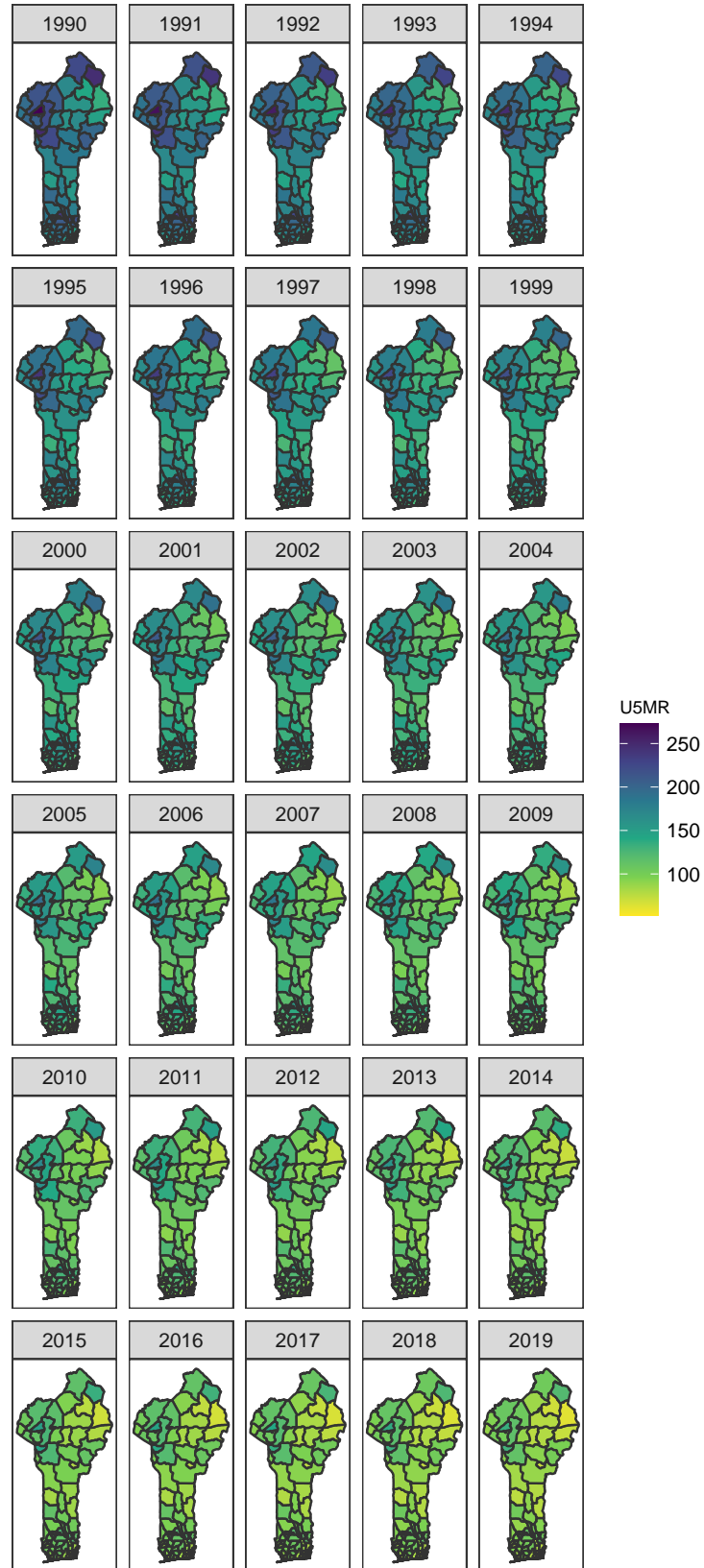


Figure 6: Posterior medians of U5MR (deaths per 1000 births) by Admin 2 area and year.

## 2 National Survey Data

Survey	Urban	Rural	Total
1996	92	108	200
2001	118	129	247
2017-18	243	297	540

Table 1: Number of clusters by urban/rural designation by survey for Benin.

Age	No. Deaths	No. Agemonths
0	1544	43780
1-11	1287	444069
12-23	647	443368
24-35	512	410435
36-47	378	379041
48-59	176	348281

Table 2: Numbers of agemonths and deaths by age for DHS 2017-18.

Age	No. Deaths	No. Agemonths
0	515	11963
1-11	635	120931
12-23	282	122355
24-35	207	115967
36-47	166	109315
48-59	87	103171

Table 3: Numbers of agemonths and deaths by age for DHS 2001.

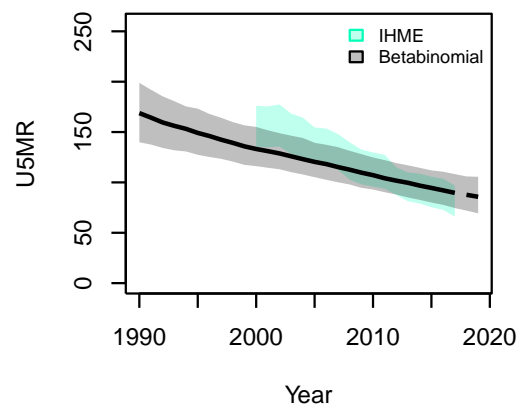
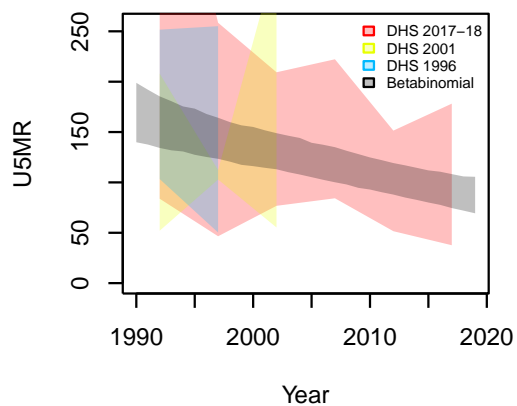
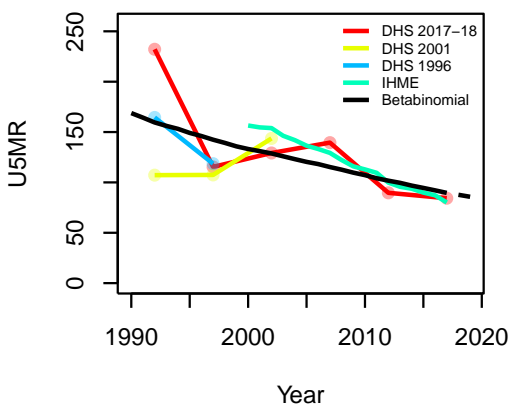
Age	No. Deaths	No. Agemonths
0	292	6852
1-11	391	69454
12-23	182	70535
24-35	108	68517
36-47	121	65650
48-59	60	62678

Table 4: Numbers of agemonths and deaths by age for DHS 1996.

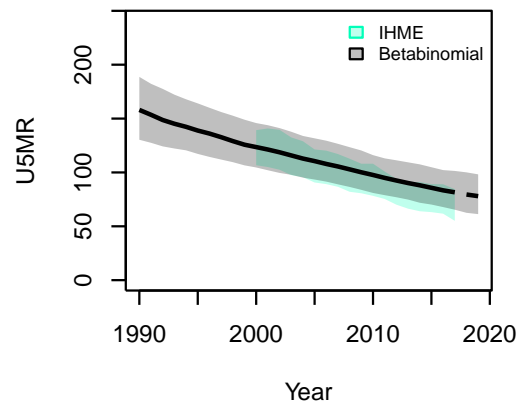
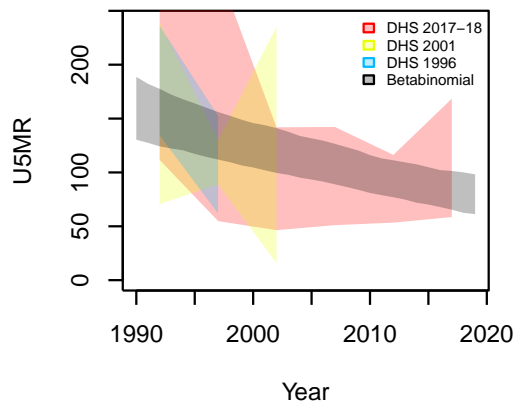
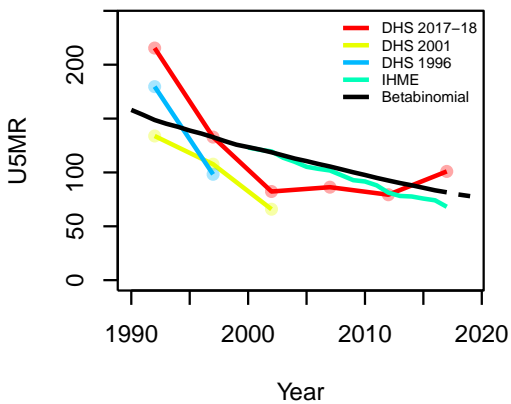
### 3 Admin 2 Figures

The following few pages have estimates by area across time with underlying data included. There are six admin areas per page. Colored lines with circular points and light grey uncertainty bands are 5-year survey-weighted estimates of U5MR for years 1990–1994 up to 2015–2019 depending on survey timing. For a survey that ends in the middle of a 5-year period, we plot the estimates at the mid-point of the years in that interval for which the survey provides data. Black lines and corresponding intervals represent posterior medians and 95% uncertainty intervals respectively for the betabinomial model.

**Banikoara, Alibori**

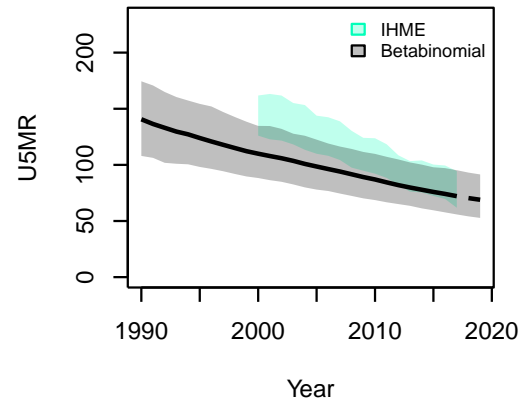
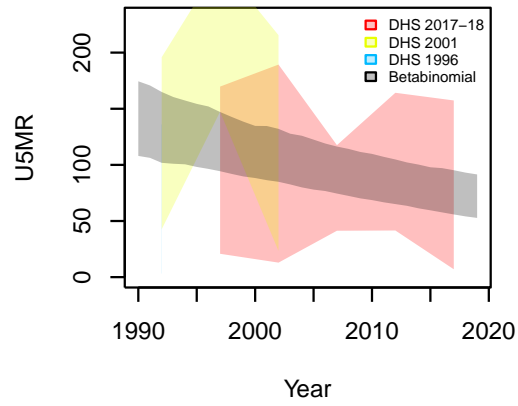
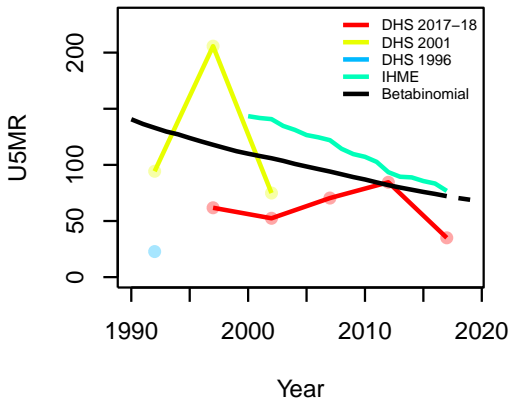


**Gogounou, Alibori**

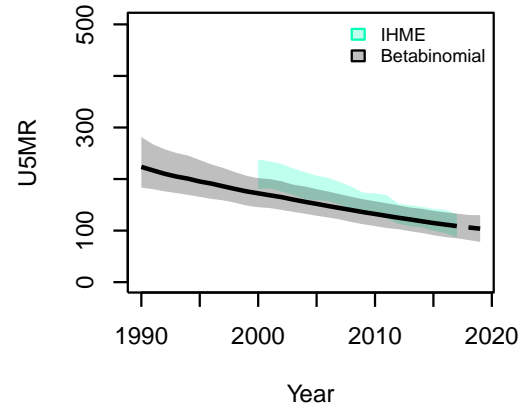
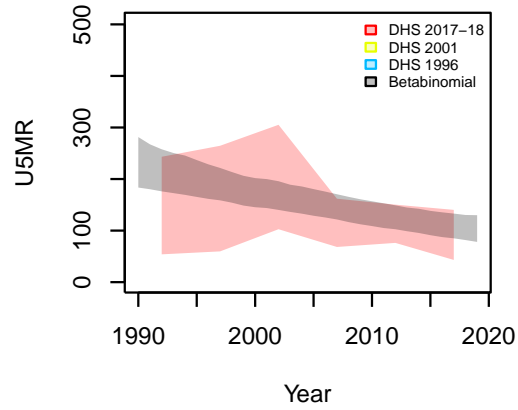
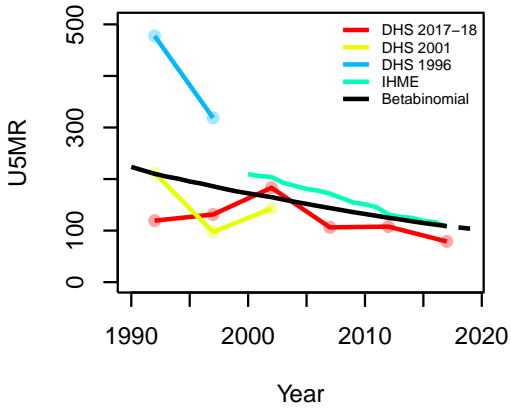




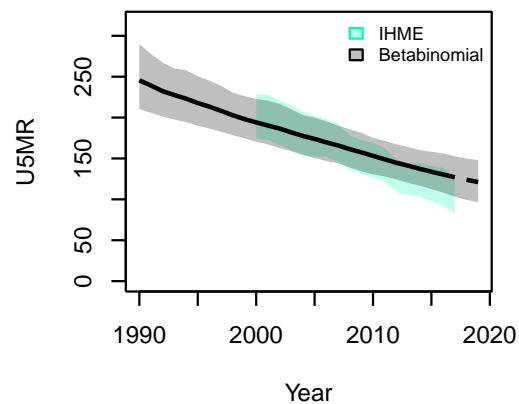
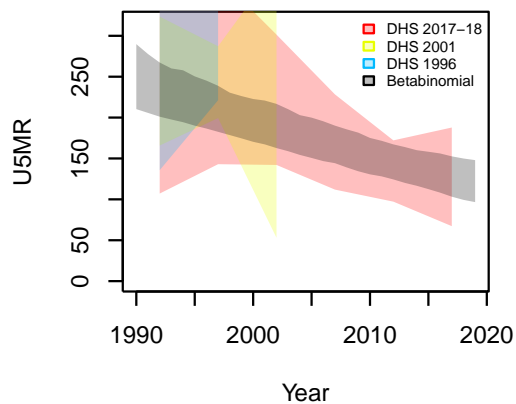
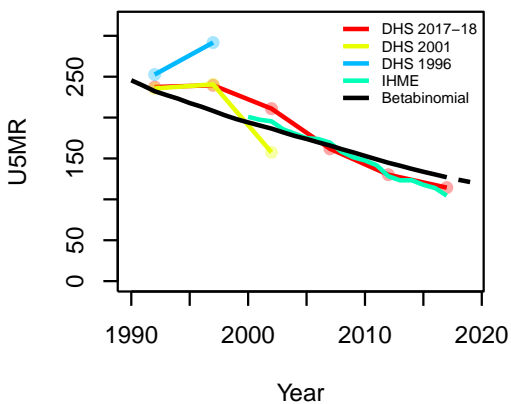
Kandi, Alibori



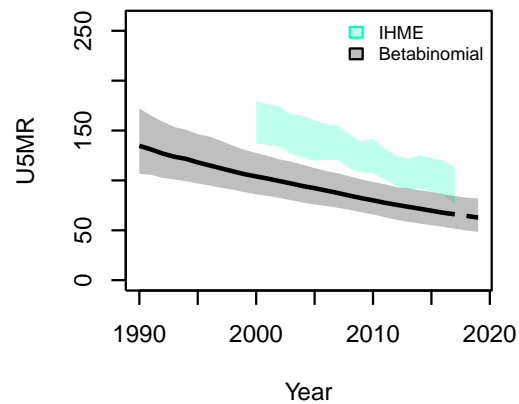
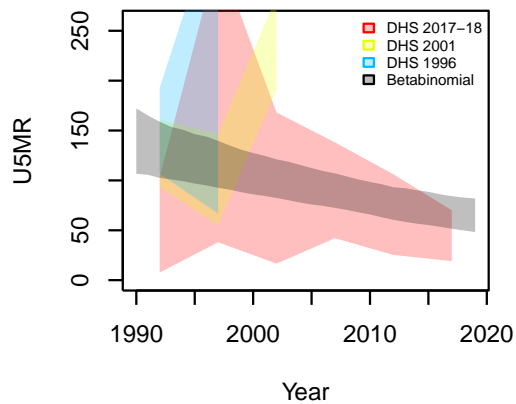
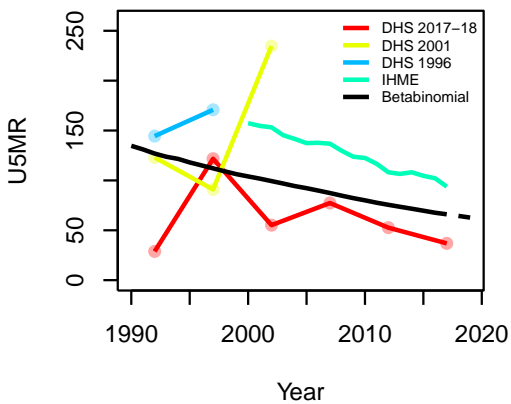
Karimama, Alibori



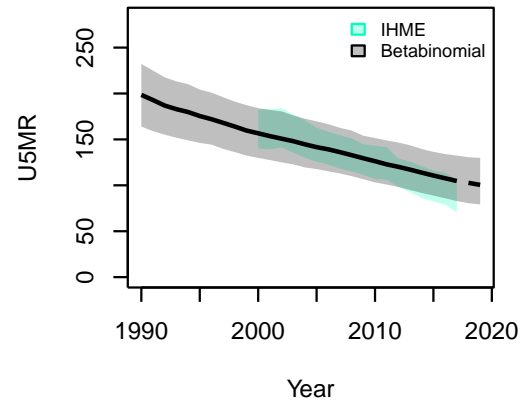
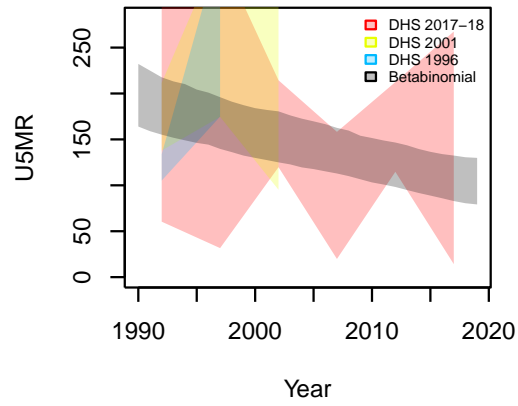
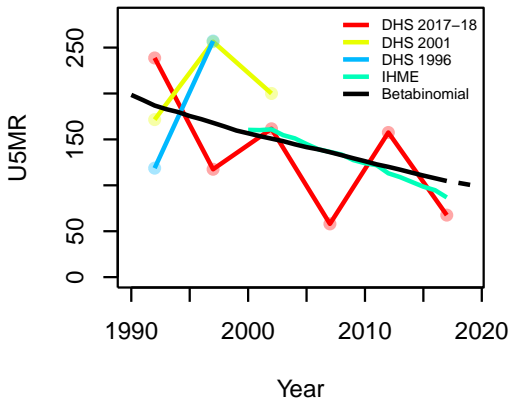
Malanville, Alibori



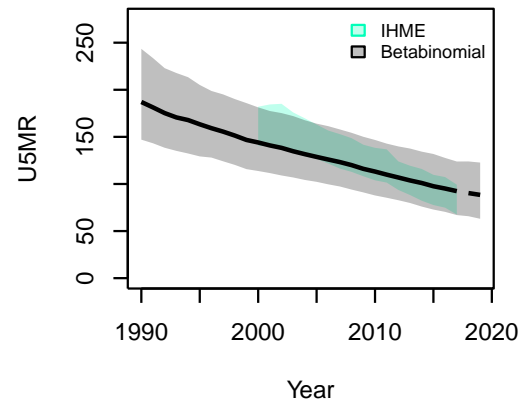
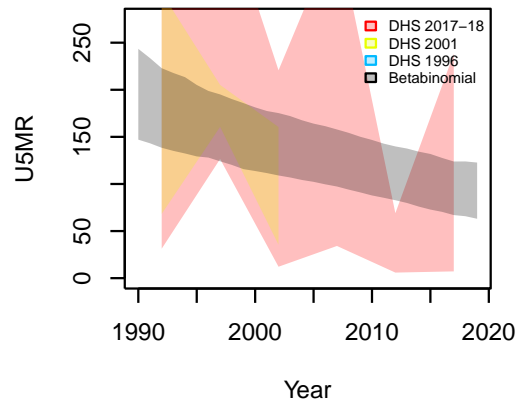
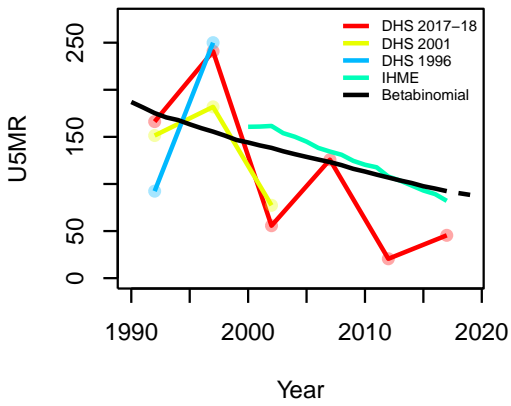
Segbana, Alibori

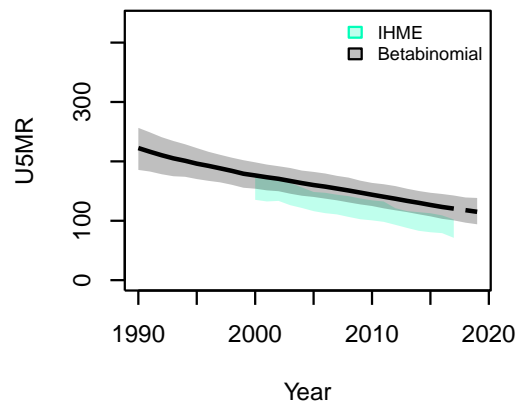
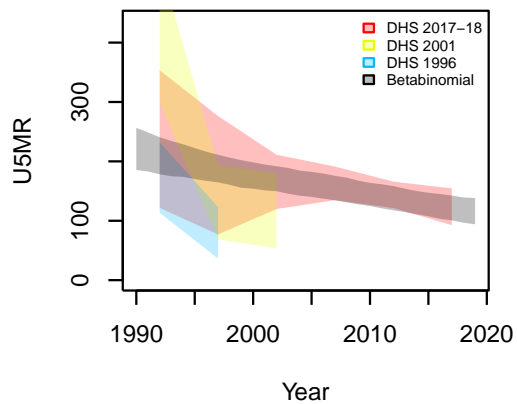
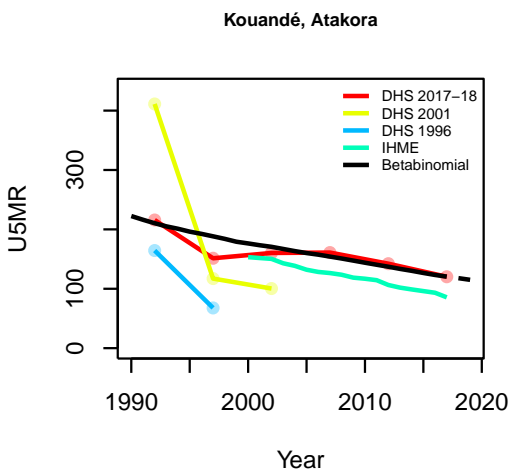
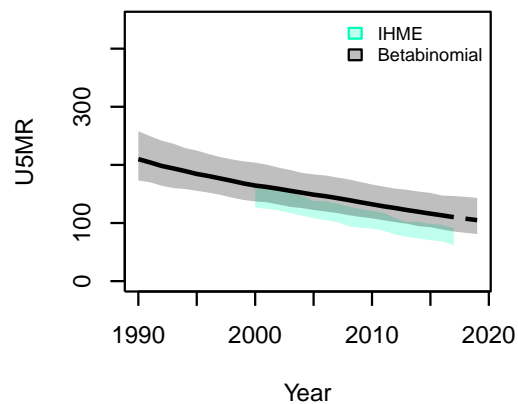
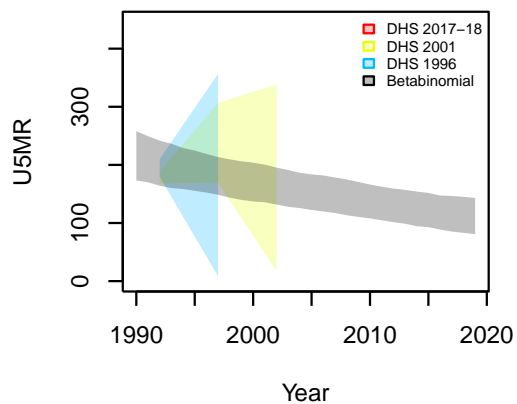
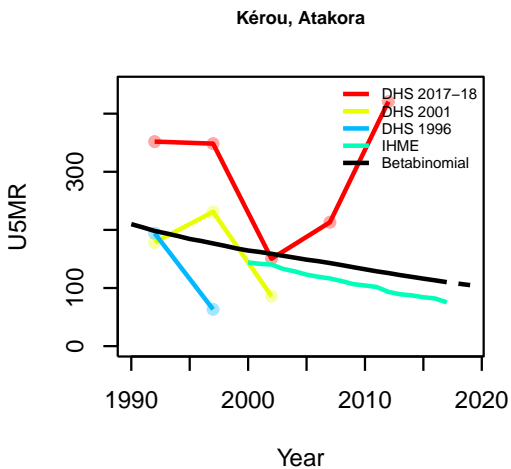


Boukoubbé, Atakora

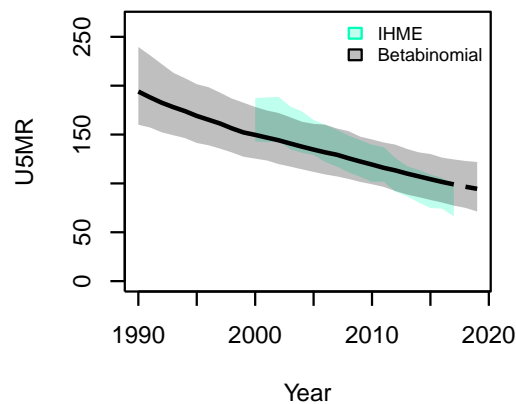
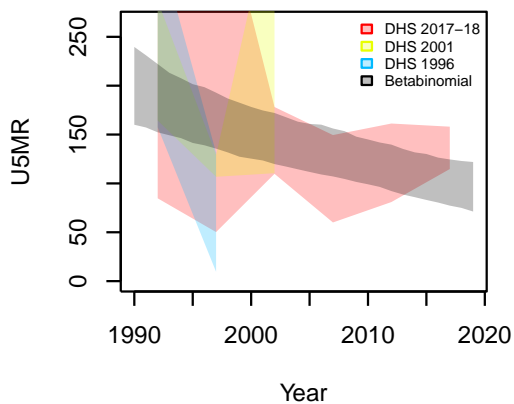
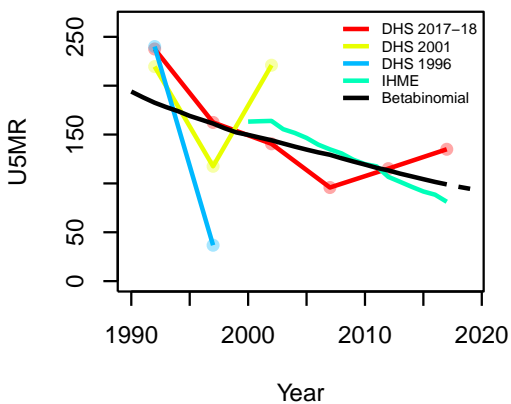


Cobly, Atakora

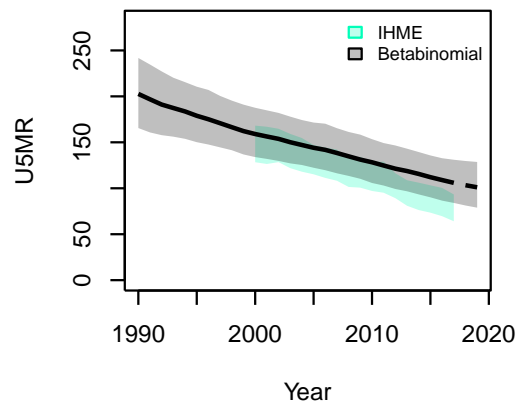
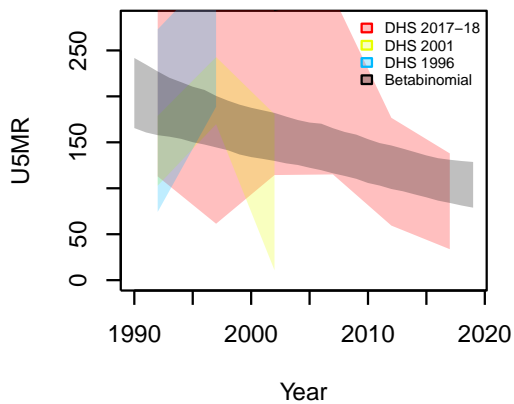
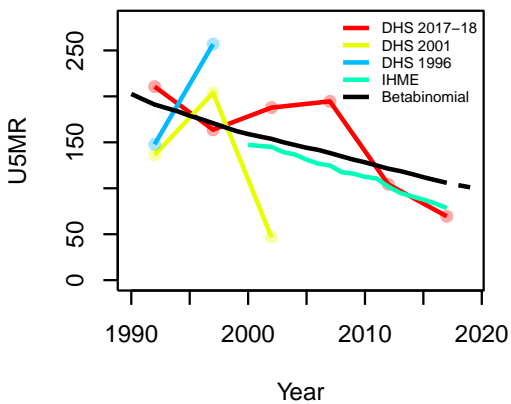




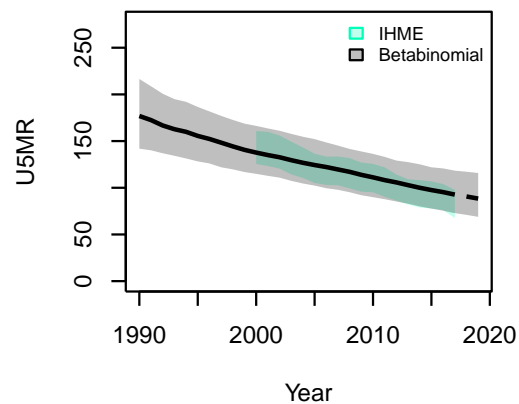
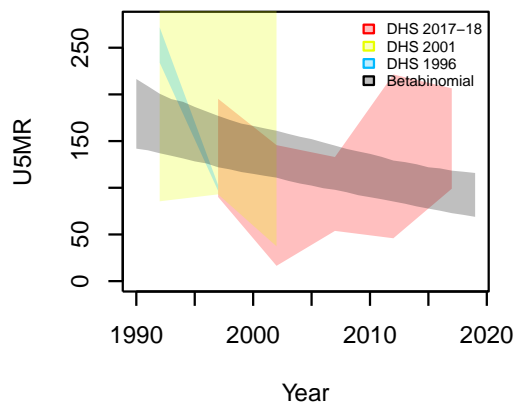
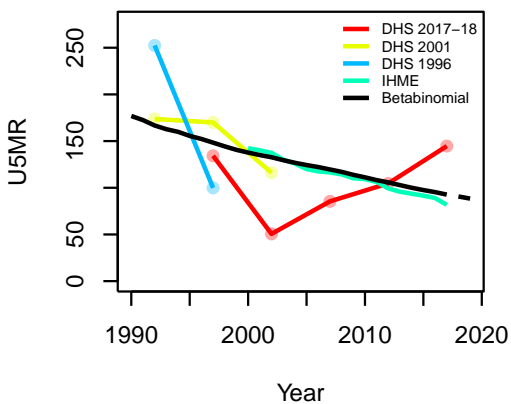
Matéri, Atakora



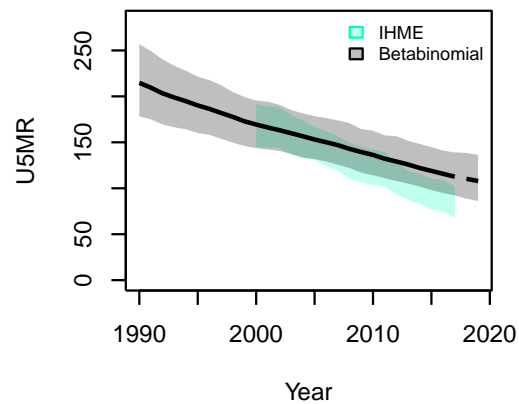
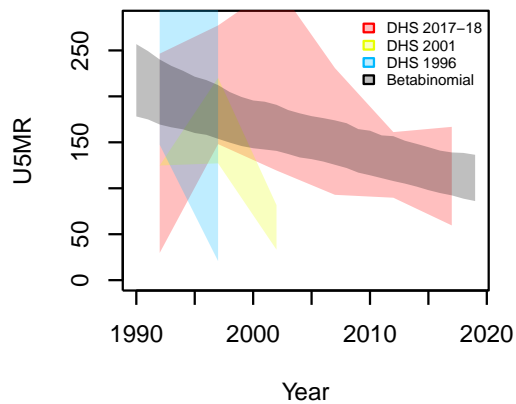
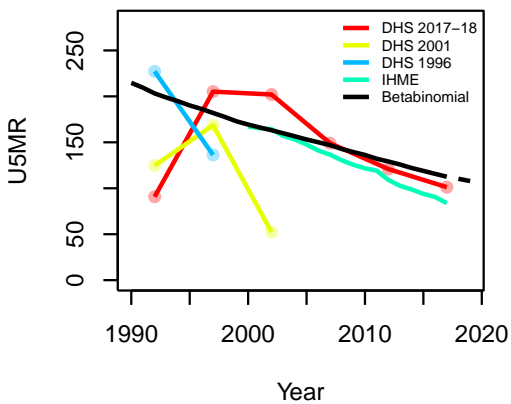
Natitingou, Atakora



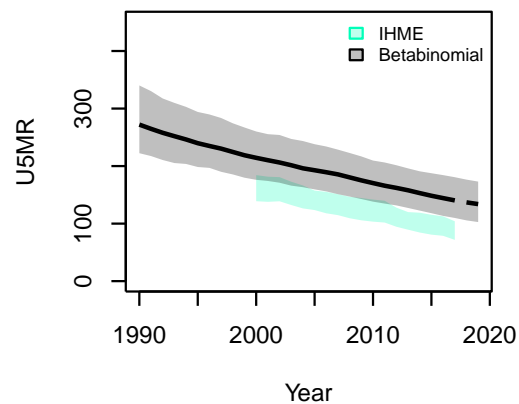
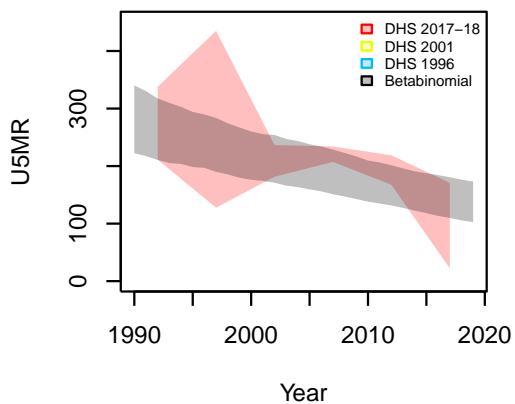
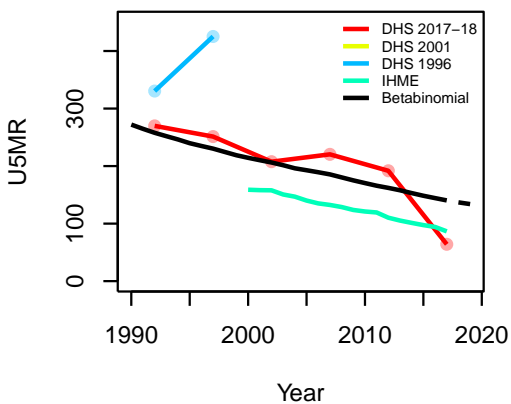
Péhunco, Atakora



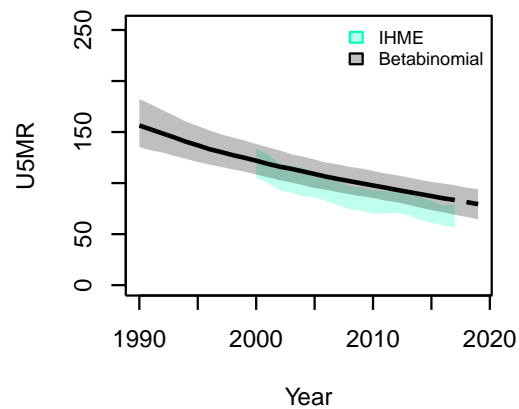
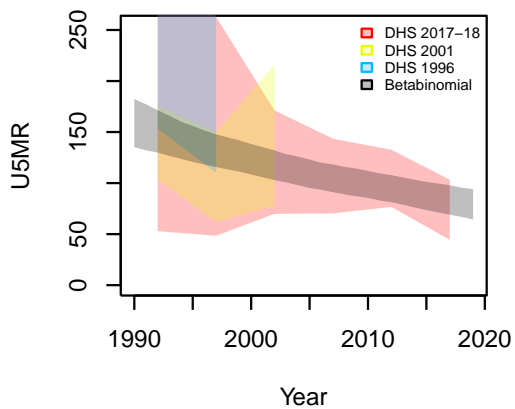
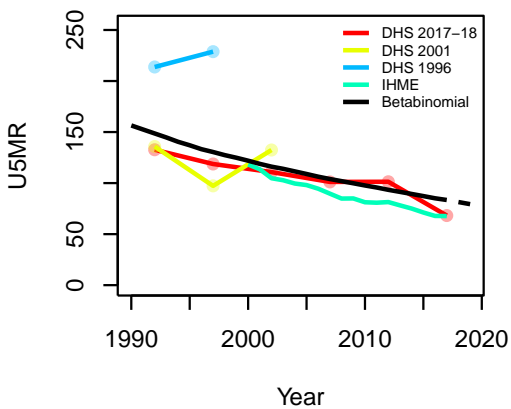
Tanguiéta, Atakora



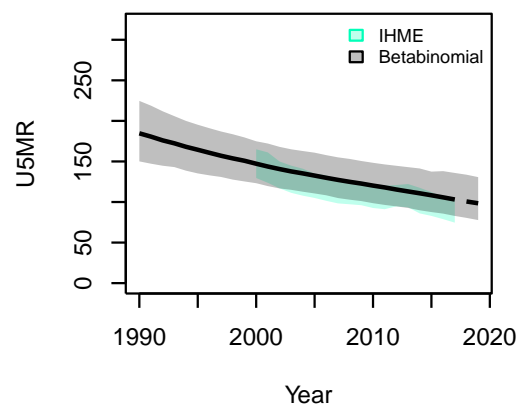
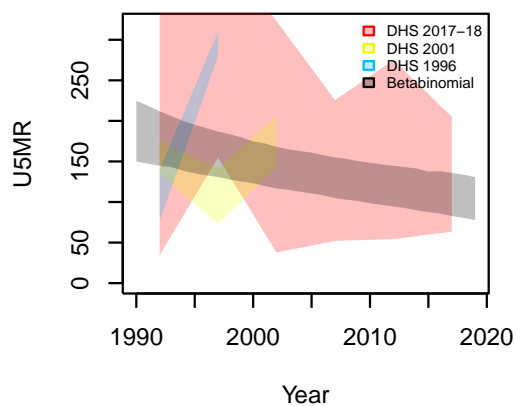
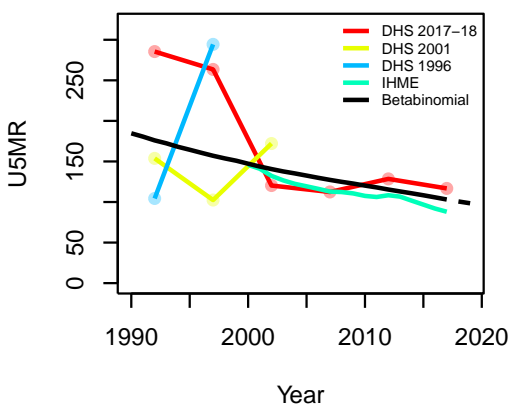
Toucountouna, Atakora



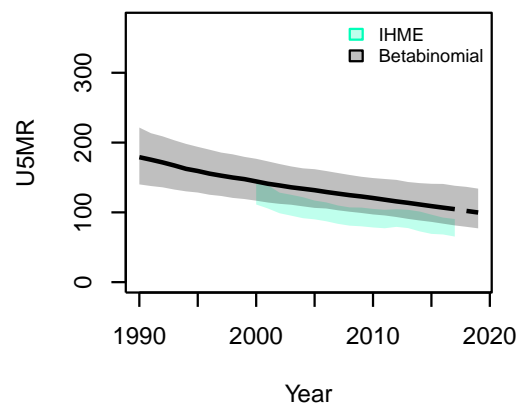
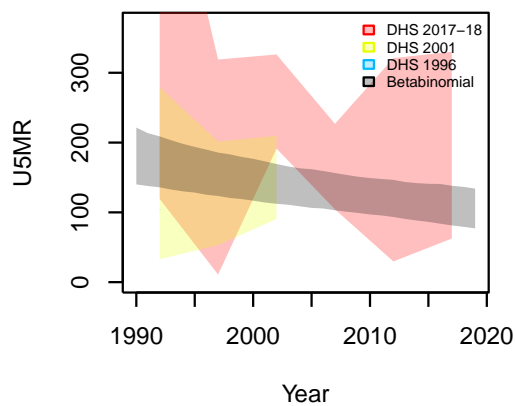
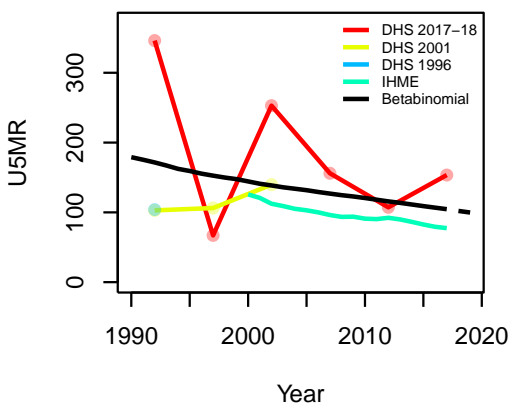
Abomey-Calavi, Atlantique



Allada, Atlantique

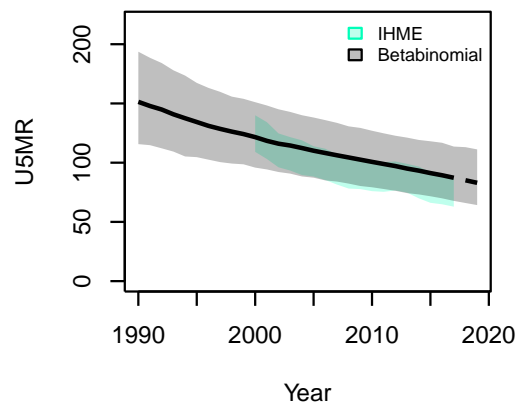
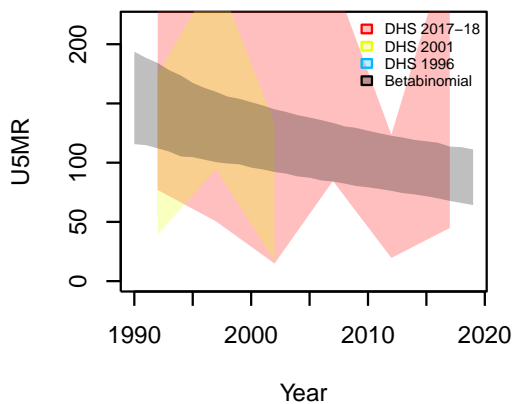
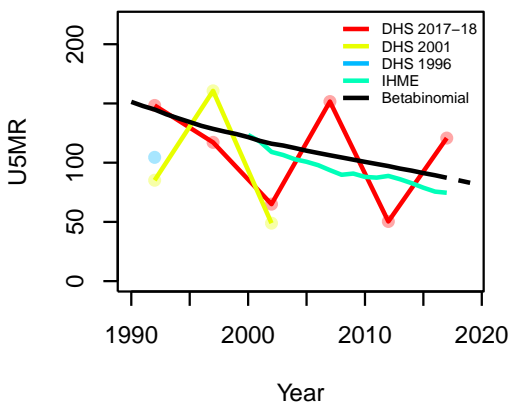


Kpomassè, Atlantique

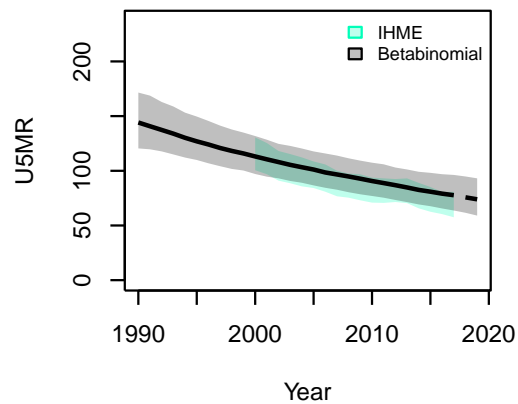
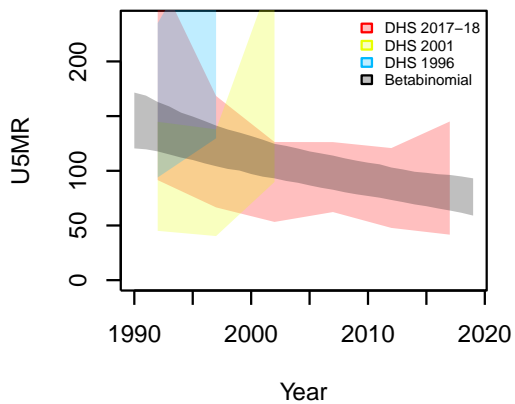
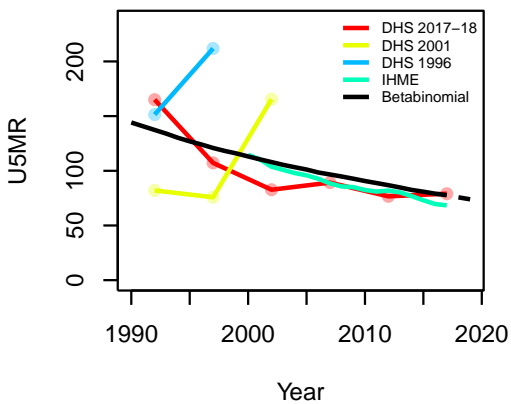




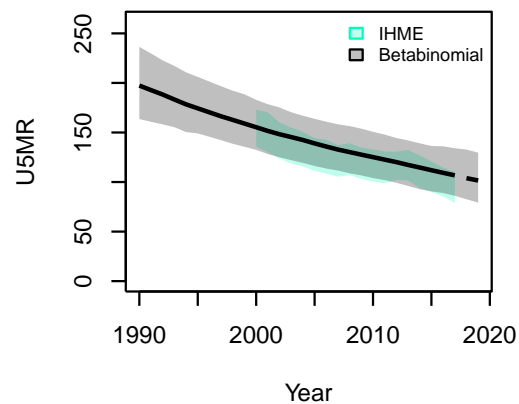
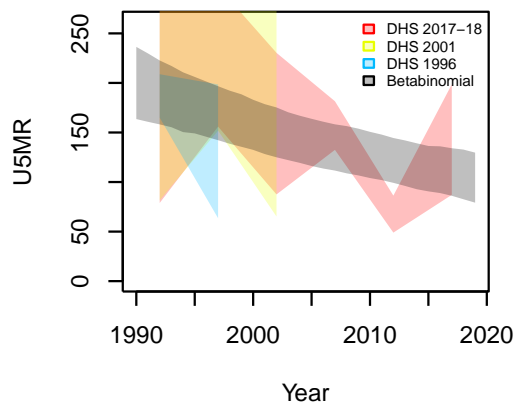
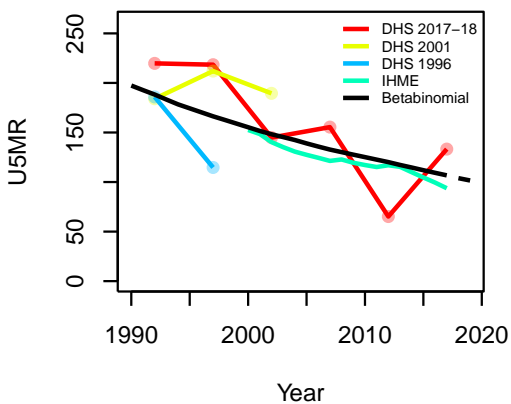
Ouidah, Atlantique



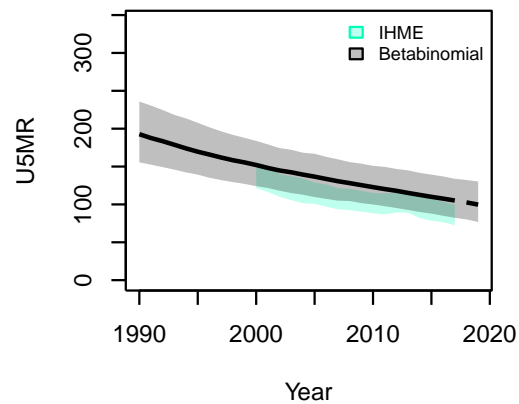
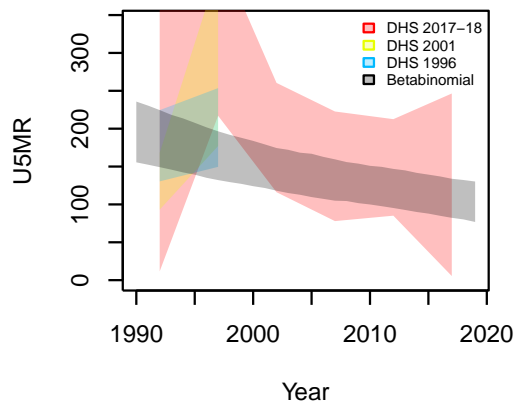
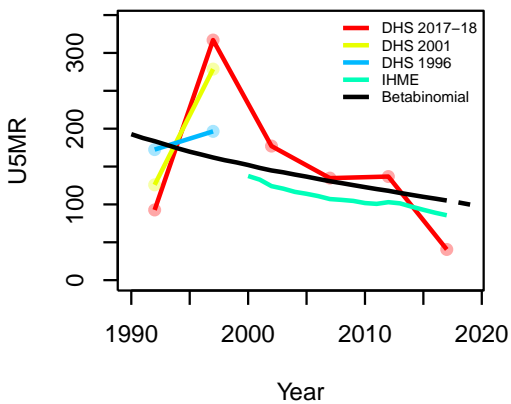
Sô-Ava, Atlantique



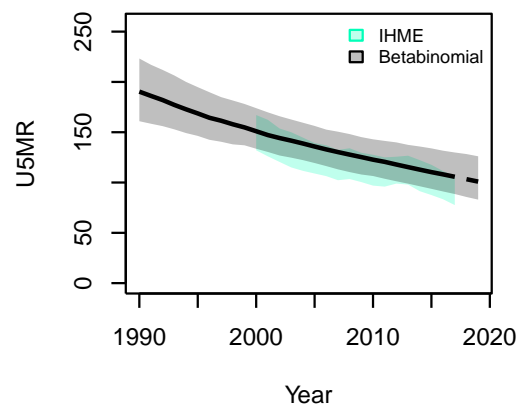
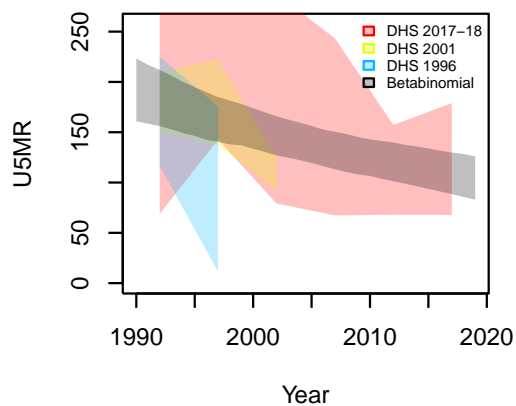
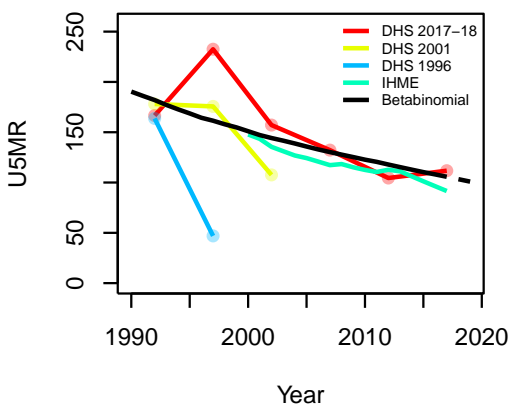
Toffo, Atlantique



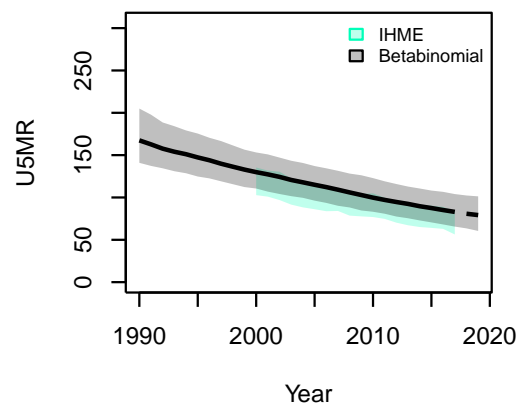
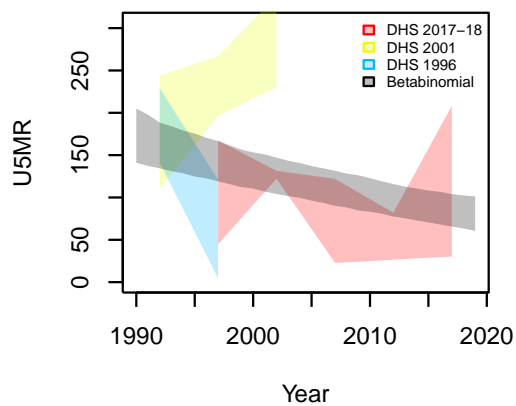
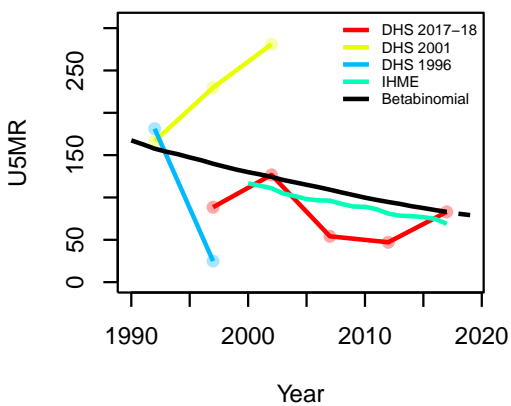
Tori-Bossito, Atlantique



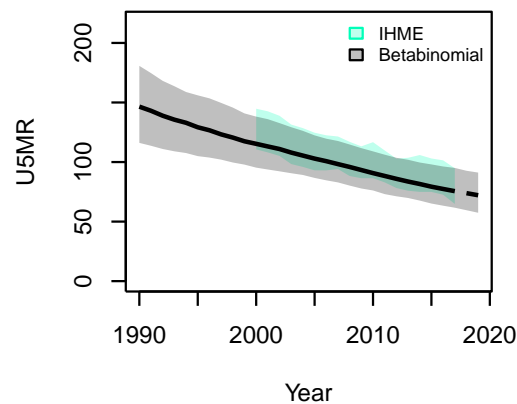
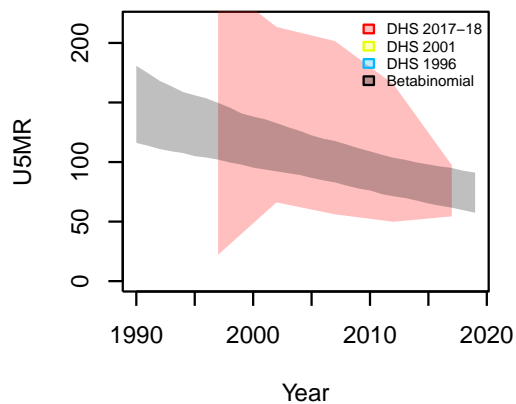
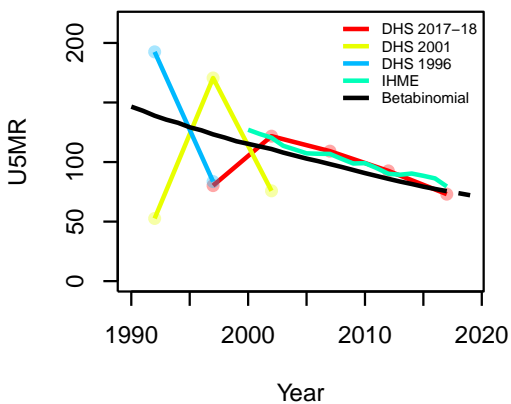
Zè, Atlantique



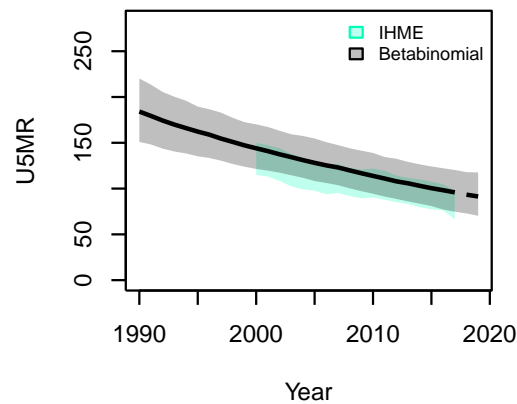
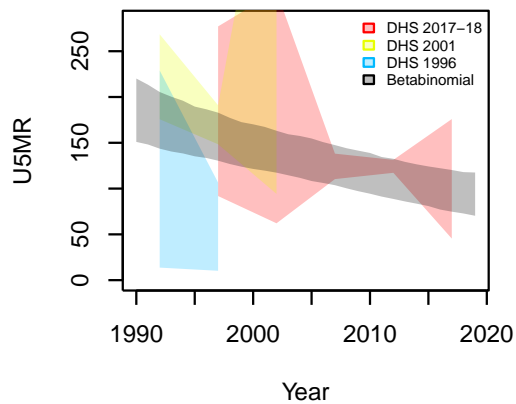
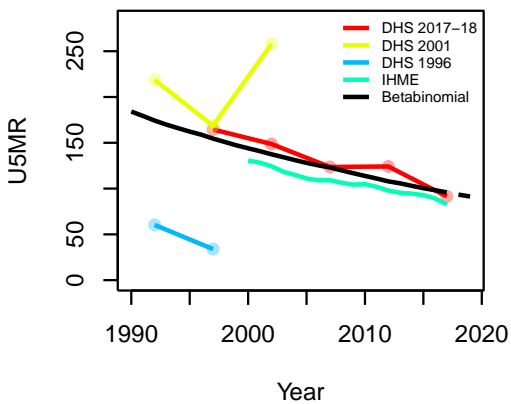
Bembéréké, Borgou



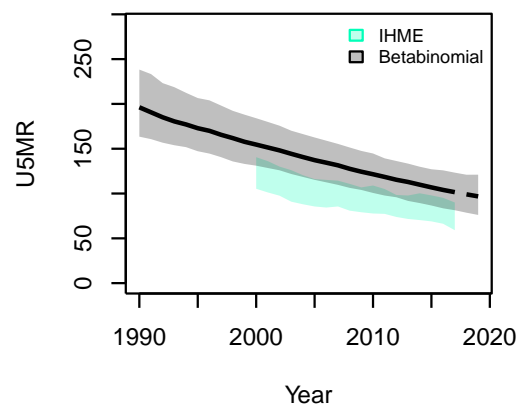
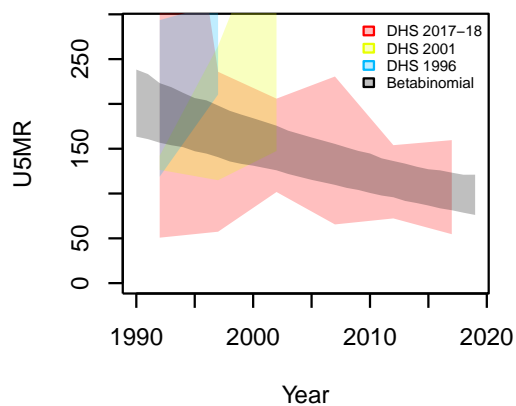
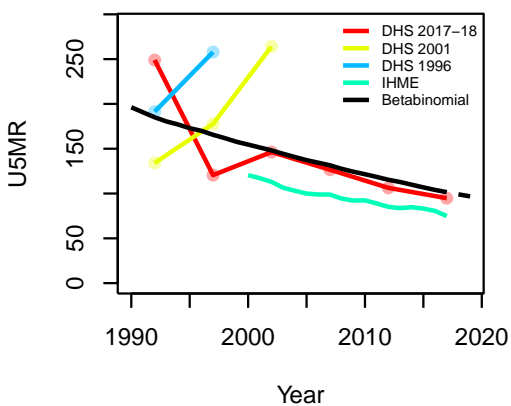
Kalalé, Borgou



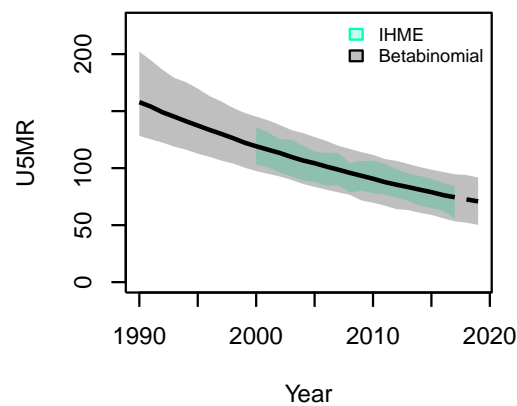
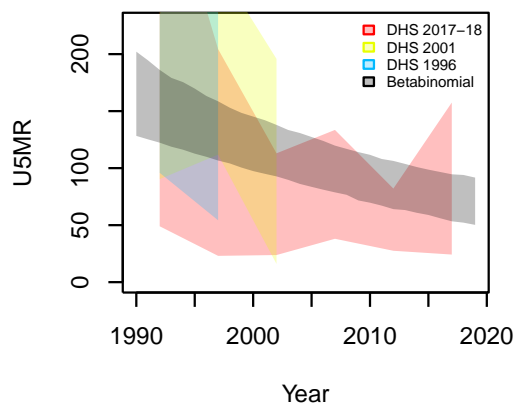
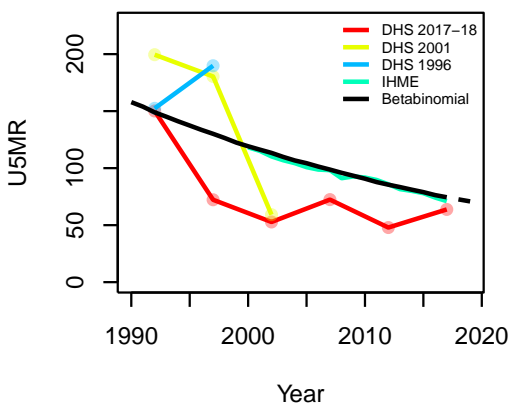
N'Dali, Borgou



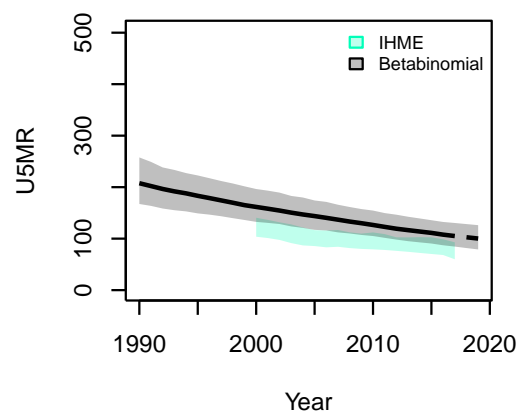
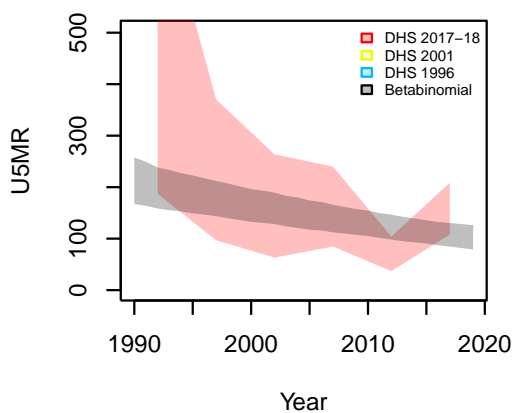
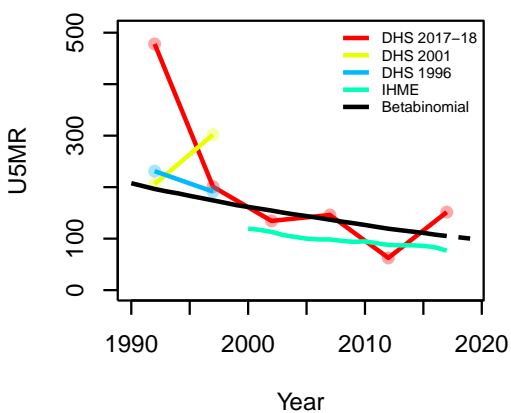
Nikki, Borgou



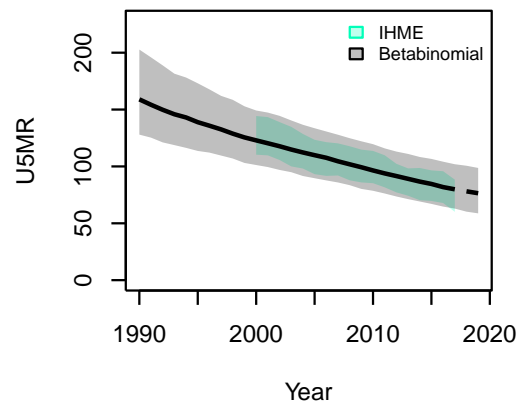
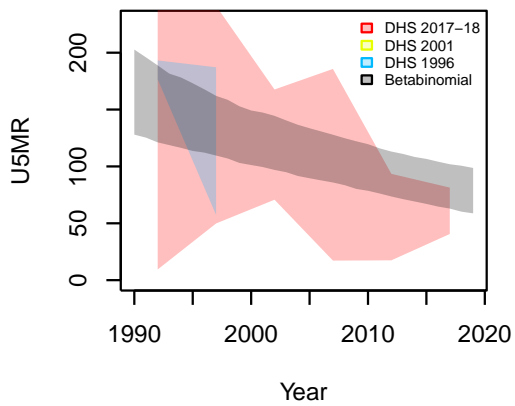
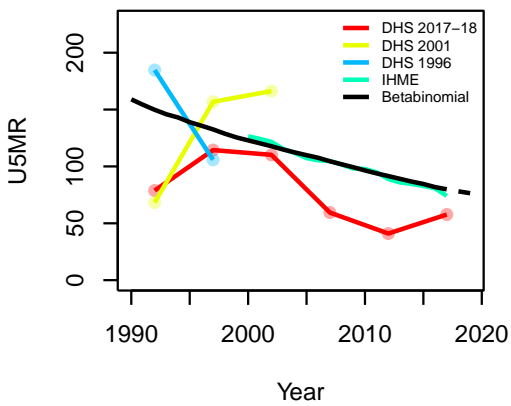
Parakou, Borgou

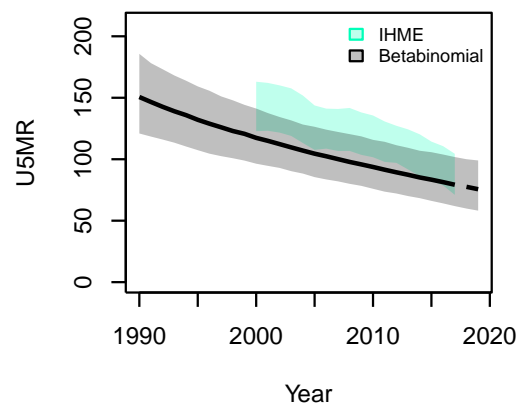
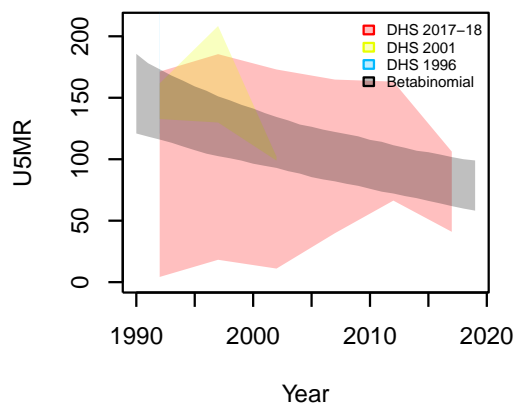
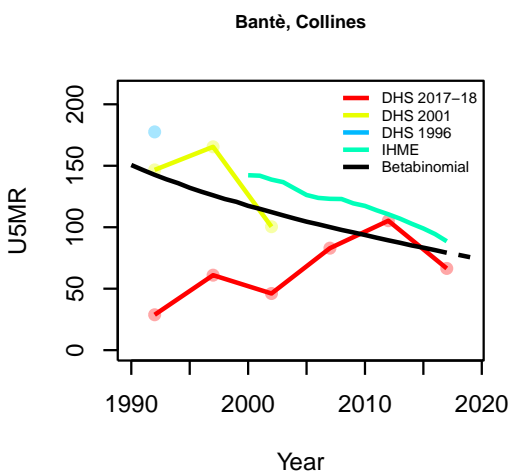
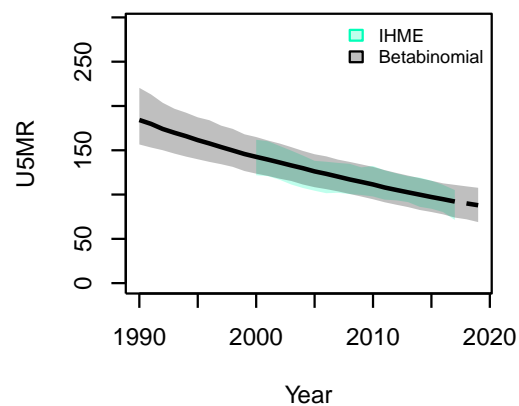
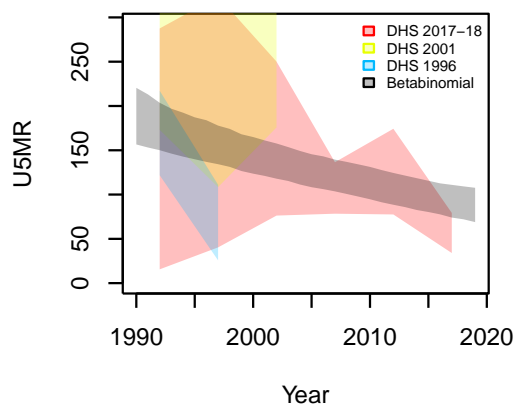
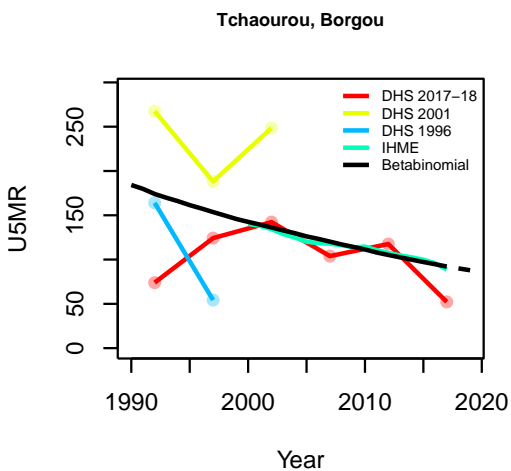


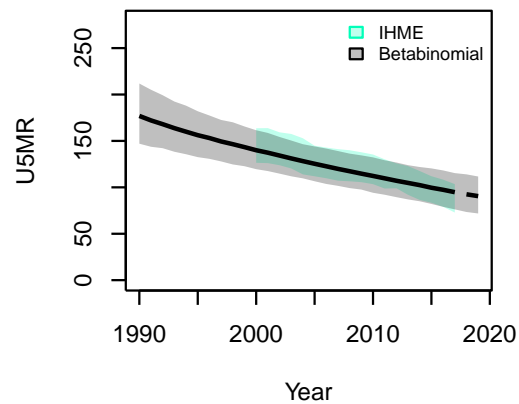
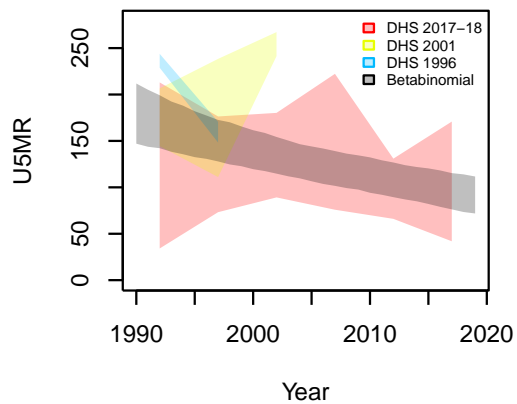
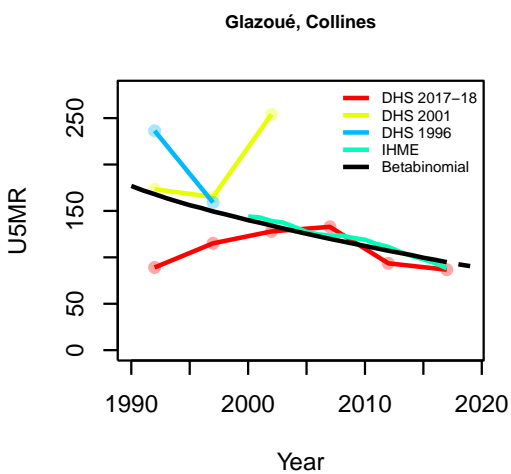
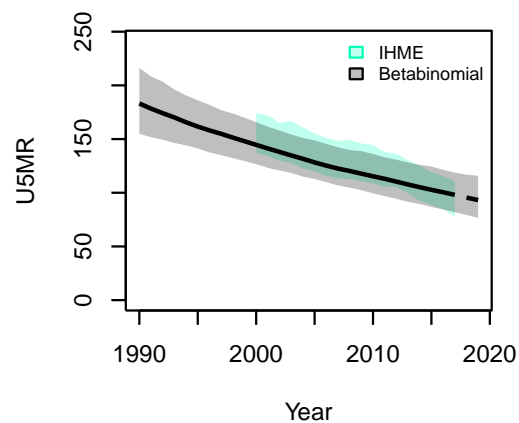
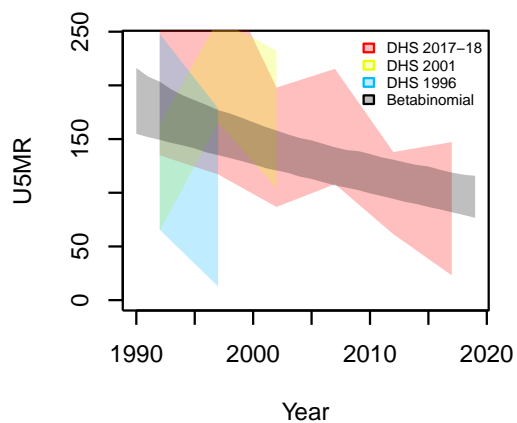
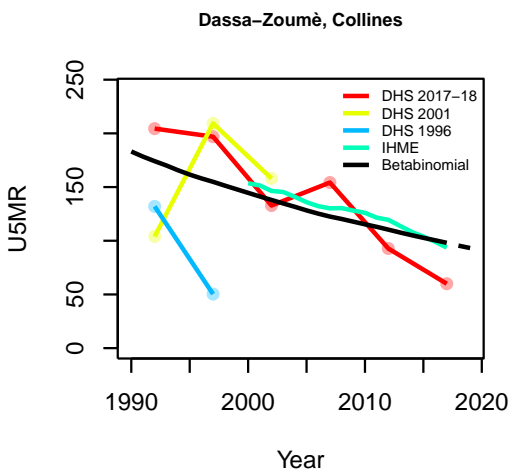
Pèrèrè, Borgou



Sinendé, Borgou

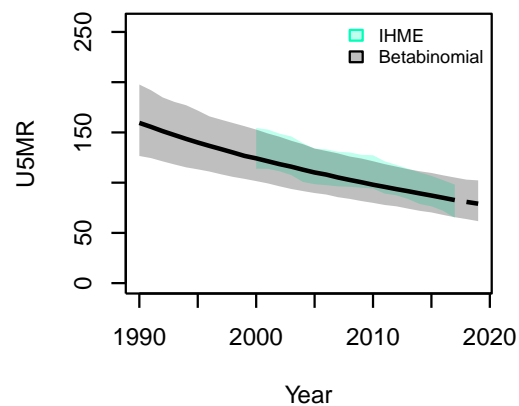
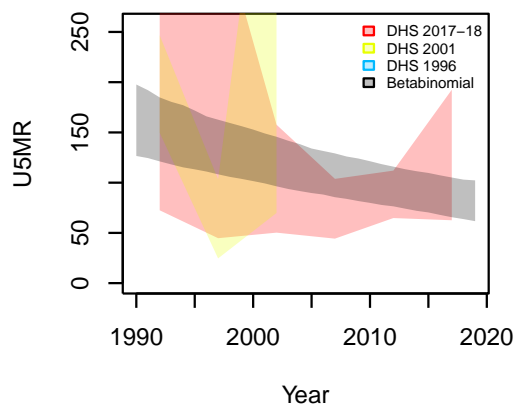
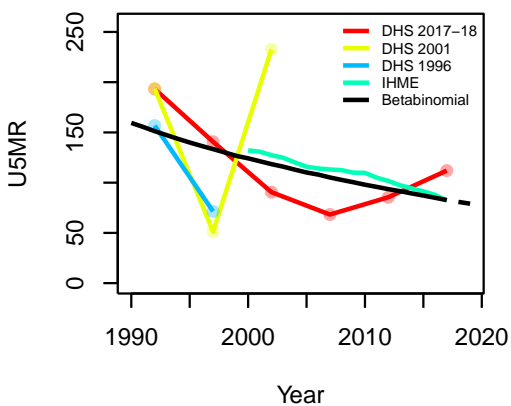




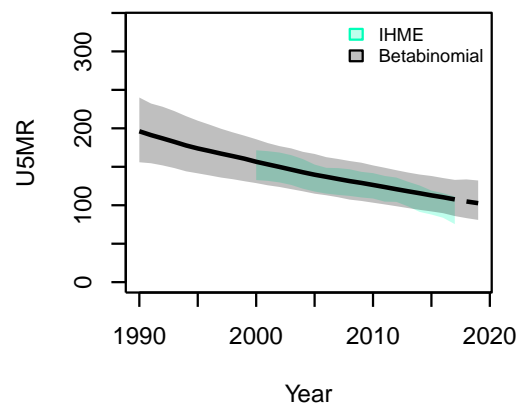
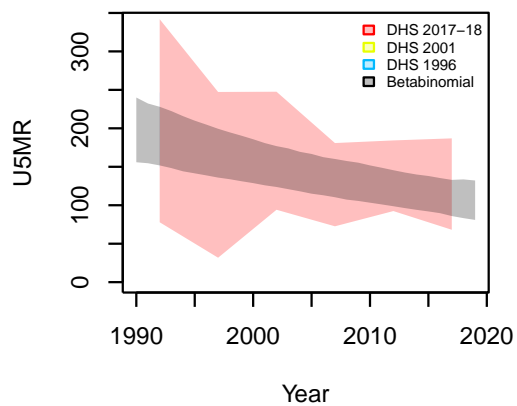
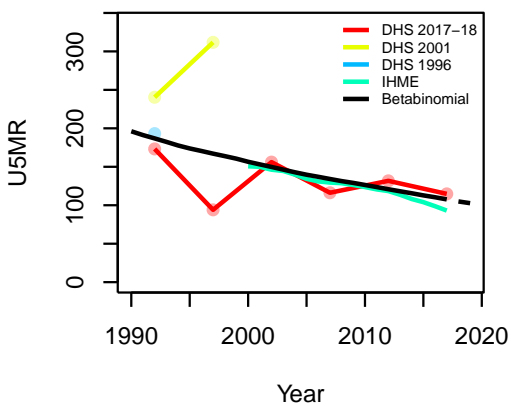




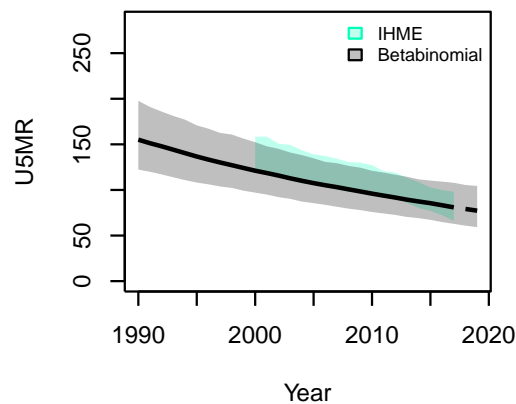
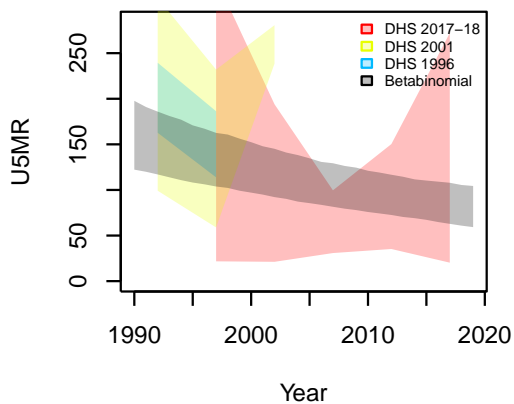
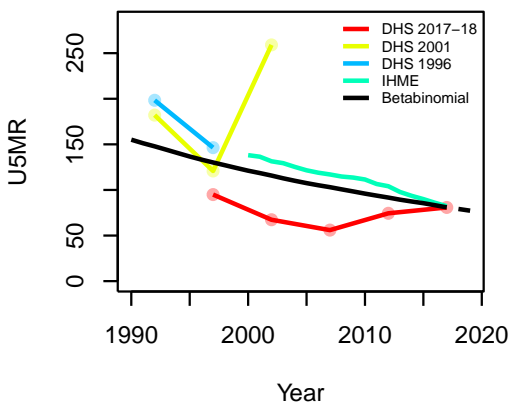
Ouèssè, Collines



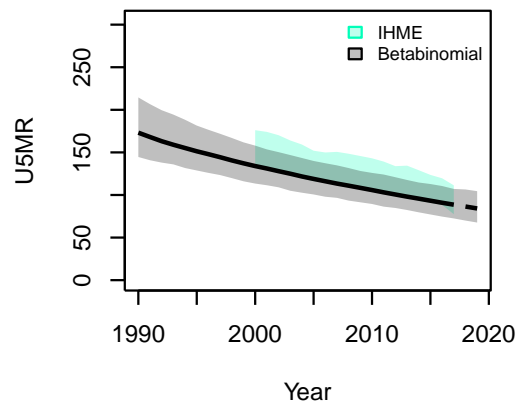
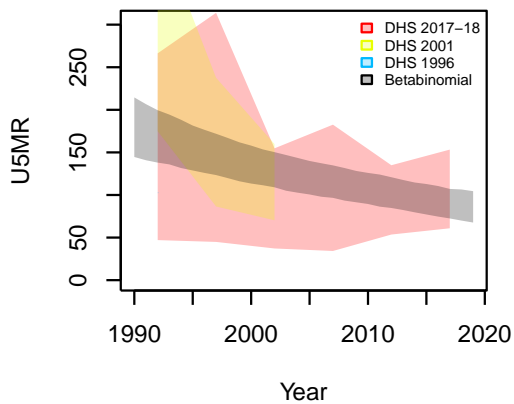
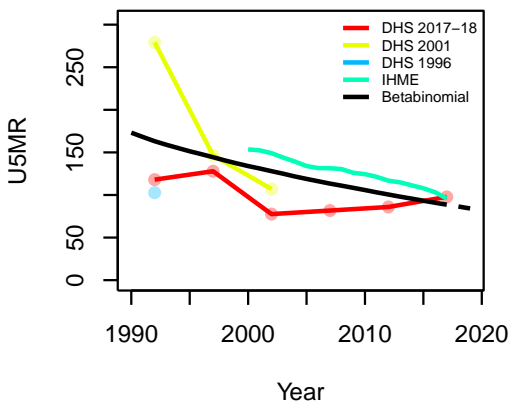
Savalou, Collines



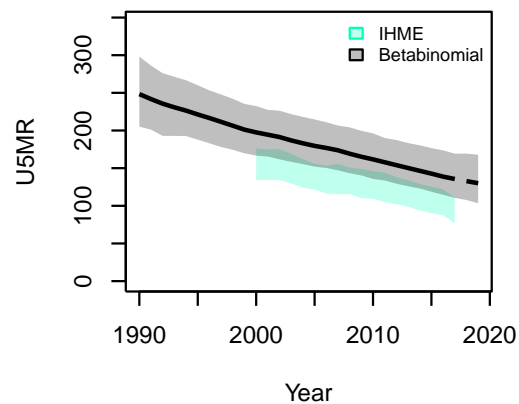
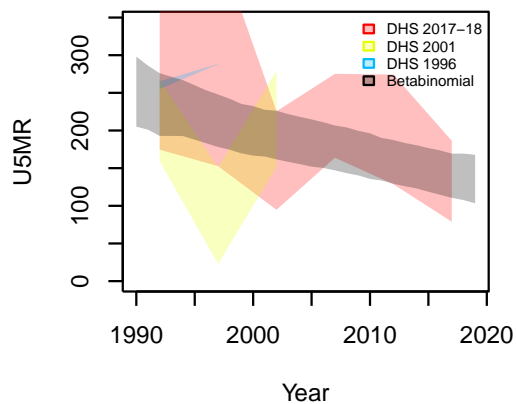
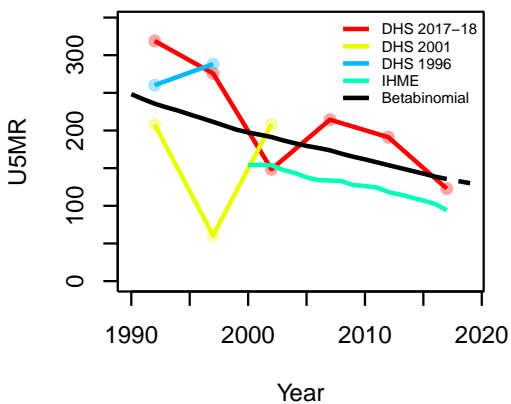
Savè, Collines



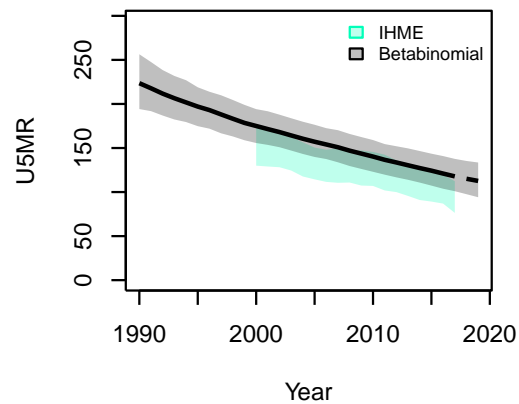
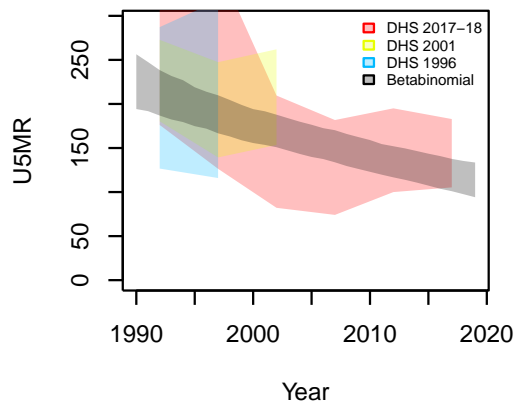
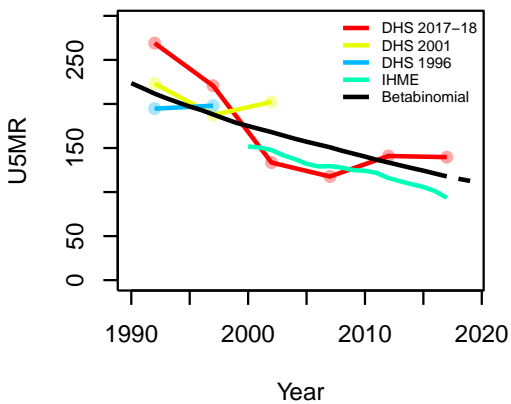
Bassila, Donga



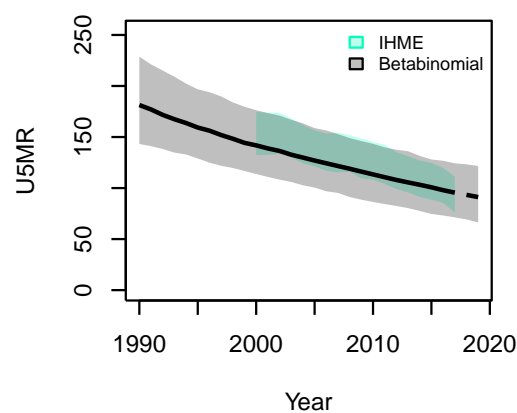
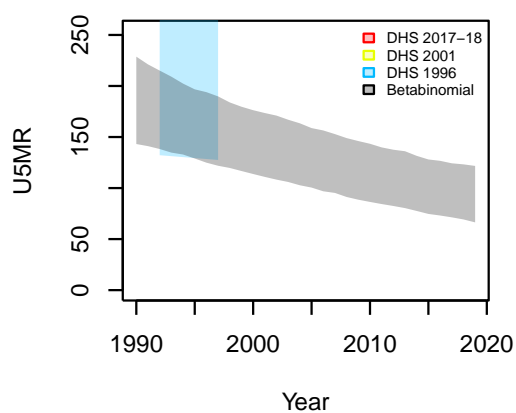
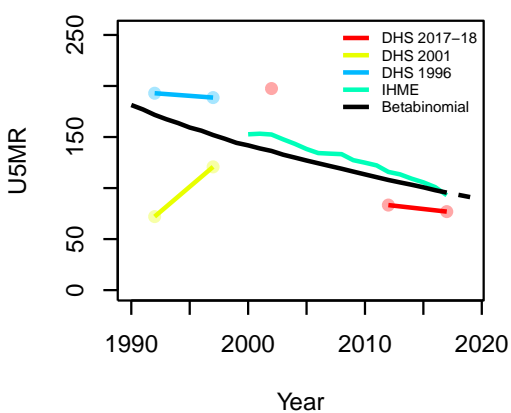
Copargo, Donga



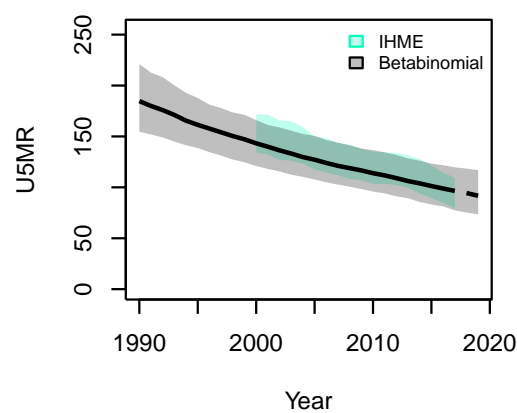
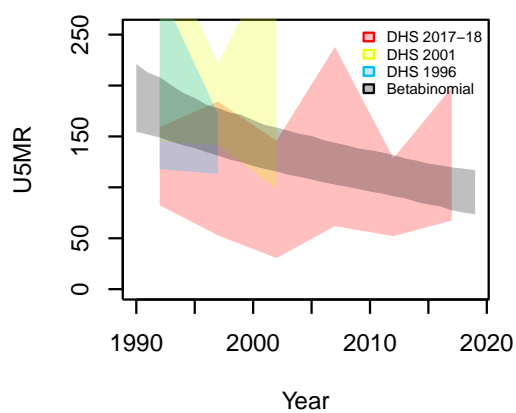
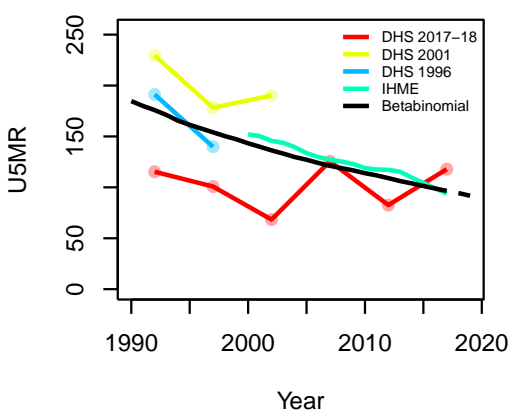
Djougou, Donga



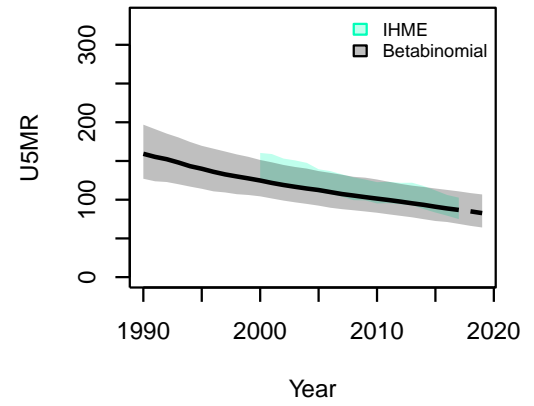
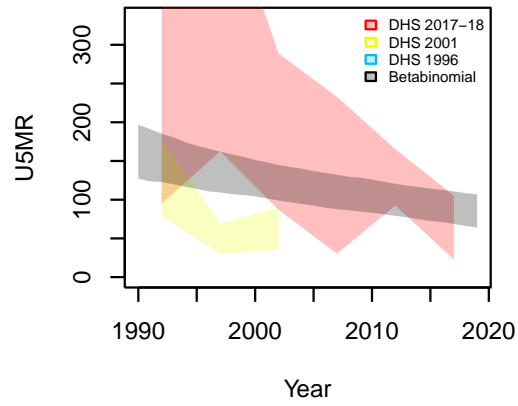
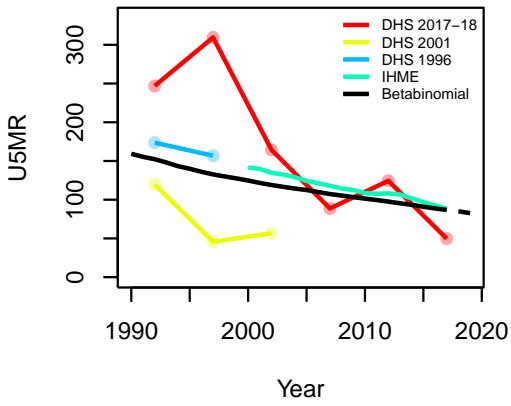
Ouaké, Donga



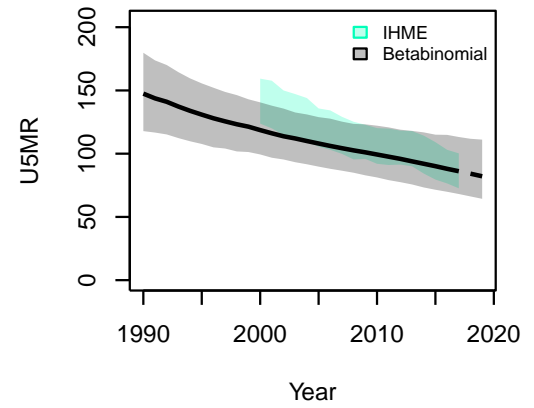
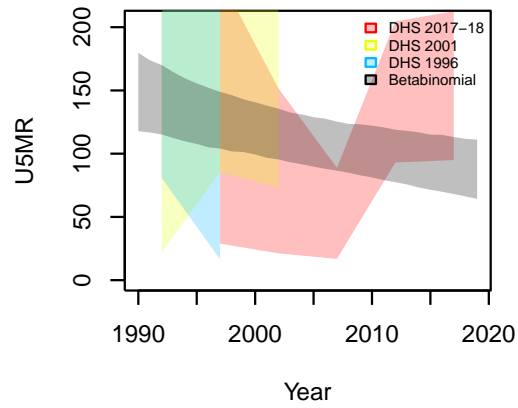
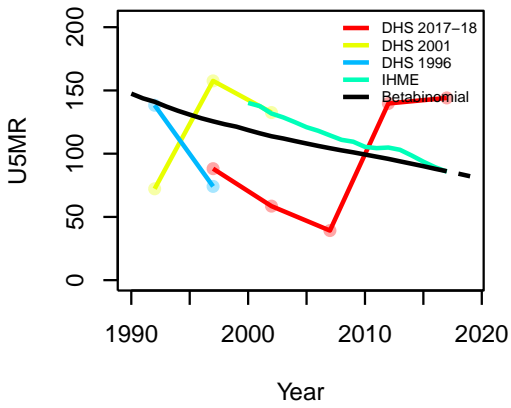
Aplahoué, Kouffo



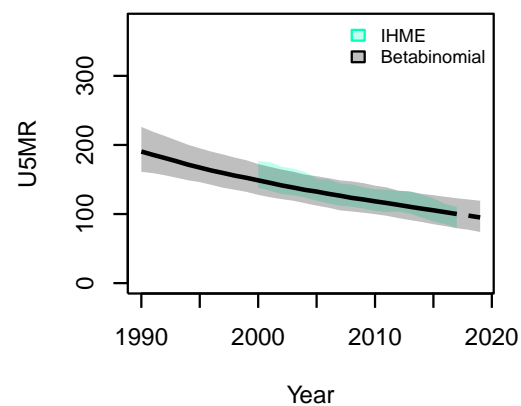
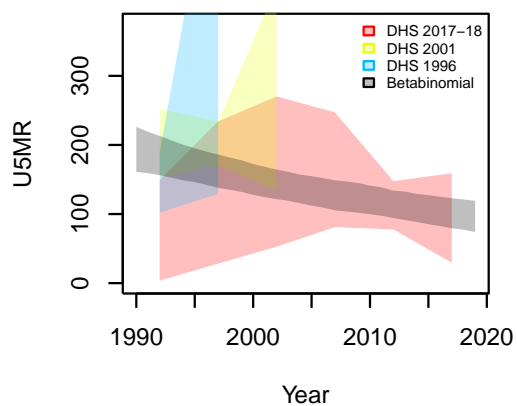
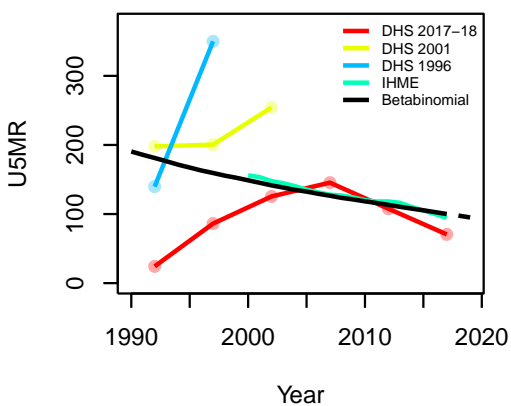
Djakotomey, Kouffo



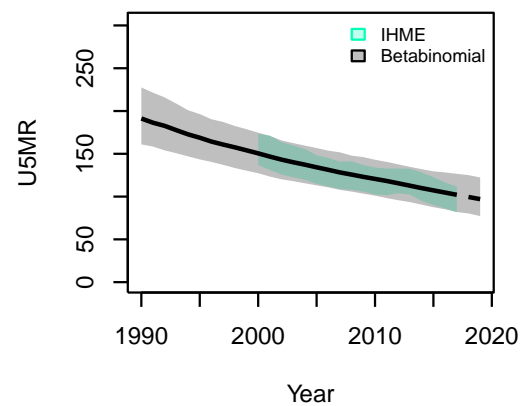
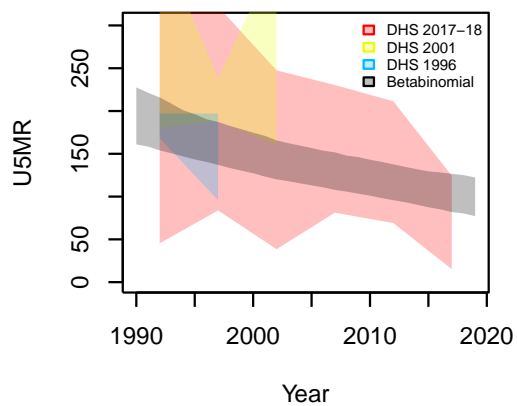
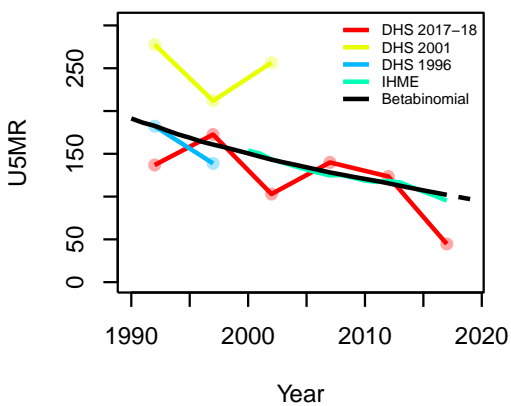
Dogbo, Kouffo



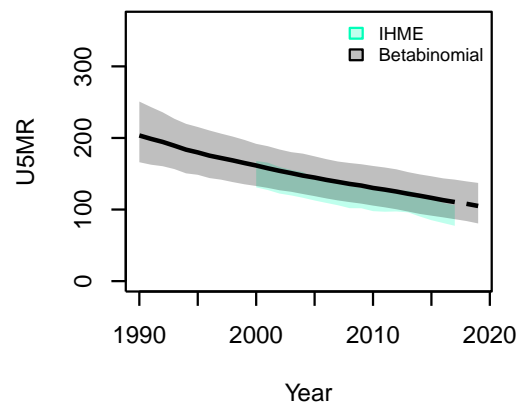
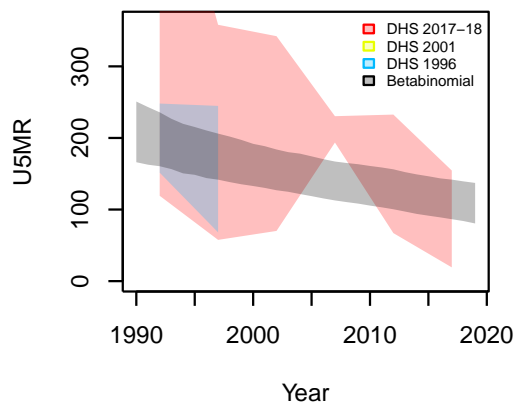
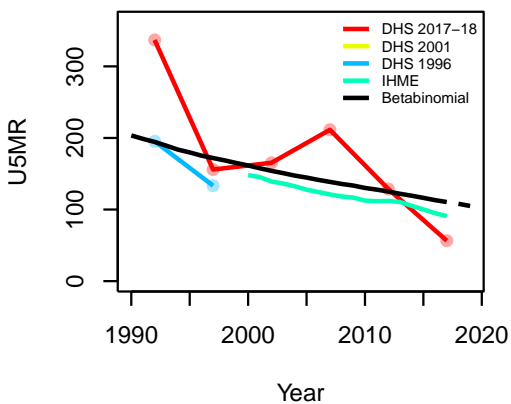
Klouékanmè, Kouffo



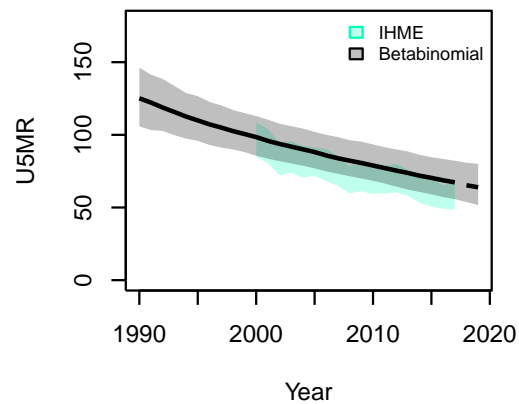
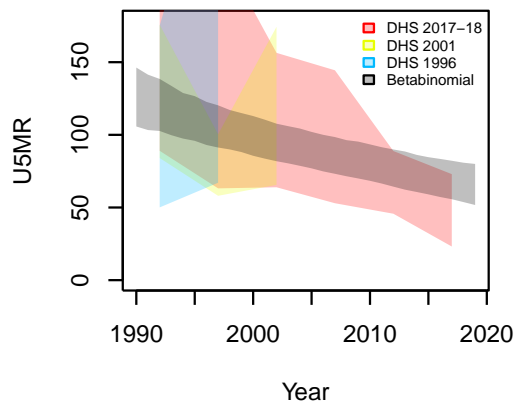
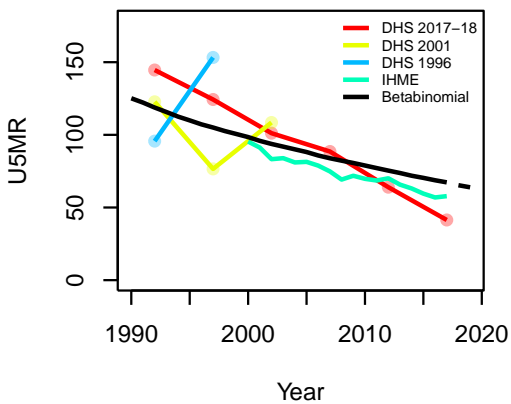
Lalo, Kouffo



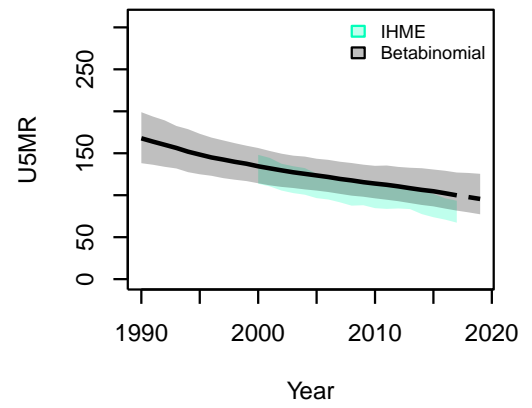
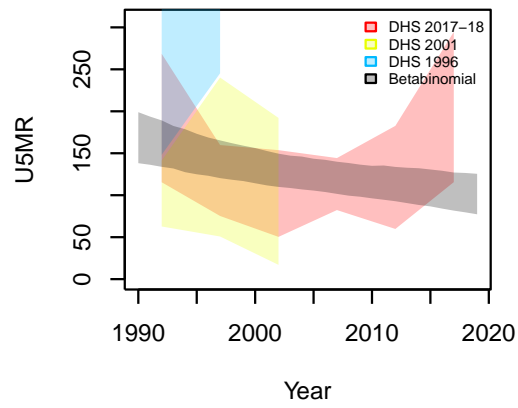
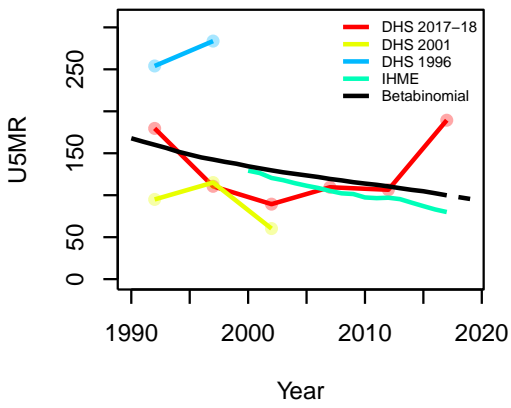
Toviklin, Kouffo



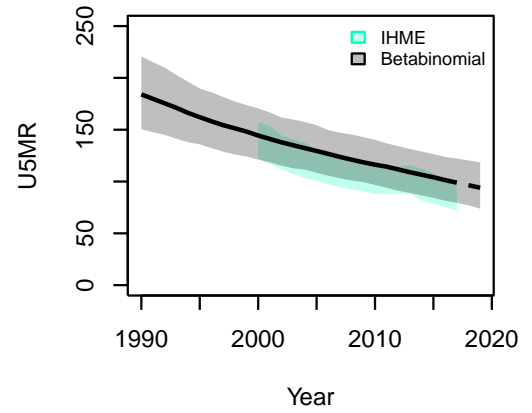
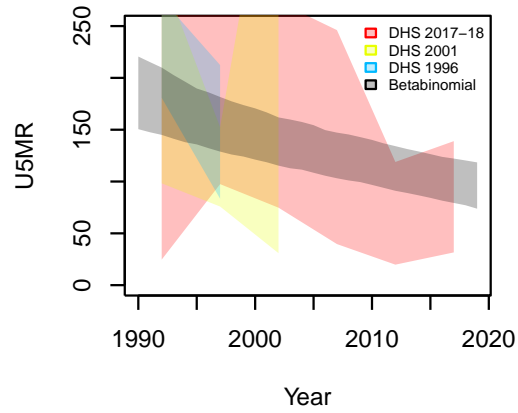
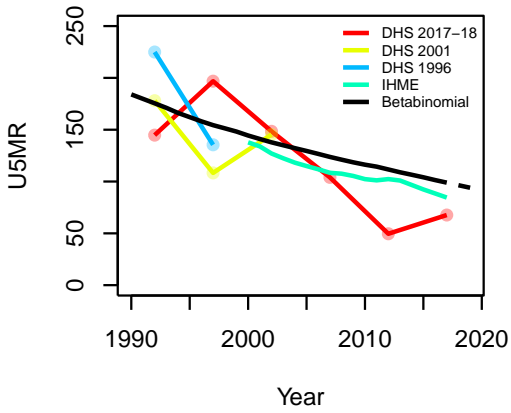
Cotonou, Littoral



Athiémé, Mono

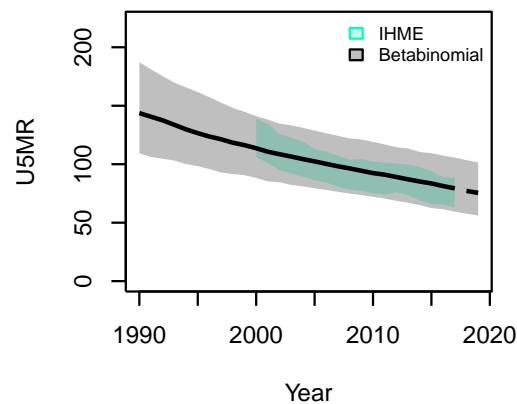
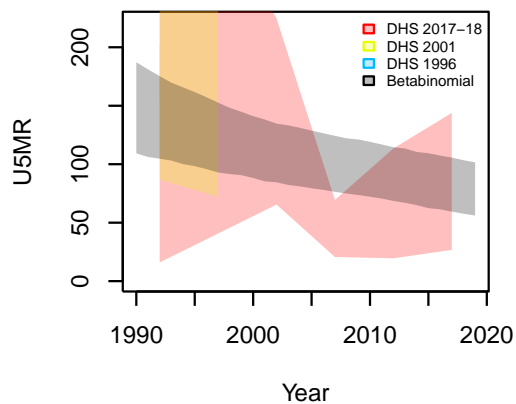
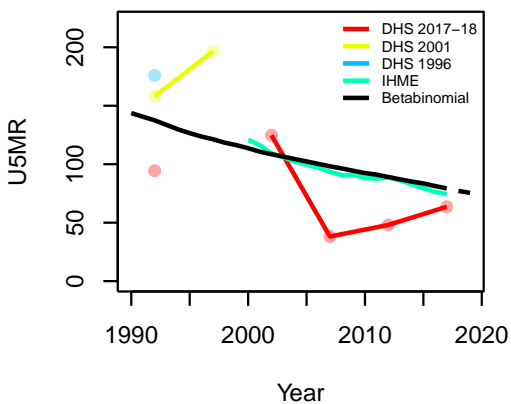


Bopa, Mono

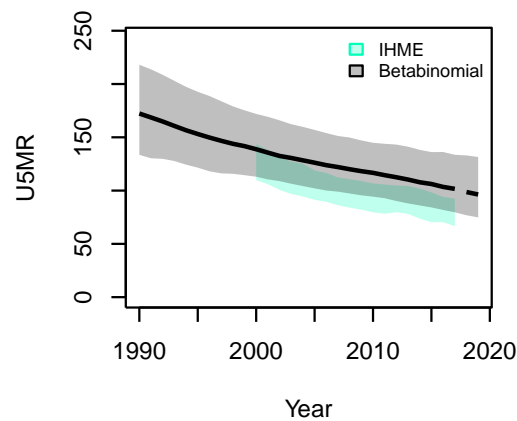
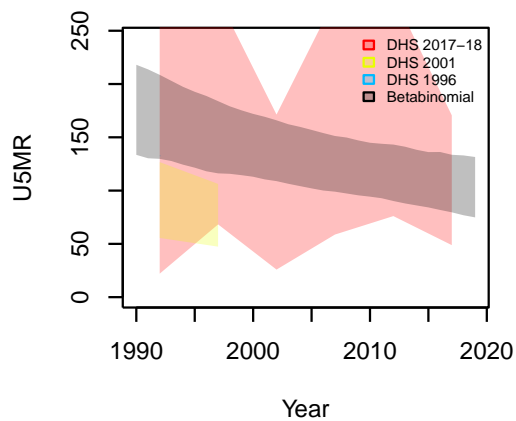
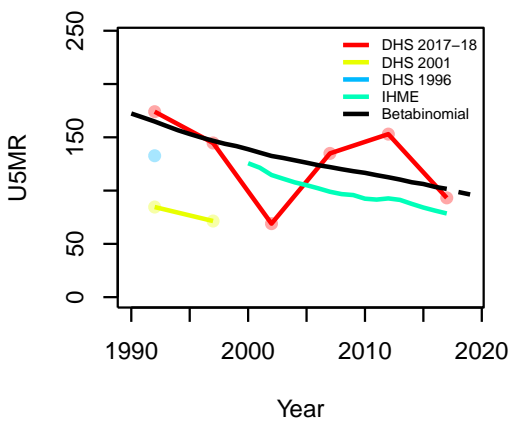




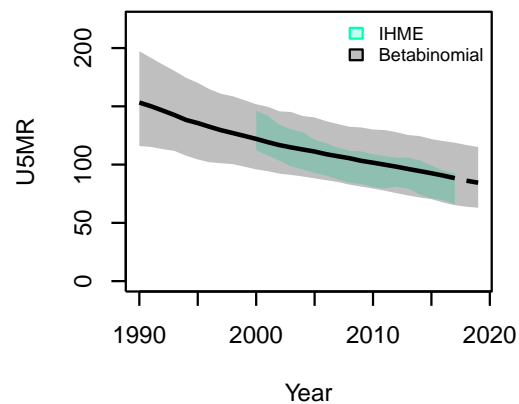
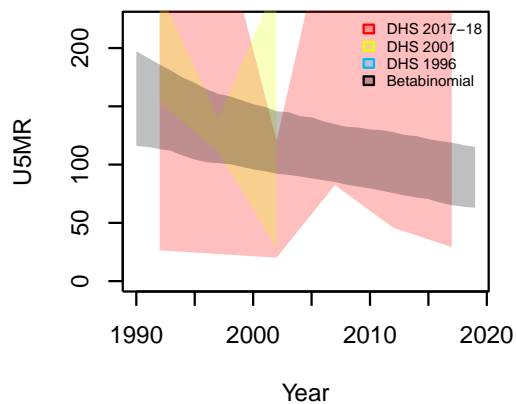
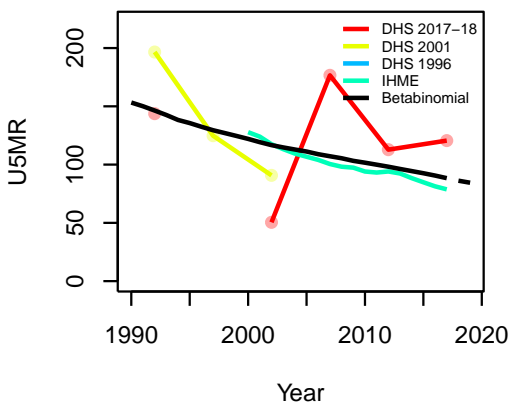
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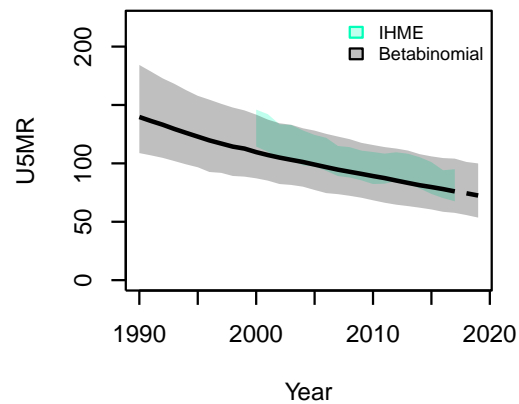
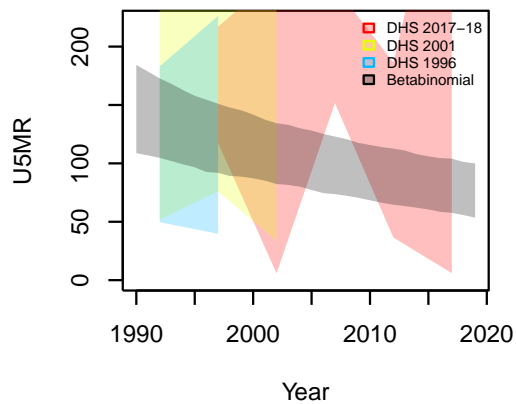
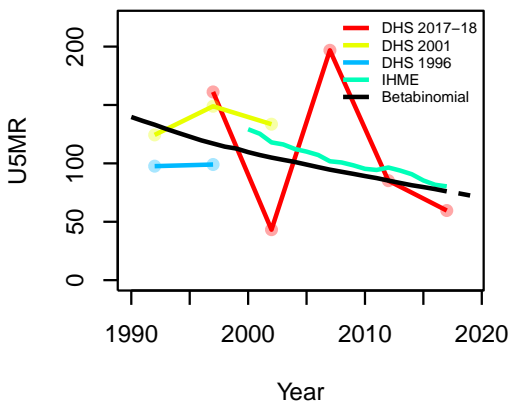
Grand-Popo, Mono



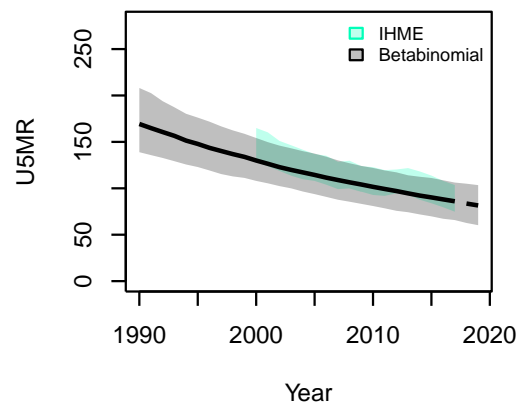
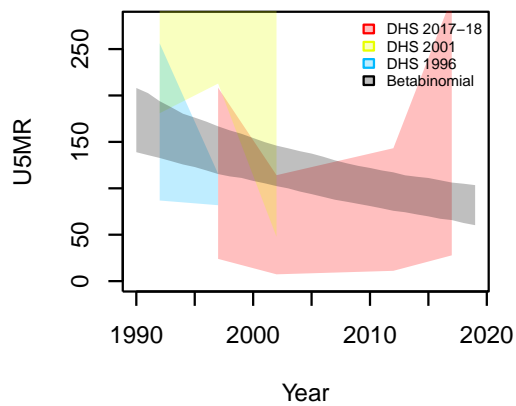
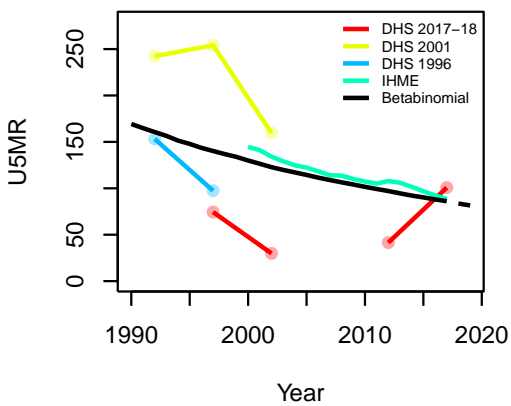
Houéyogbé, Mono



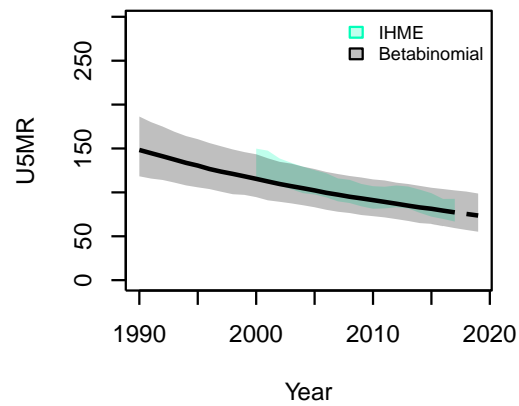
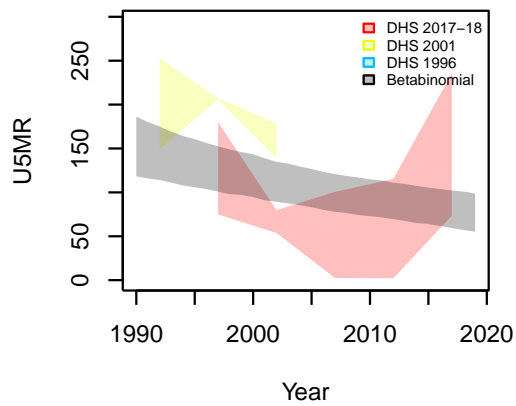
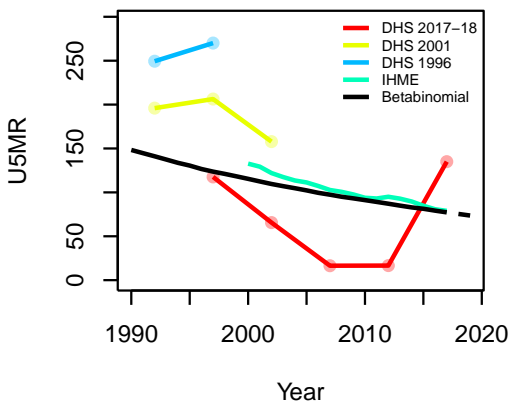
Adjarra, Ouémé



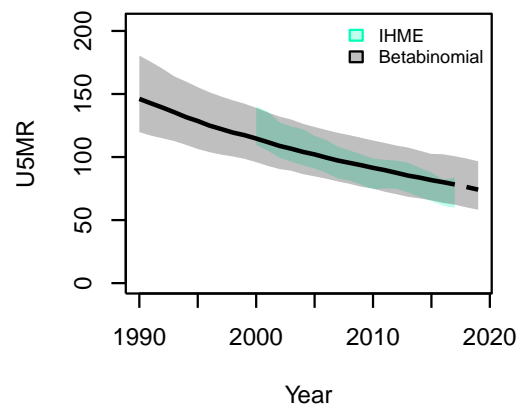
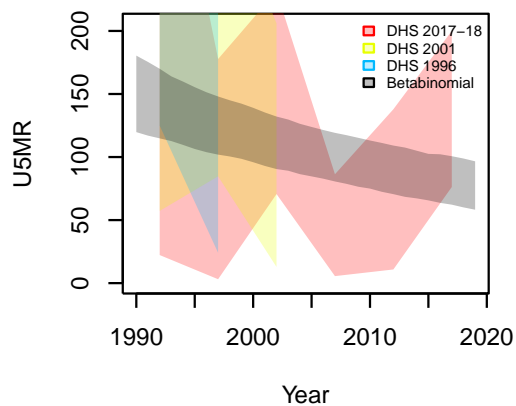
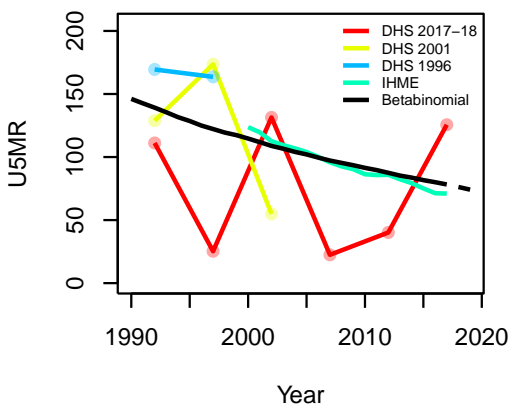
Adjohoun, Ouémé



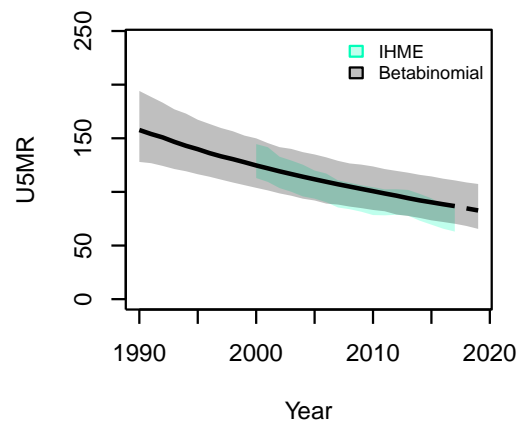
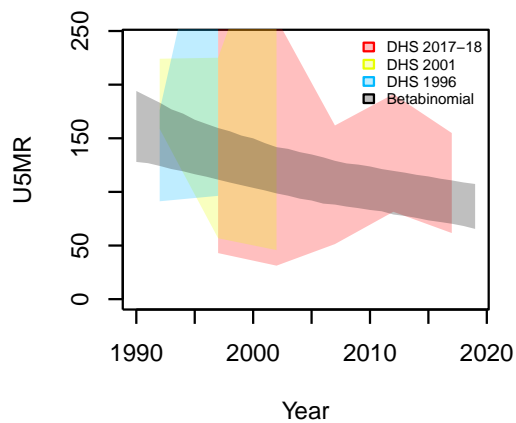
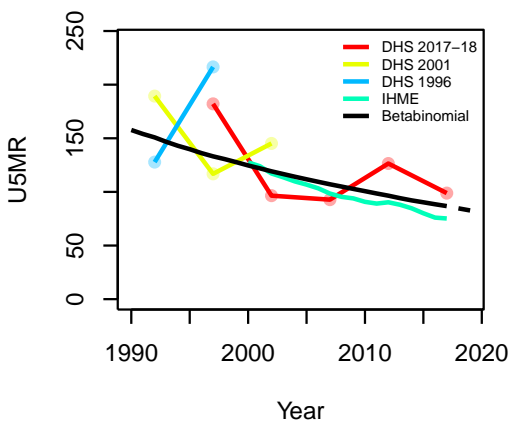
Aguégués, Ouémé

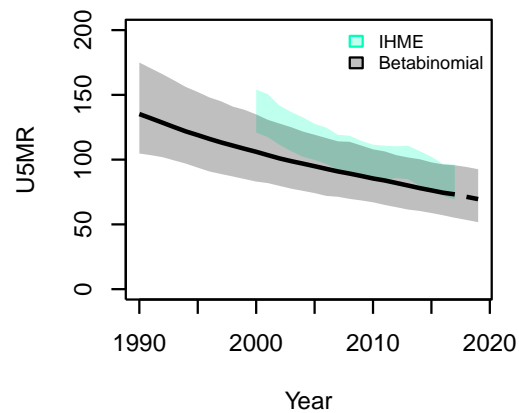
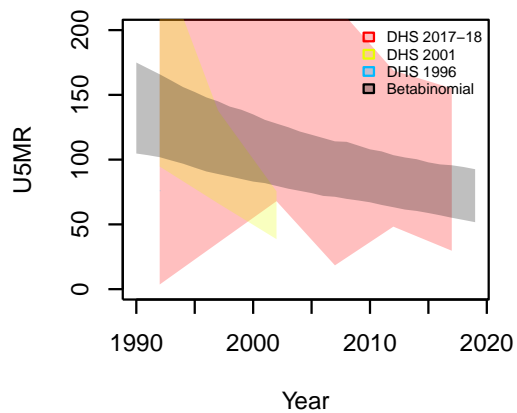
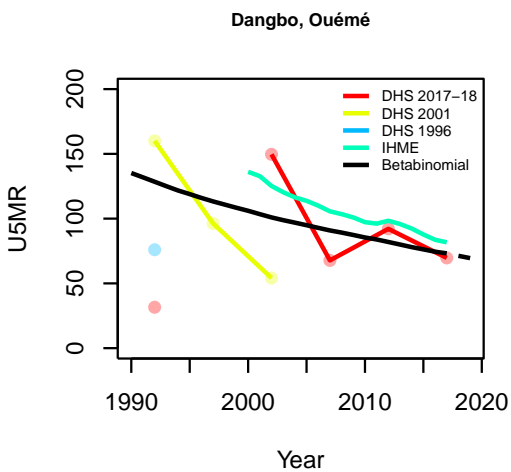
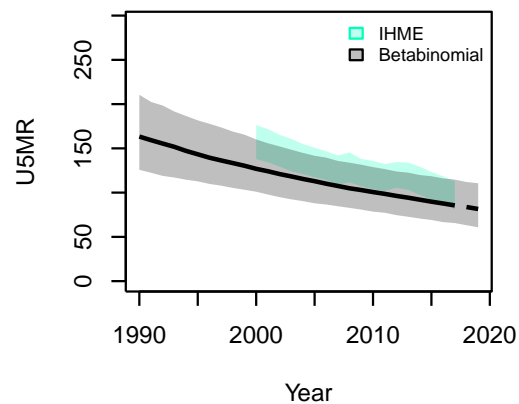
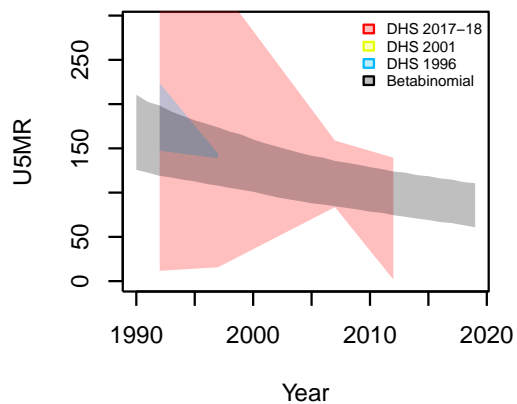
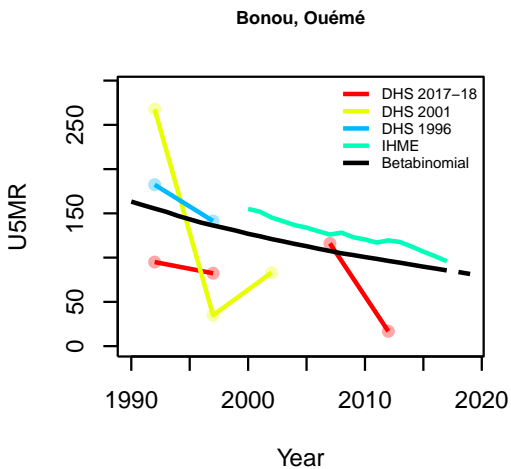


Akpro-Misséré-té, Ouémé

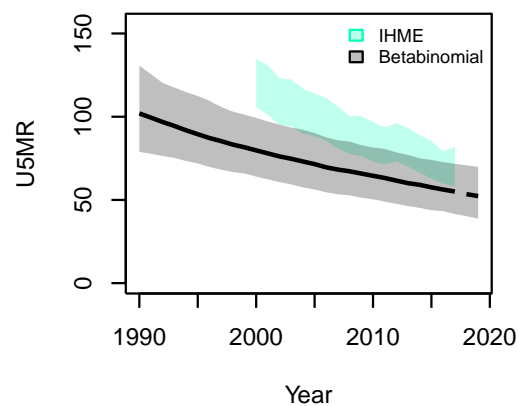
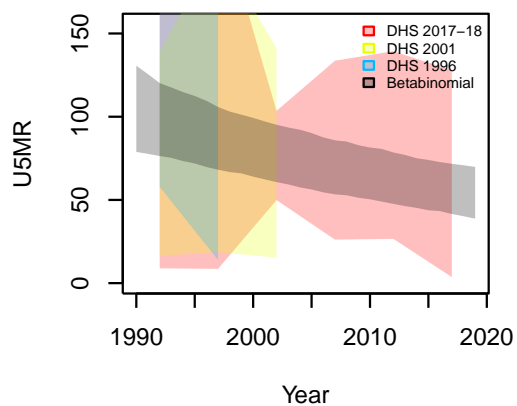
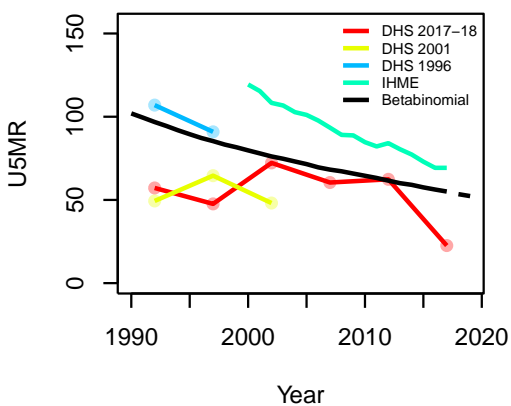


Avrankou, Ouémé

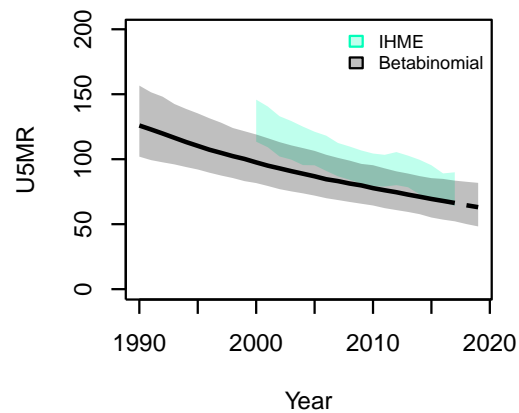
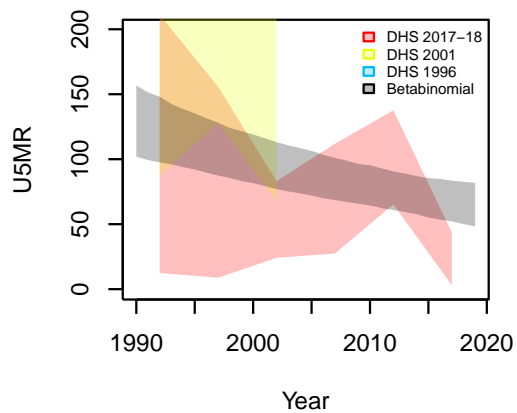
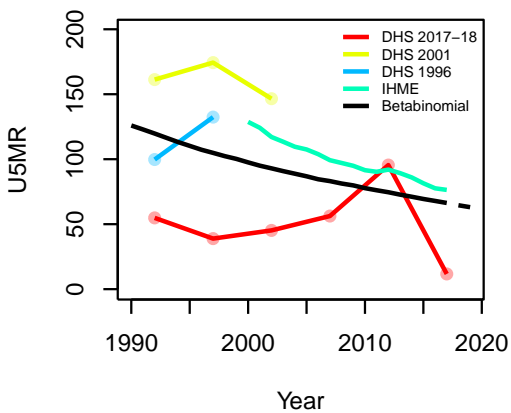




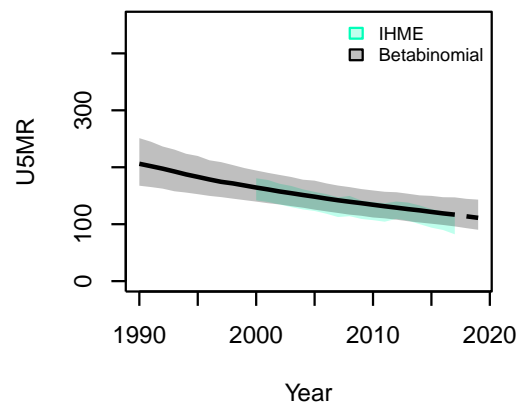
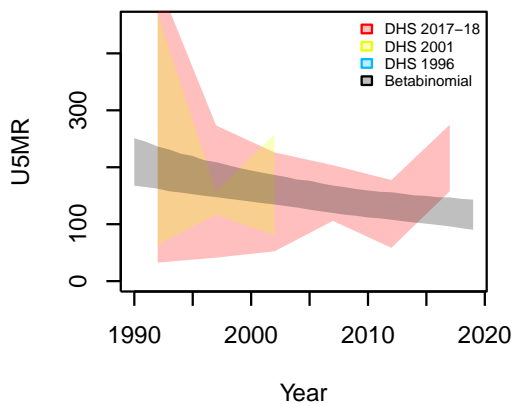
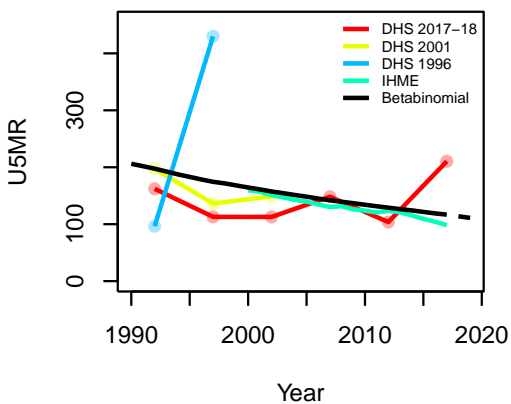
Porto–Novo, Ouémé



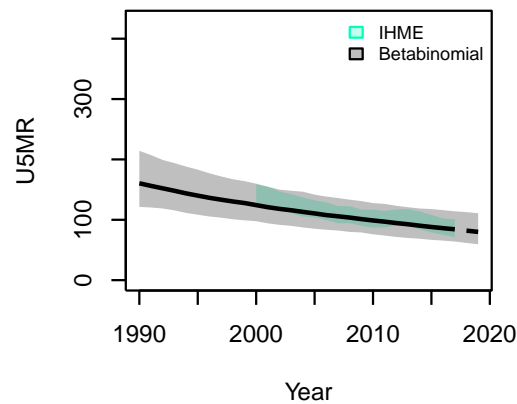
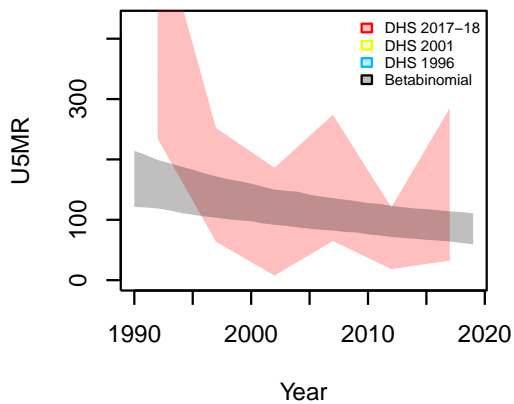
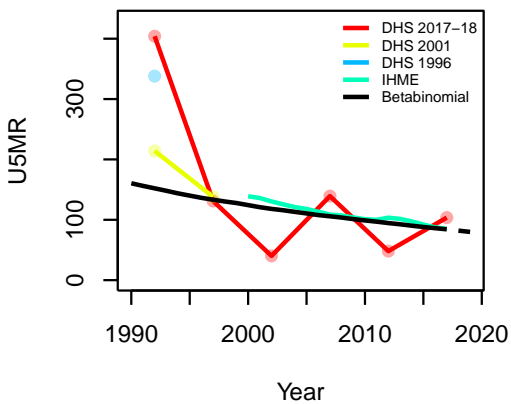
Sèmè–Kpodji, Ouémé



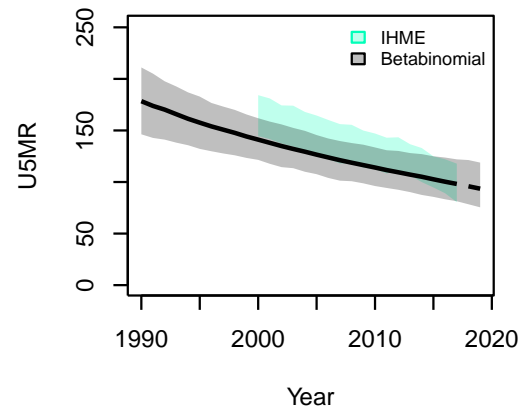
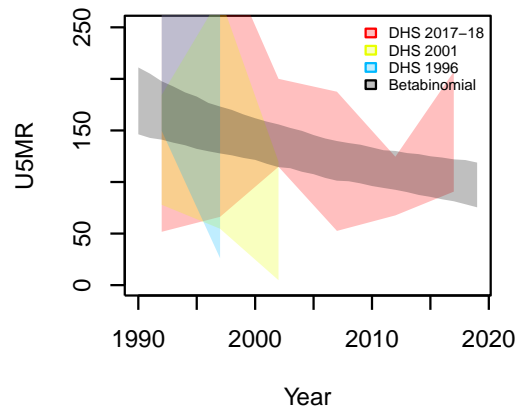
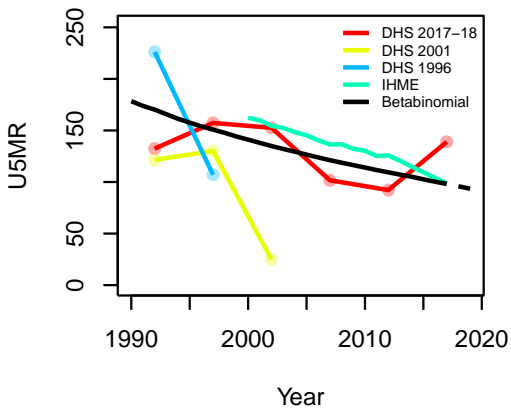
Adja-Ouèrè, Plateau



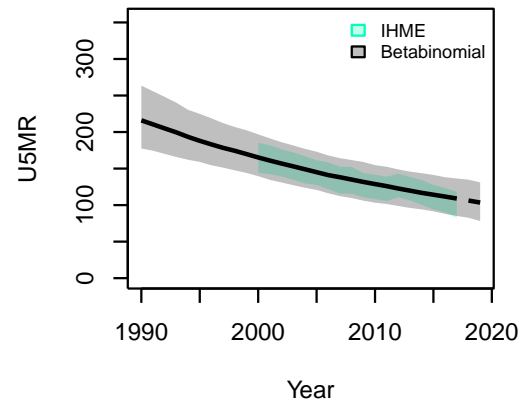
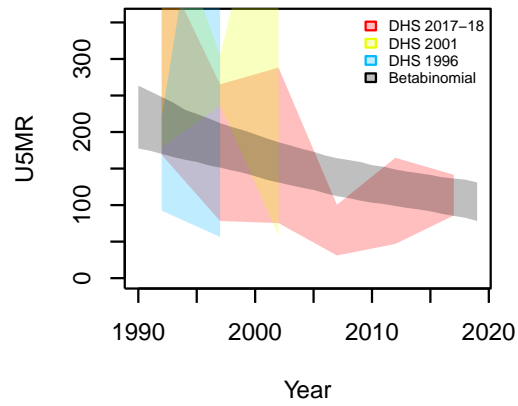
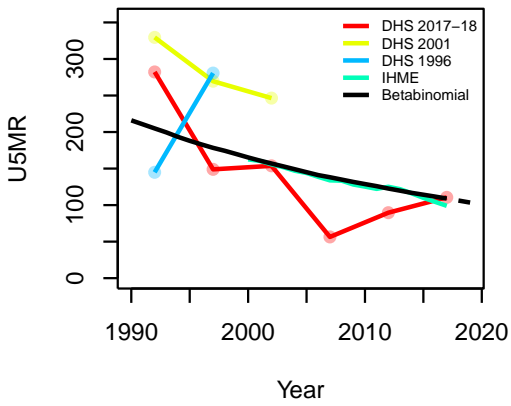
Ifangni, Plateau



Kétou, Plateau

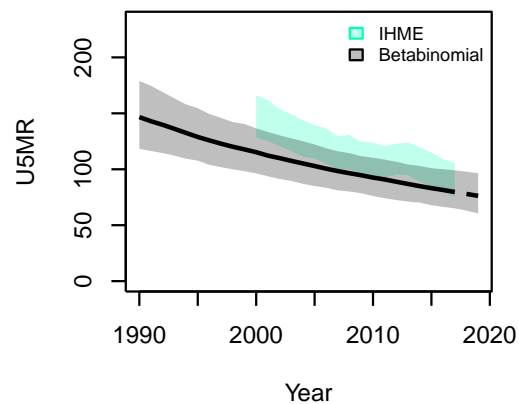
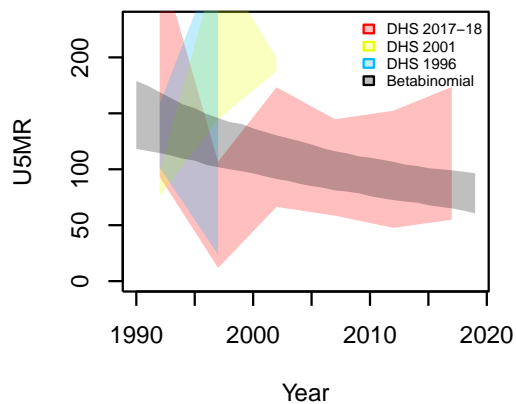
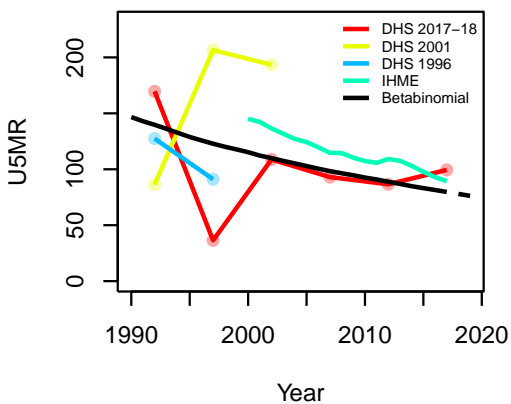


Pobè, Plateau

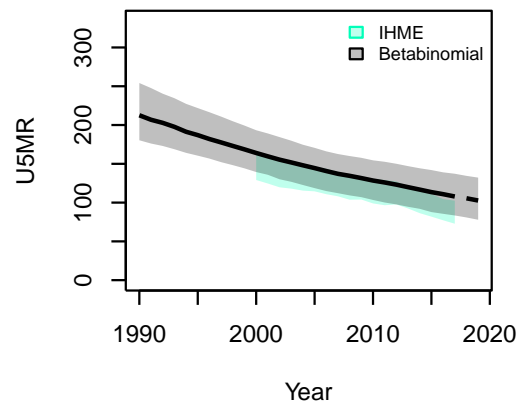
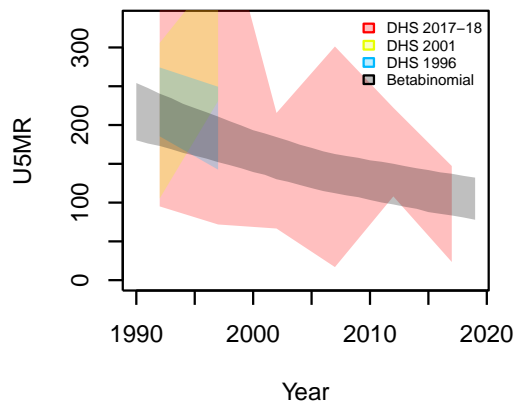
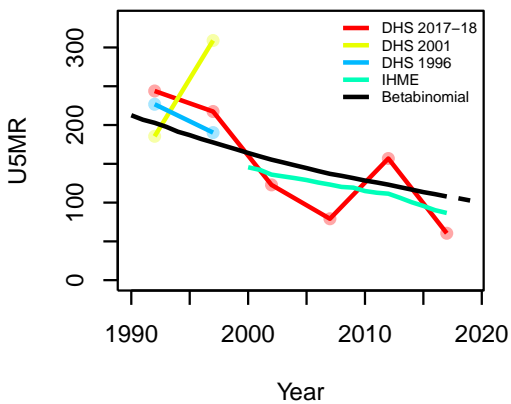




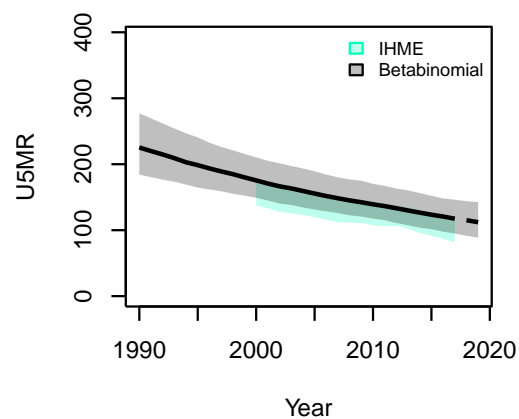
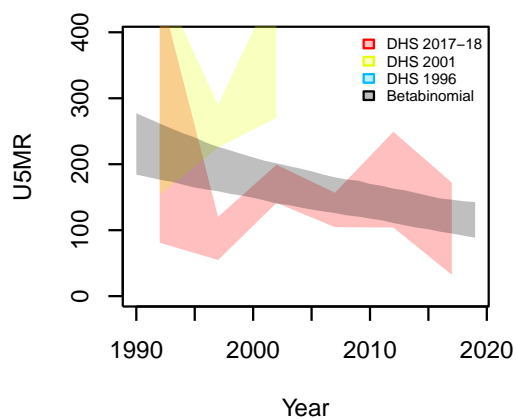
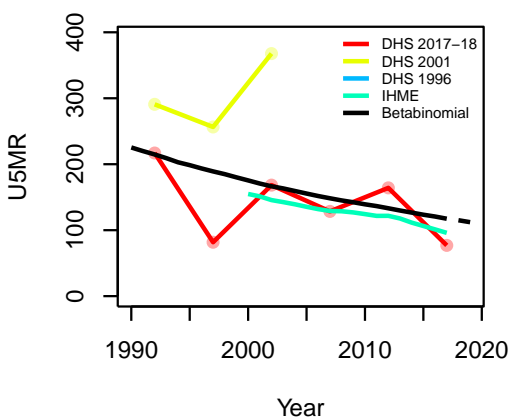
Sakété, Plateau



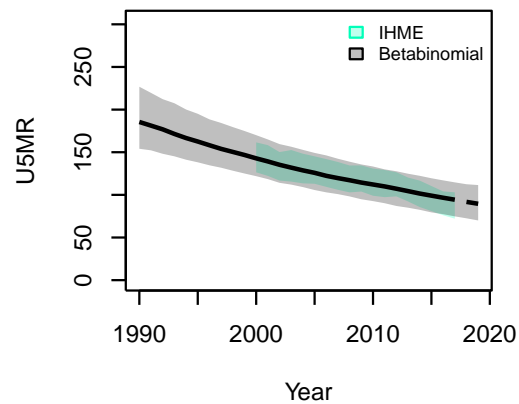
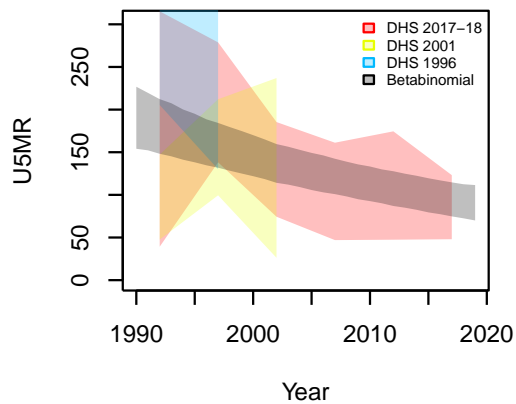
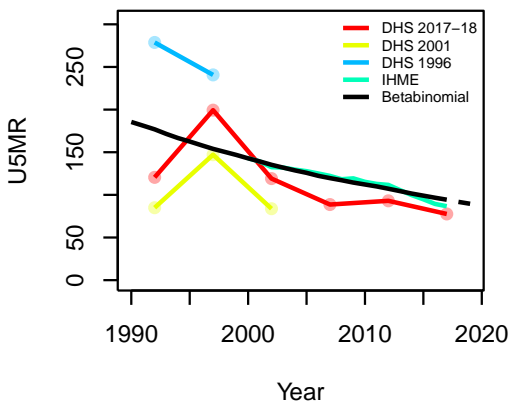
Abomey, Zou



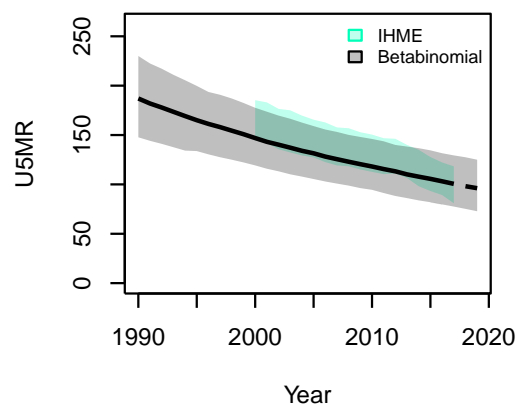
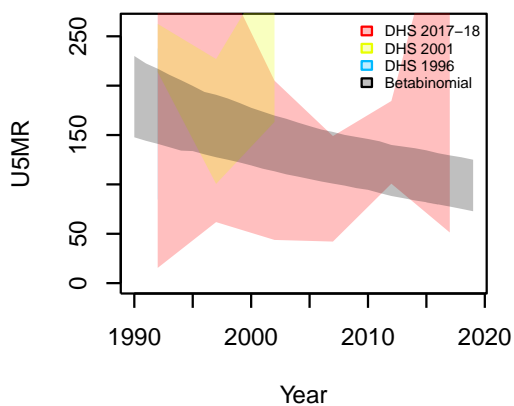
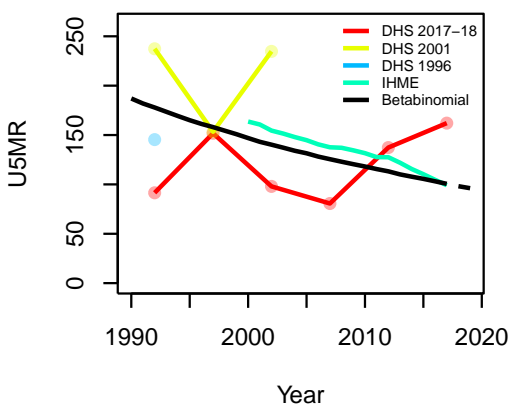
Agbangnizoun, Zou



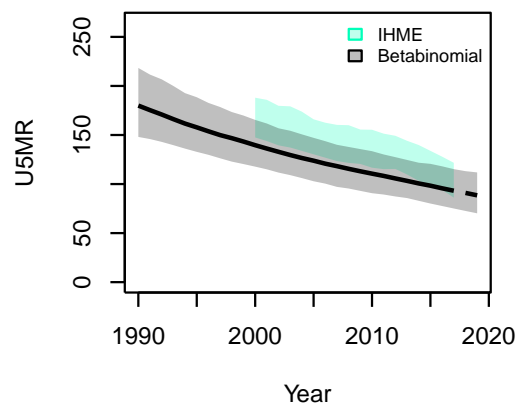
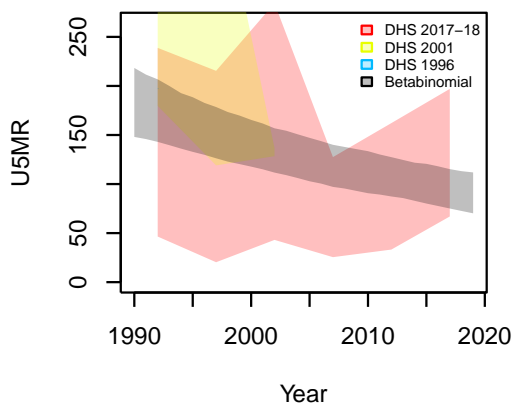
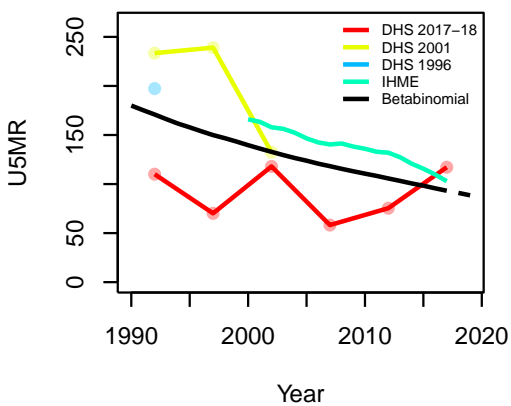
Bohicon, Zou



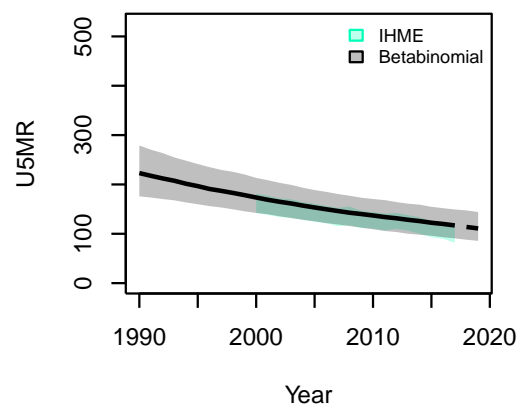
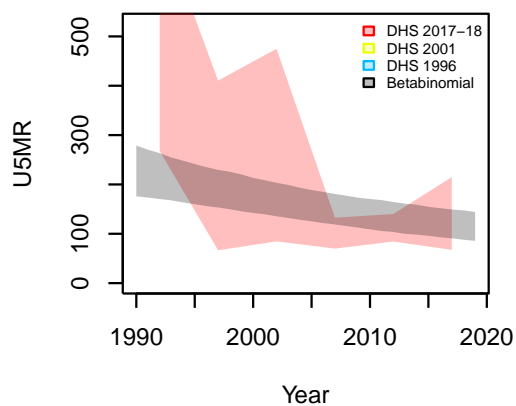
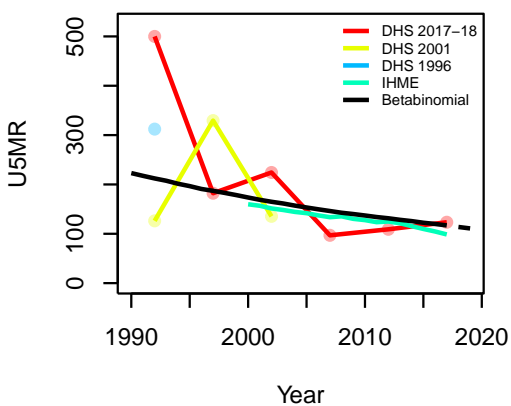
Covè, Zou



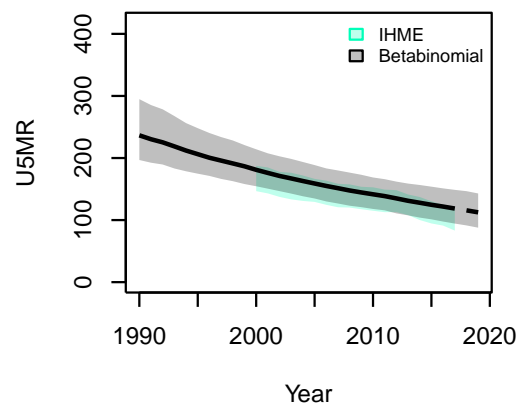
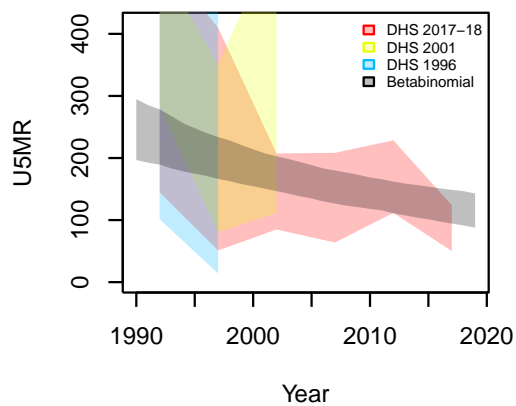
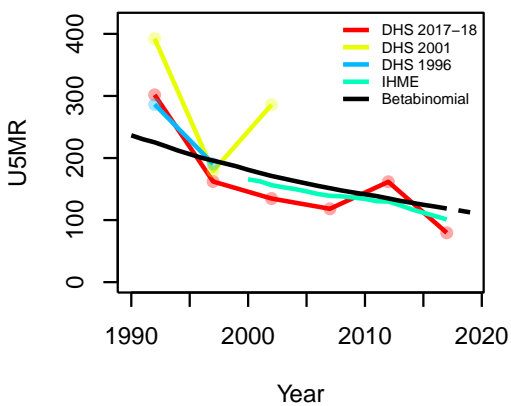
Djidja, Zou

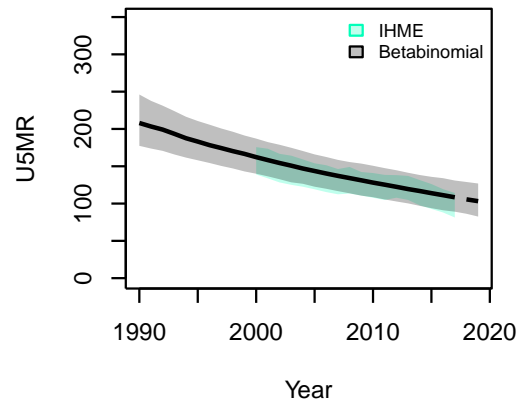
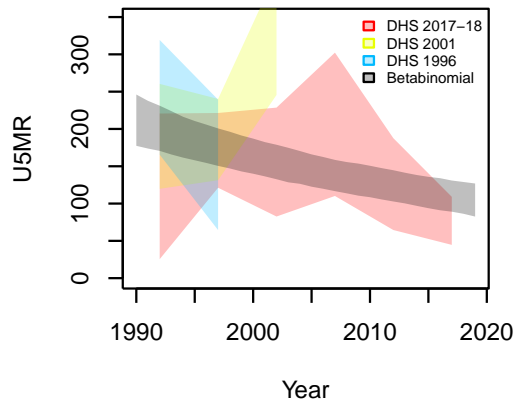
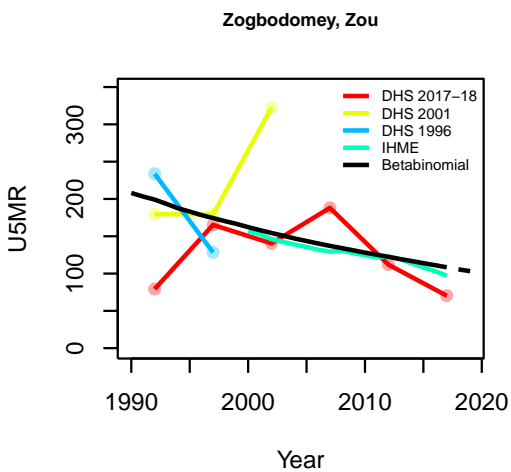
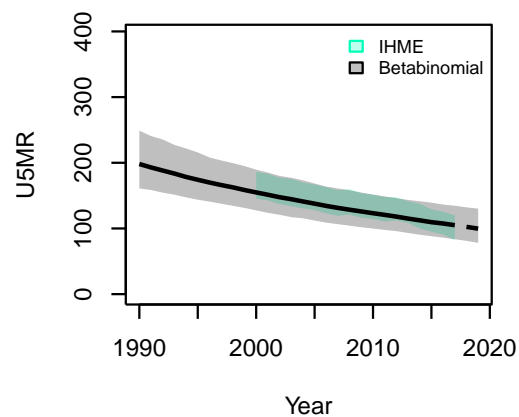
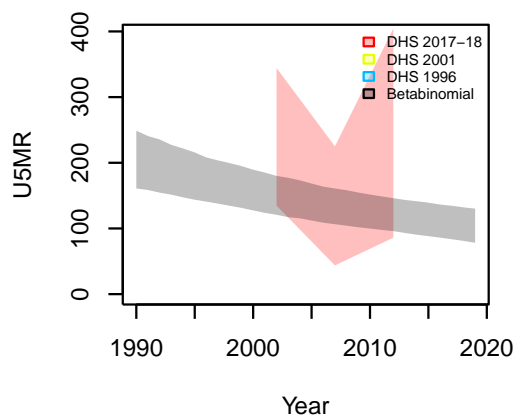
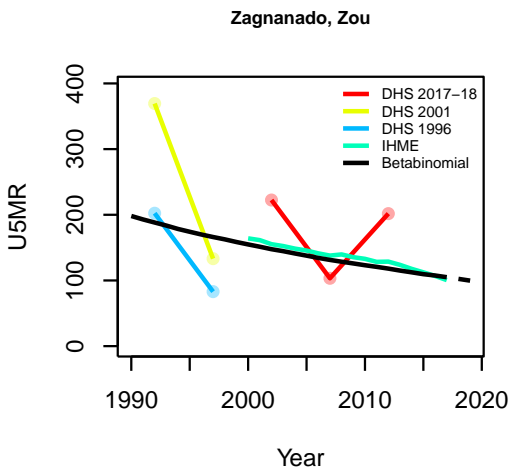


Ouinhi, Zou



Za-Kpota, Zou





## 4 National Figures and Results

	Median	Interval	Median- Bench	Interval
0	38.20	(36.2,40.3)	37.30	(35.3,39.3)
1-11	3.50	(3.3,3.8)	3.50	(3.3,3.7)
12-23	1.70	(1.6,1.9)	1.70	(1.6,1.8)
24-35	1.40	(1.3,1.5)	1.40	(1.3,1.5)
36-47	1.20	(1.1,1.3)	1.20	(1.1,1.3)
48-59	0.60	(0.6,0.7)	0.60	(0.6,0.7)

Table 5: Monthly hazards in terms of 1000 children by age band for national, unstratified model for Benin.

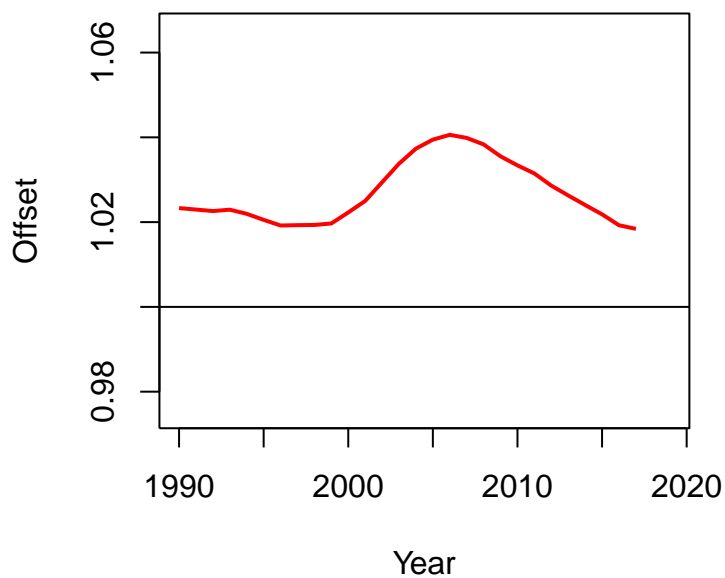


Figure 7: Benchmark offsets:  $BENCH(t) = U5MR^*(t)/U5MR(t)$  where  $U5MR^*(t)$  is modeled estimate and  $U5MR(t)$  is UN-IGME estimate.

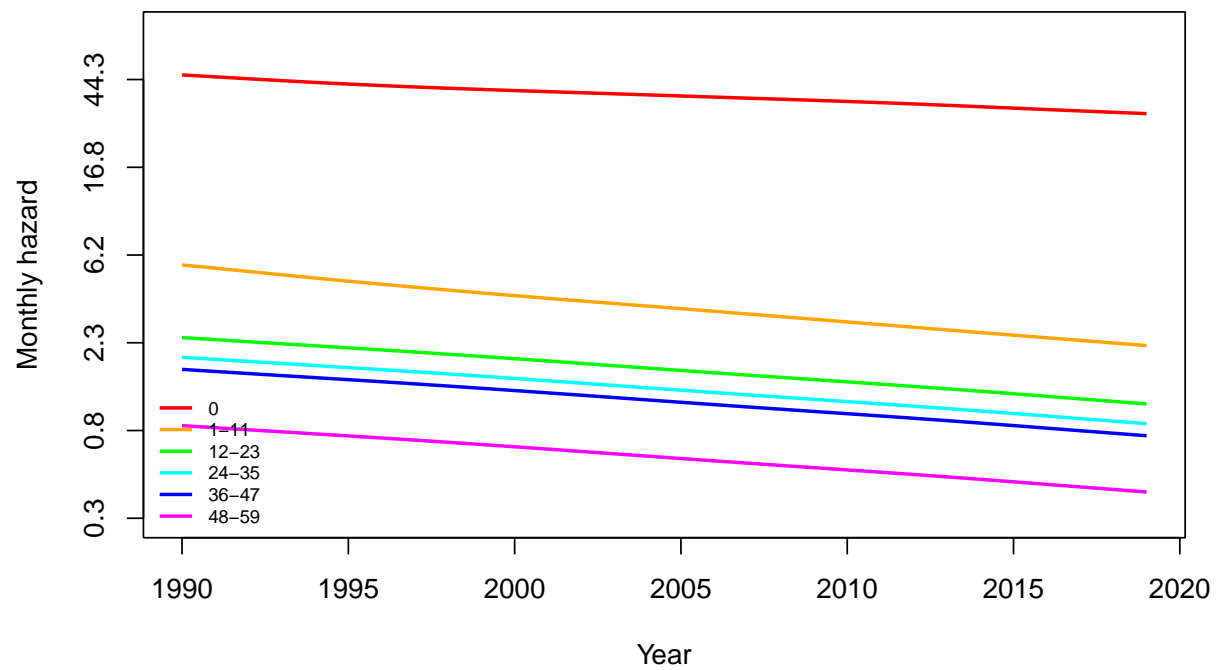


Figure 8: Monthly hazards of death in terms of U5MR (number deaths per 1000 children) by agebands.

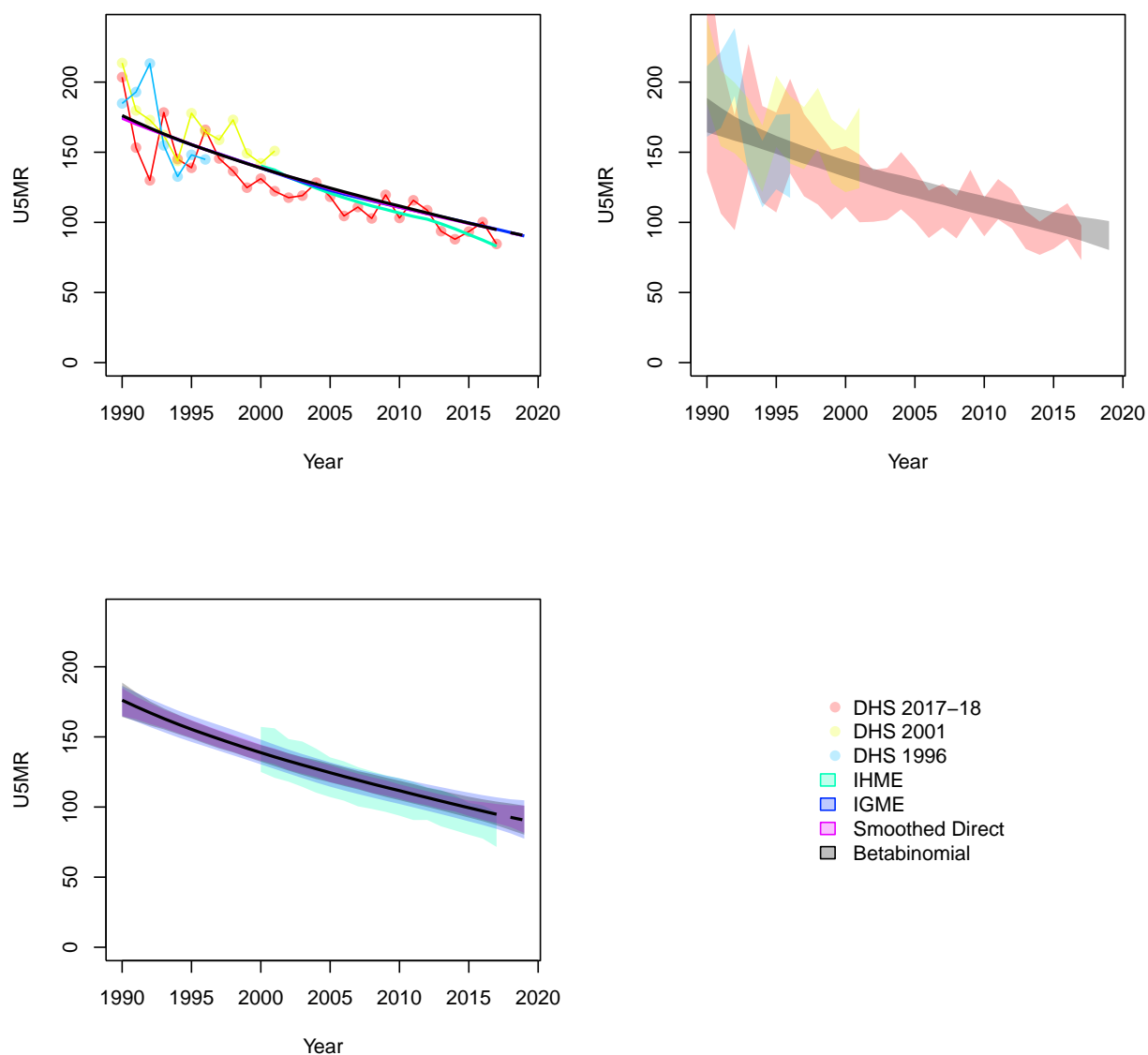
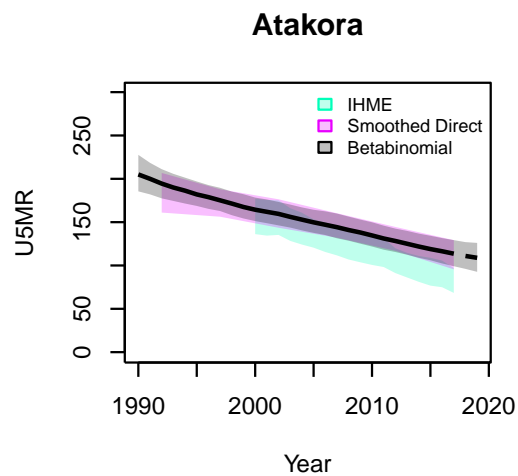
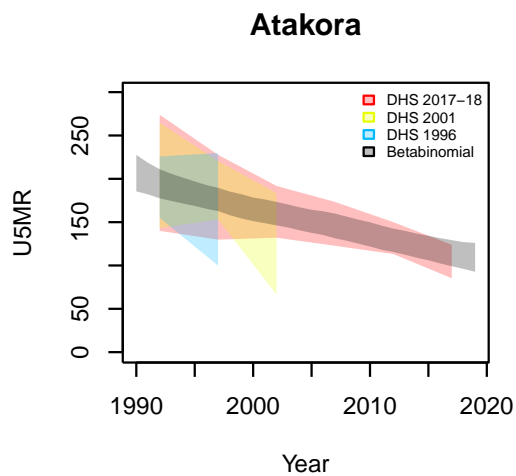
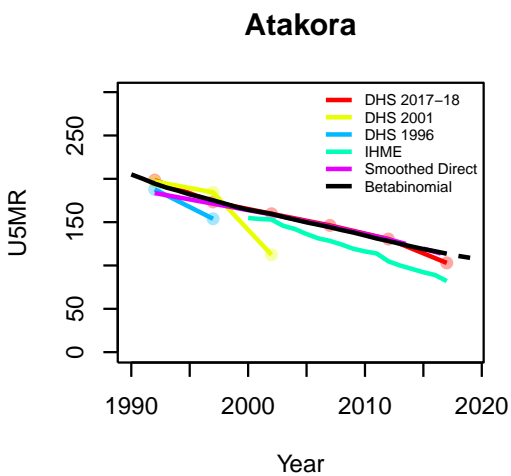
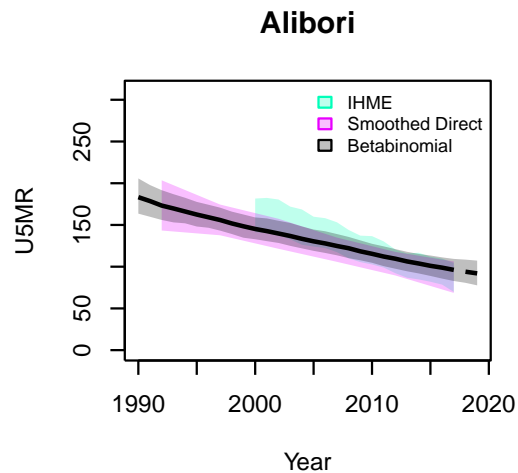
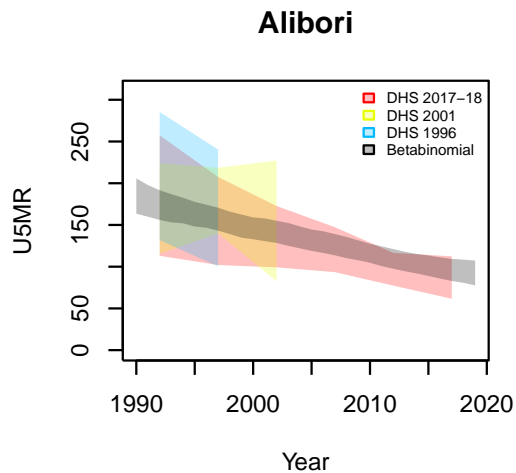
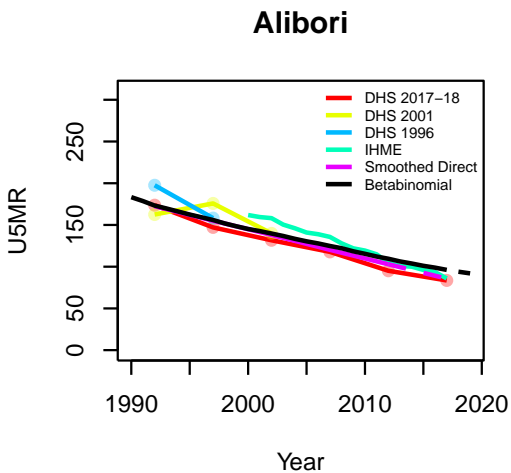


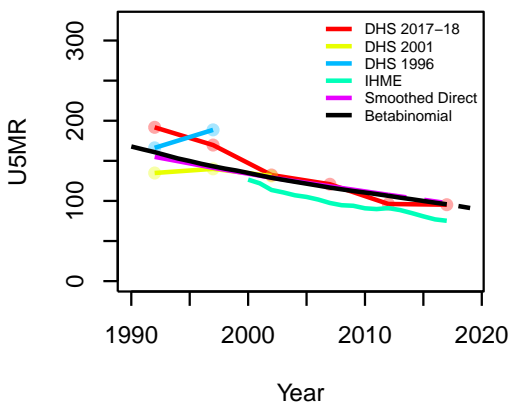
Figure 9: Benchmarked U5MR rates per 1000 live births. Top: DHS direct estimates with national trends from IHME GBD, UN-IGME, Smoothed Direct and Betabinomial estimates. Middle: 95% uncertainty intervals for DHS data. Bottom: IHME GBD, UN-IGME, Smoothed Direct and Betabinomial estimates with for the unstratified model. 95% uncertainty intervals



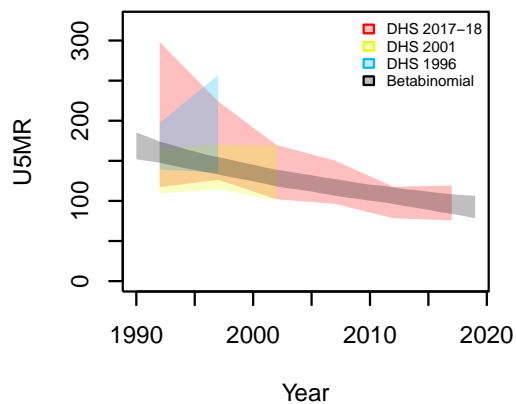
## 5 Admin 1 Figures



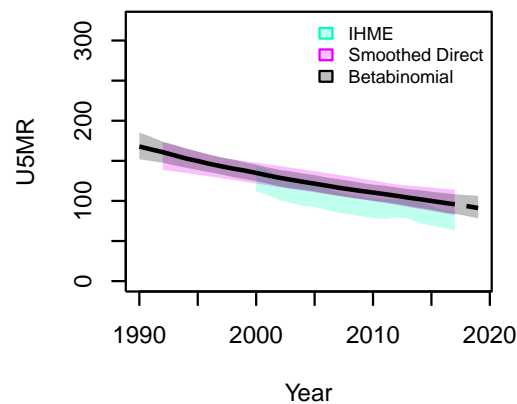
**Atlantique**



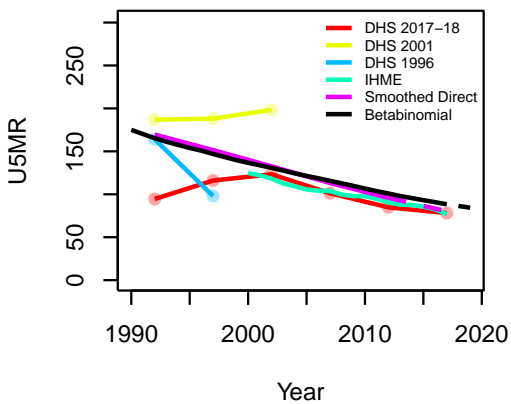
**Atlantique**



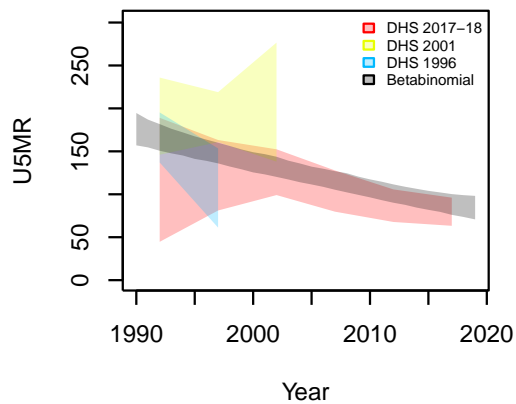
**Atlantique**



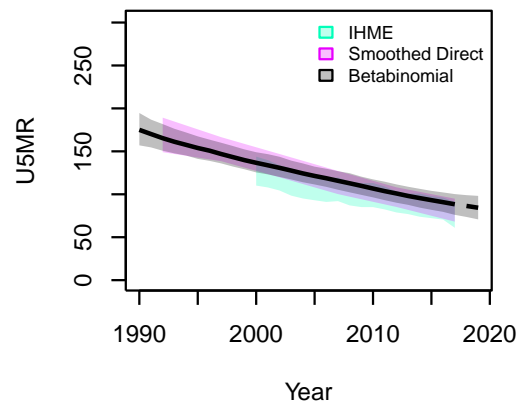
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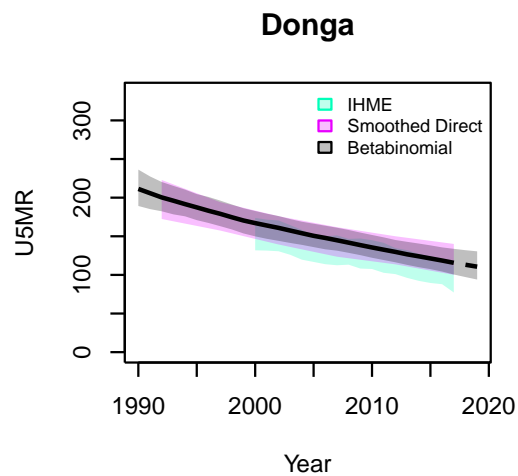
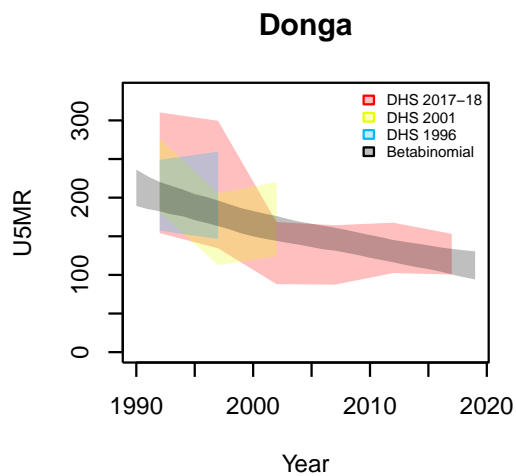
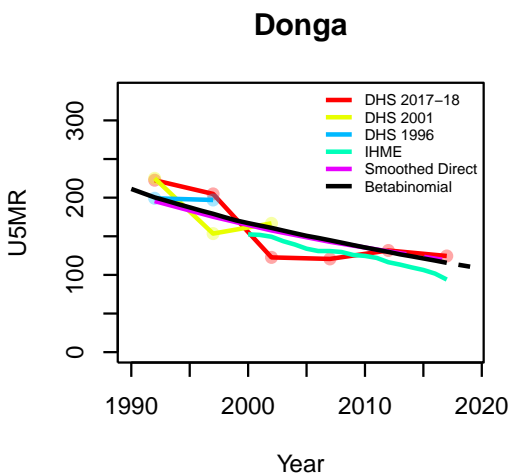
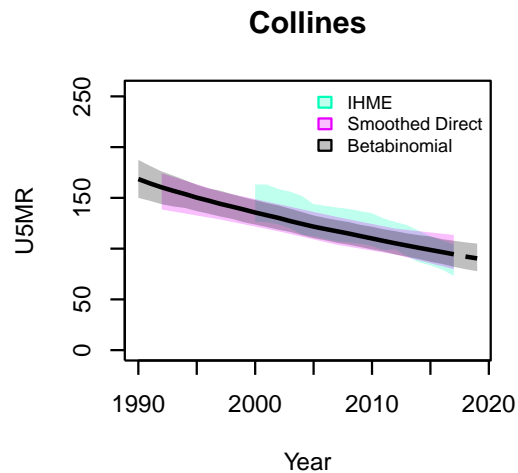
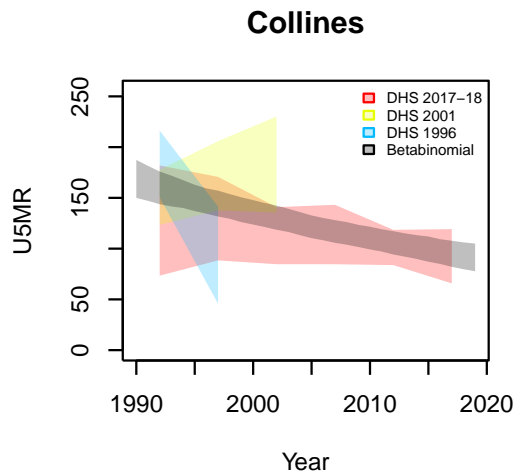
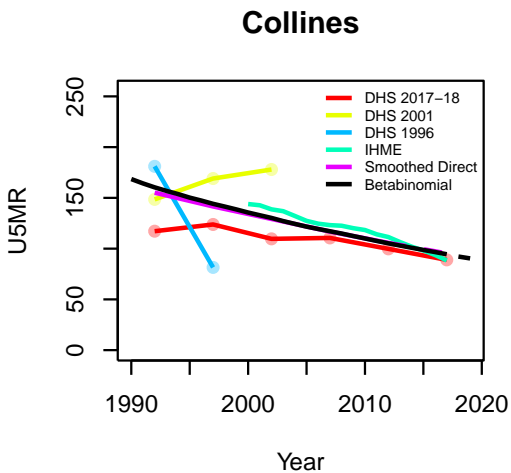


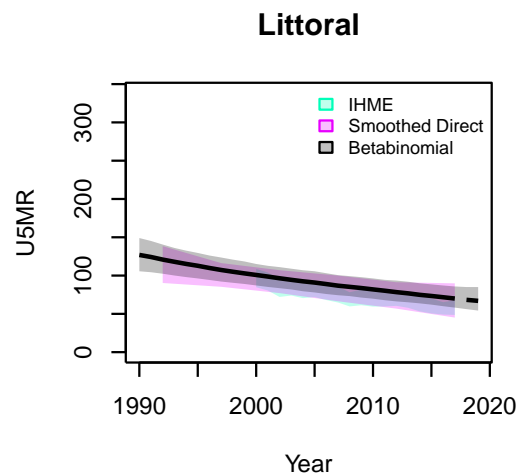
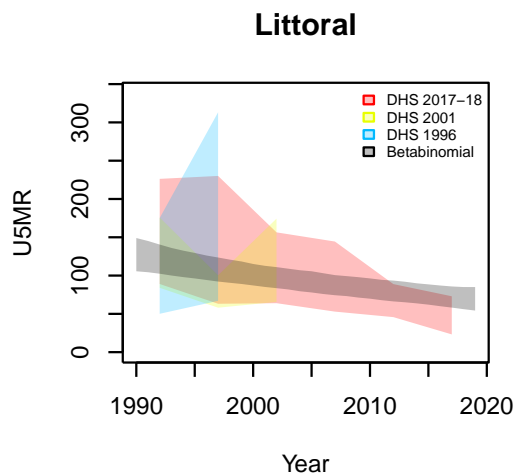
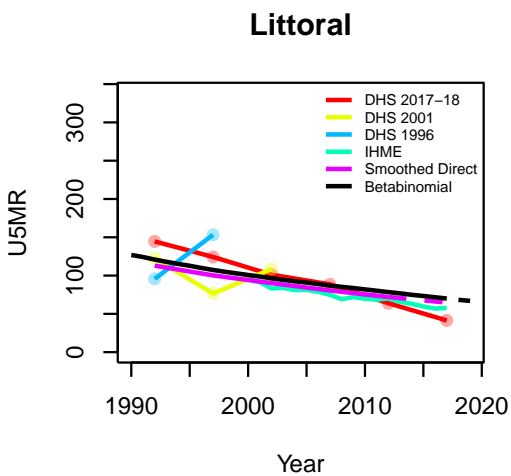
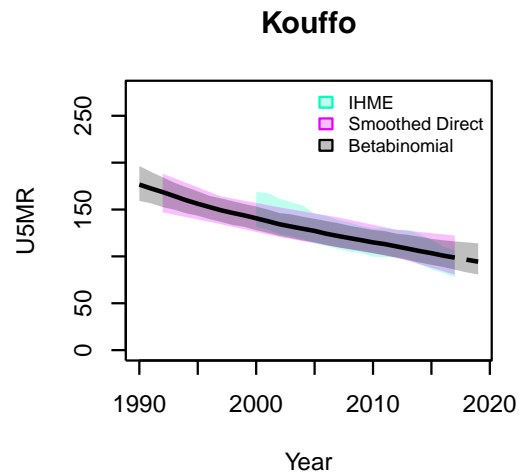
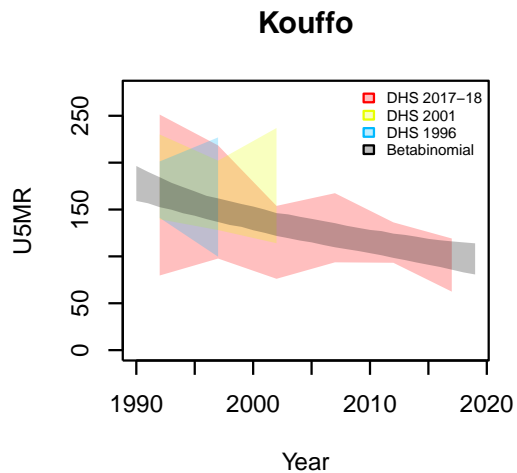
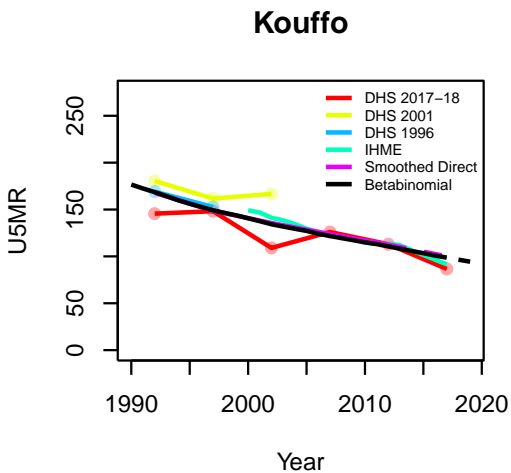
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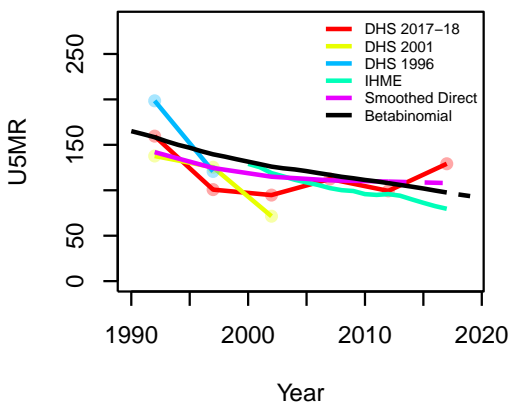
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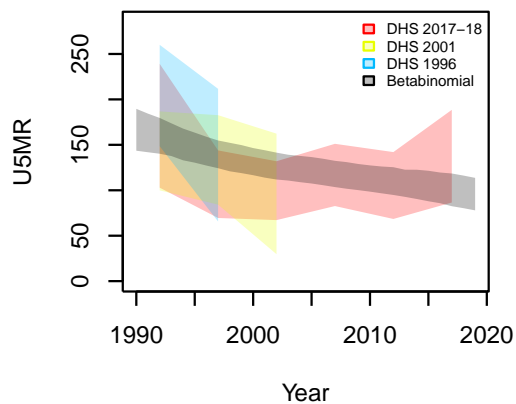




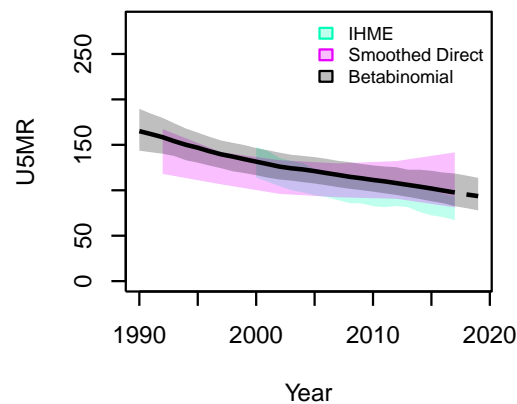
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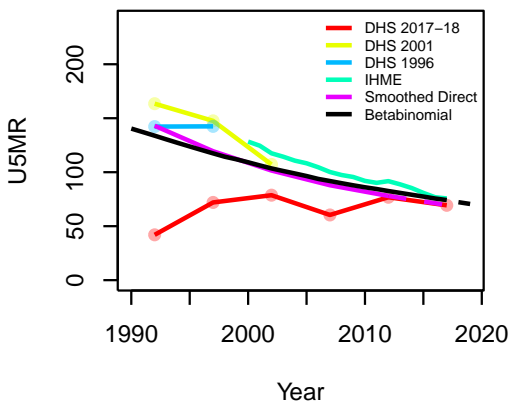
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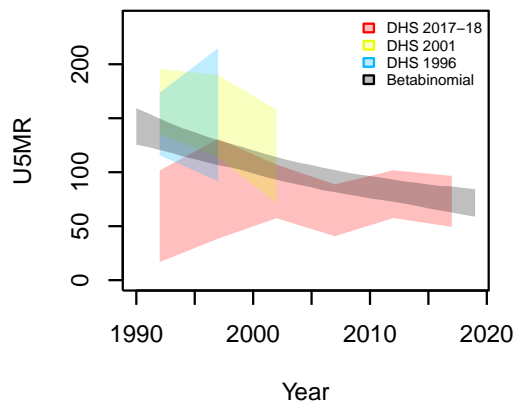
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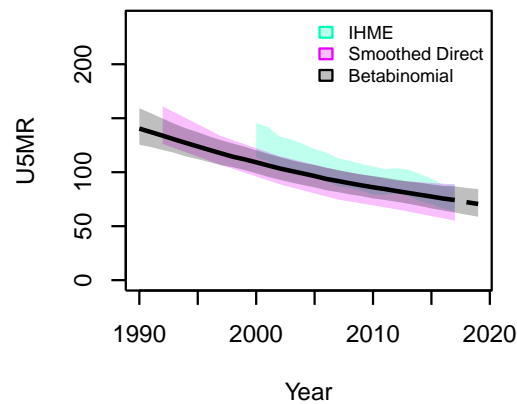
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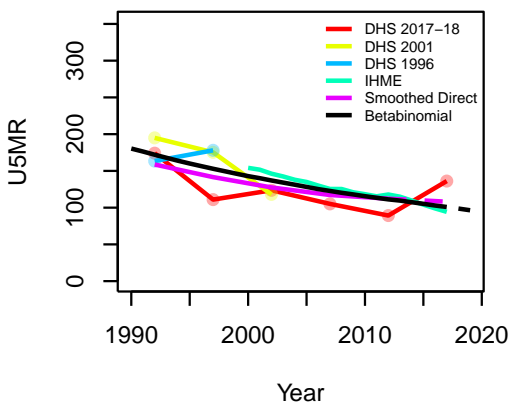
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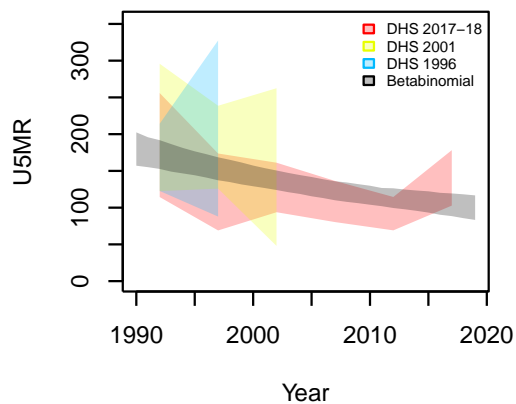
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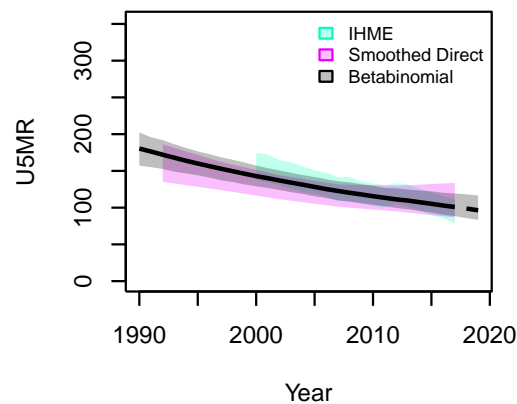
**Plateau**



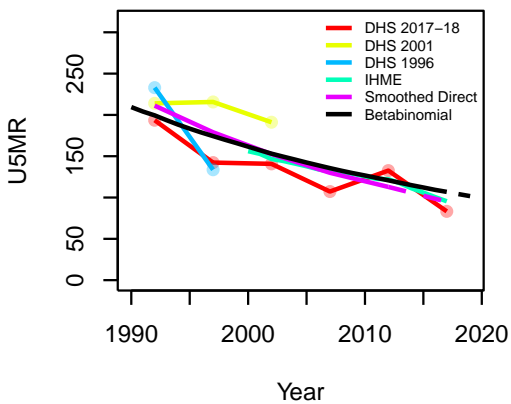
**Plateau**



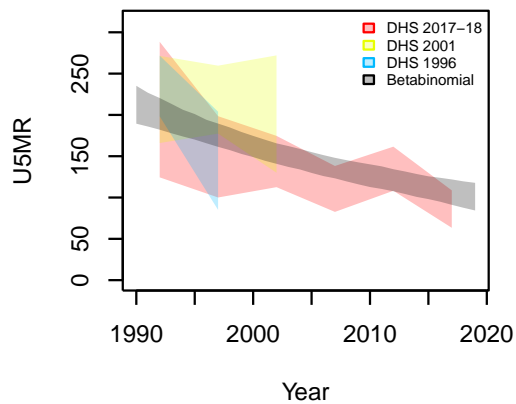
**Plateau**



**Zou**



**Zou**



**Zou**

