Contact tracing with time to action distribution

Laura Boyle, Dennis Liu, Joshua Ross

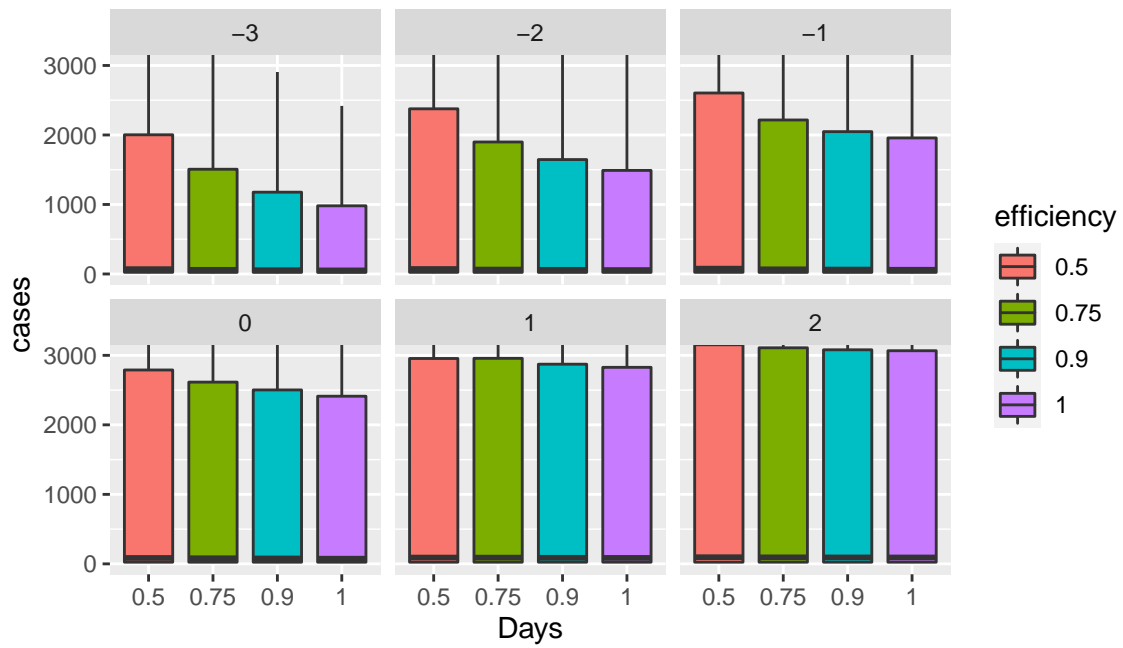25/09/20

Contents

1 Snowball tracing

1.1 n = 20000, offset = 0, gamma mean = 3 variance = 6

1.1.1 Case numbers

```
## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
```

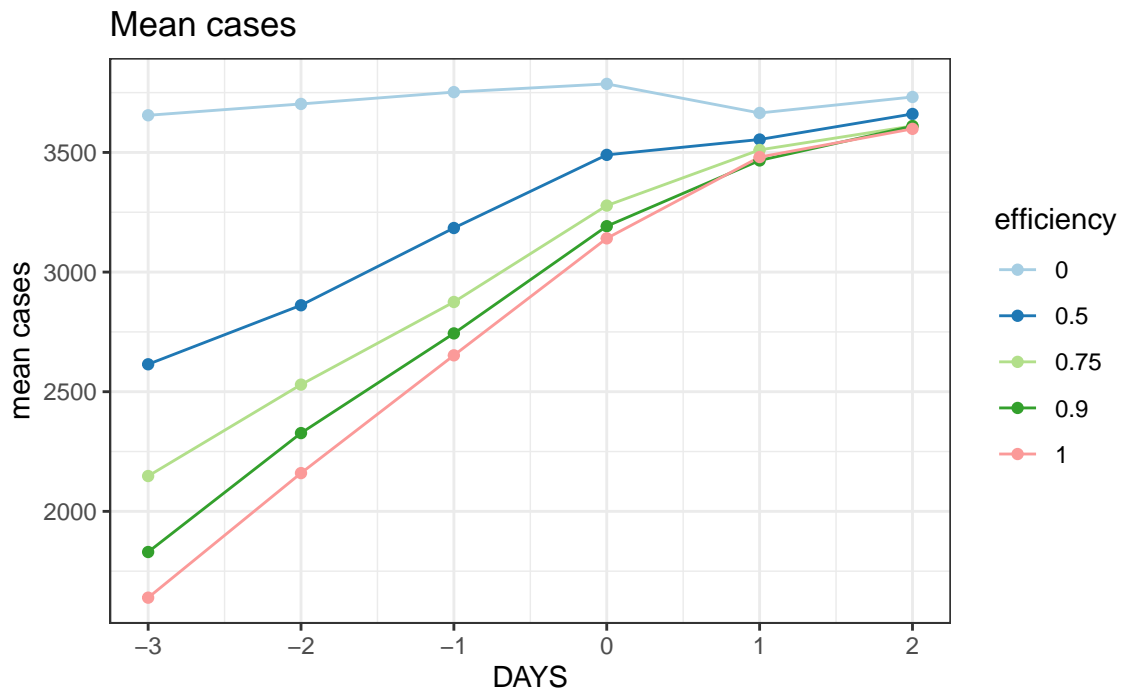| DAYS	pc	mean	median	min	max	n_sims
-3	0.00	3655.262	101.0	12	220059	20000
-3	0.50	2614.634	70.0	12	206468	20000
-3	0.75	2147.575	60.0	12	189038	20000
-3	0.90	1830.118	55.0	12	184453	20000
-3	1.00	1639.240	52.0	12	114263	20000
-2	0.00	3702.625	102.0	12	373478	20000
-2	0.50	2861.281	72.0	12	202119	20000
-2	0.75	2529.603	64.0	12	163829	20000
-2	0.90	2327.088	60.0	12	148868	20000
-2	1.00	2159.833	57.0	12	128307	20000
-1	0.00	3752.109	102.0	12	388464	20000
-1	0.50	3184.208	77.0	12	370504	20000
-1	0.75	2874.983	67.5	12	174775	20000
-1	0.90	2743.648	64.0	12	196935	20000
-1	1.00	2652.032	61.0	12	274297	20000
0	0.00	3786.431	105.0	12	351389	20000
0	0.50	3489.815	85.0	12	374840	20000
0	0.75	3277.899	81.0	12	377070	20000
0	0.90	3191.730	78.0	12	185105	20000
0	1.00	3140.909	75.0	12	264806	20000
1	0.00	3664.972	100.0	12	355374	20000
1	0.50	3553.992	91.0	12	267437	20000
1	0.75	3510.541	90.0	12	367484	20000
1	0.90	3466.470	87.5	12	353571	20000
1	1.00	3480.720	86.0	12	311557	20000
2	0.00	3731.713	100.5	12	292046	20000
2	0.50	3660.747	96.0	12	284570	20000
2	0.75	3610.647	94.0	12	342885	20000
2	0.90	3609.918	93.0	12	283437	20000
2	1.00	3598.550	92.0	12	374002	20000

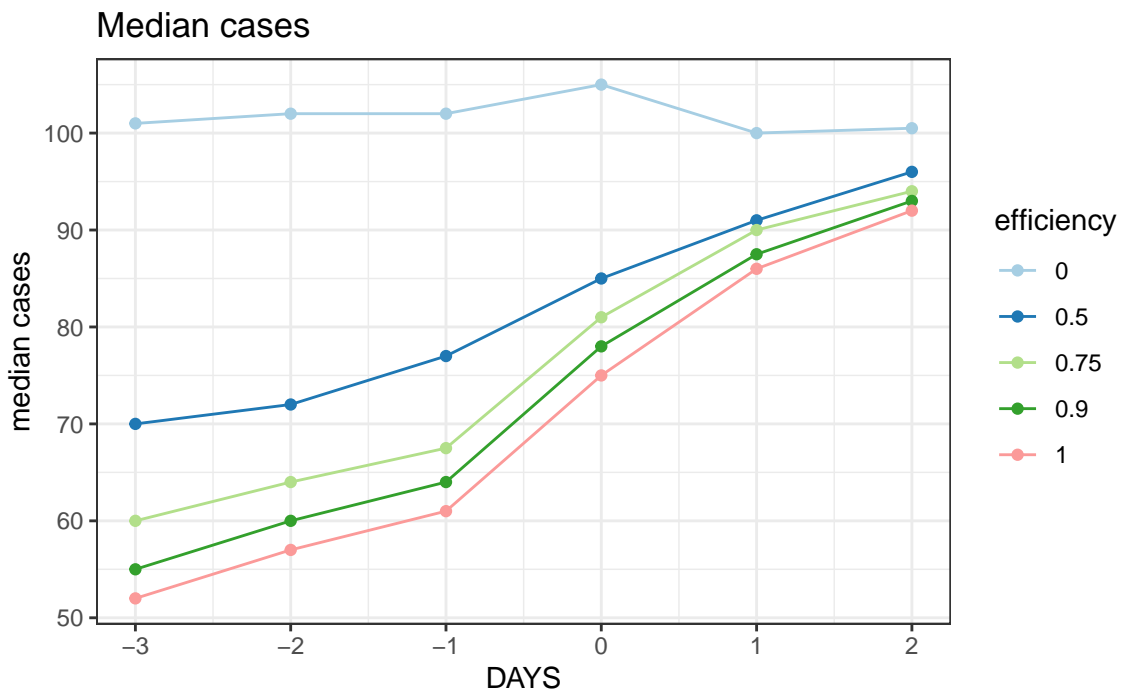Box plot of cases (axis limited at 3000)

Box plot of cases (axis limited at 100)
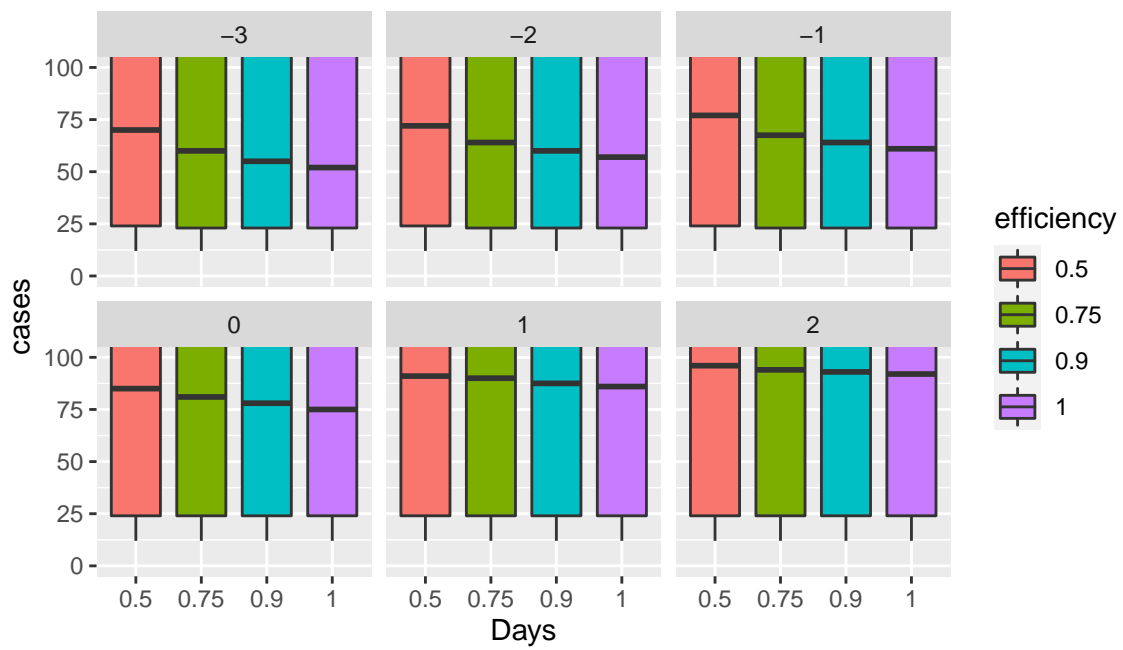
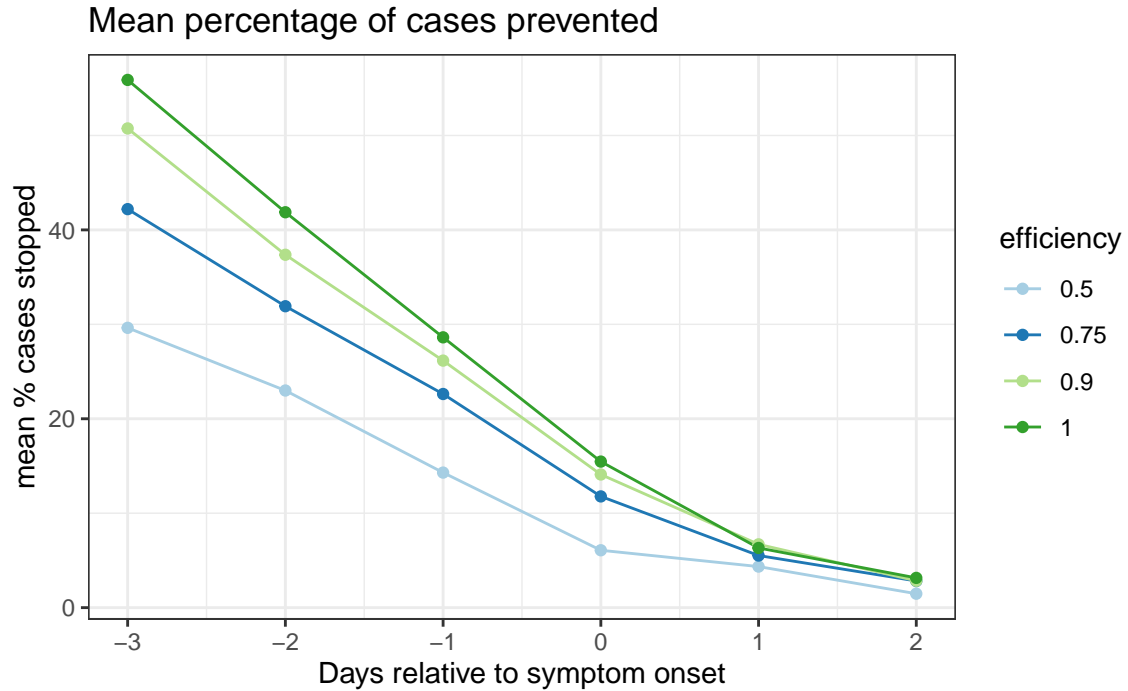## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)

Mean cases

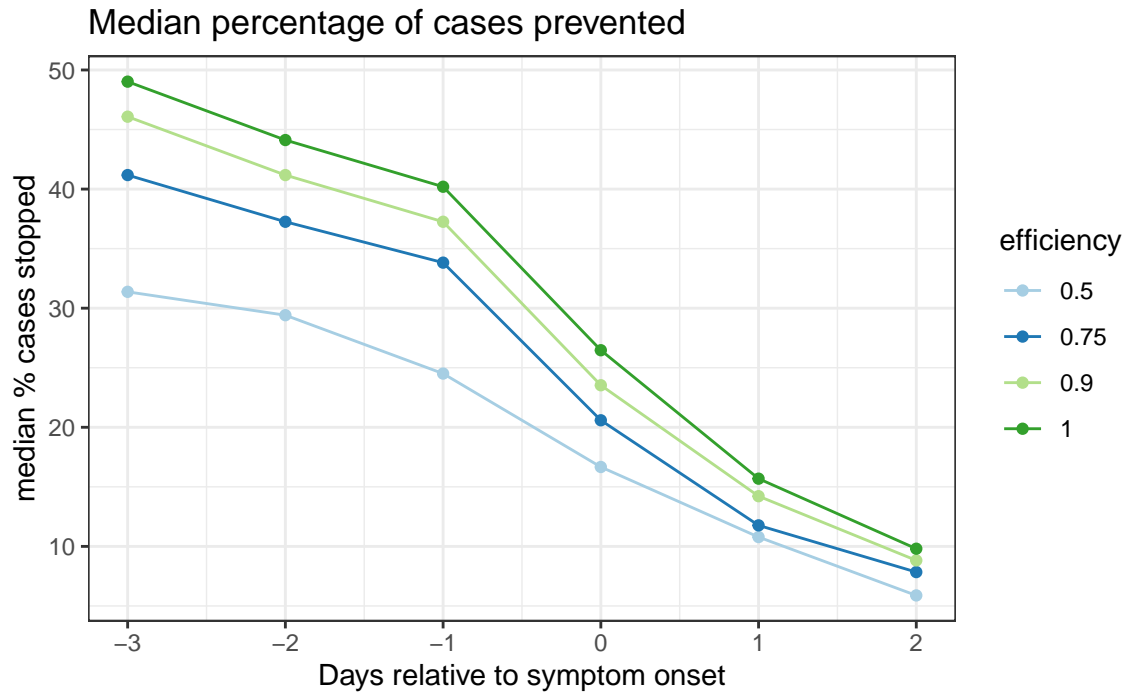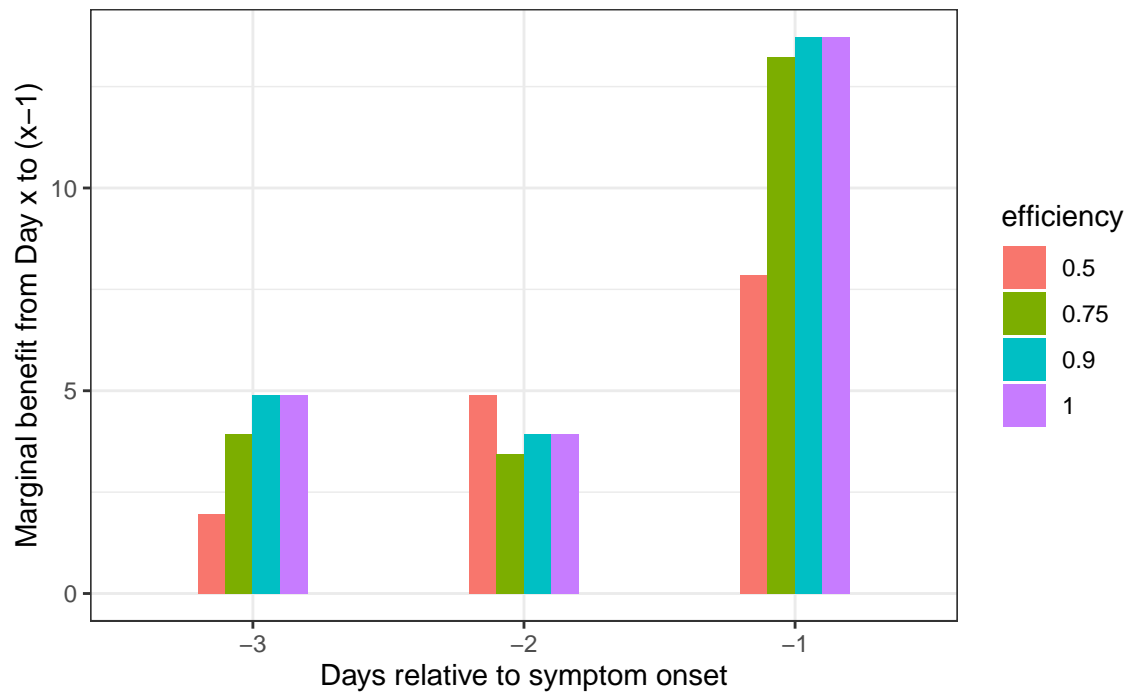## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)

Median cases

1.1.2 Cases prevented

```
## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
```

Mean percentage of cases prevented


```
## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
```
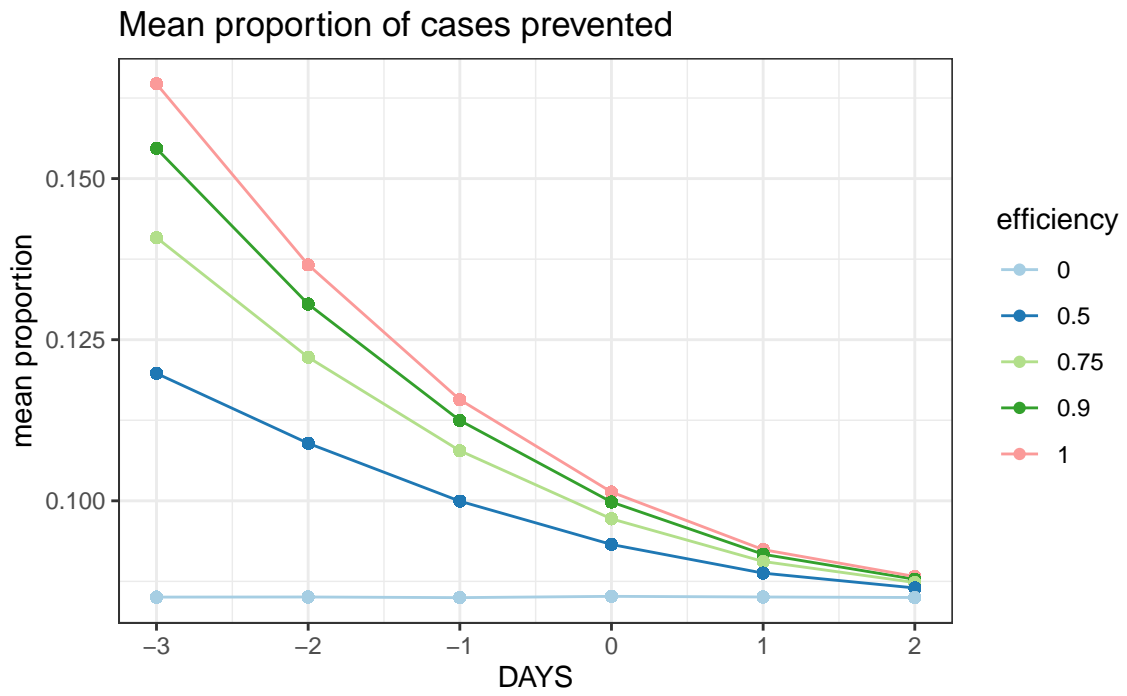
Median percentage of cases prevented

`summarise()` regrouping output by 'DAYS' (override with `.groups` argument)

1.1.3 Cases prevented (proportion)

Mean proportion of cases prevented

1.1.4 Actual generation interval

Mean generation interval

1.2 n = 20000, offset = 1, gamma mean = 2 variance = 1

1.2.1 Case numbers

```
## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
```

DAYS	pc	mean	median	min	max	n_sims
-3	0.00	4259.892	126.0	12	386581	20000
-3	0.50	2972.862	78.0	12	360637	20000
-3	0.75	2336.961	65.0	12	264392	20000
-3	0.90	2058.161	59.0	12	194541	20000
-3	1.00	1846.665	56.0	12	187233	20000
-2	0.00	4219.042	123.0	12	353790	20000
-2	0.50	3244.168	80.0	12	307468	20000
-2	0.75	2882.506	69.0	12	358158	20000
-2	0.90	2618.194	63.0	12	232329	20000
-2	1.00	2432.668	60.0	12	148414	20000
-1	0.00	4355.903	128.5	12	374402	20000
-1	0.50	3694.359	87.0	12	384063	20000
-1	0.75	3272.004	74.0	12	325735	20000
-1	0.90	3118.882	68.0	12	267097	20000
-1	1.00	2983.243	65.0	12	384958	20000
0	0.00	4161.075	123.0	12	385708	20000
0	0.50	3811.334	94.0	12	318503	20000
0	0.75	3584.226	83.0	12	293398	20000
0	0.90	3456.098	77.0	12	358672	20000
0	1.00	3354.828	73.0	12	386799	20000
1	0.00	4212.313	134.5	12	399196	20000
1	0.50	3889.826	113.0	12	353456	20000
1	0.75	3786.194	101.0	12	381434	20000
1	0.90	3770.673	95.0	12	376002	20000
1	1.00	3679.158	91.0	12	361213	20000
2	0.00	4215.484	122.0	12	387668	20000
2	0.50	4129.043	116.0	12	350516	20000
2	0.75	4052.070	111.0	12	371923	20000
2	0.90	4049.347	109.0	12	385315	20000
2	1.00	4038.700	106.5	12	367958	20000

Box plot of cases (axis limited at 4000)

Box plot of cases (axis limited at 100)

`summarise()` regrouping output by 'DAYS' (override with `.groups` argument)

Mean cases

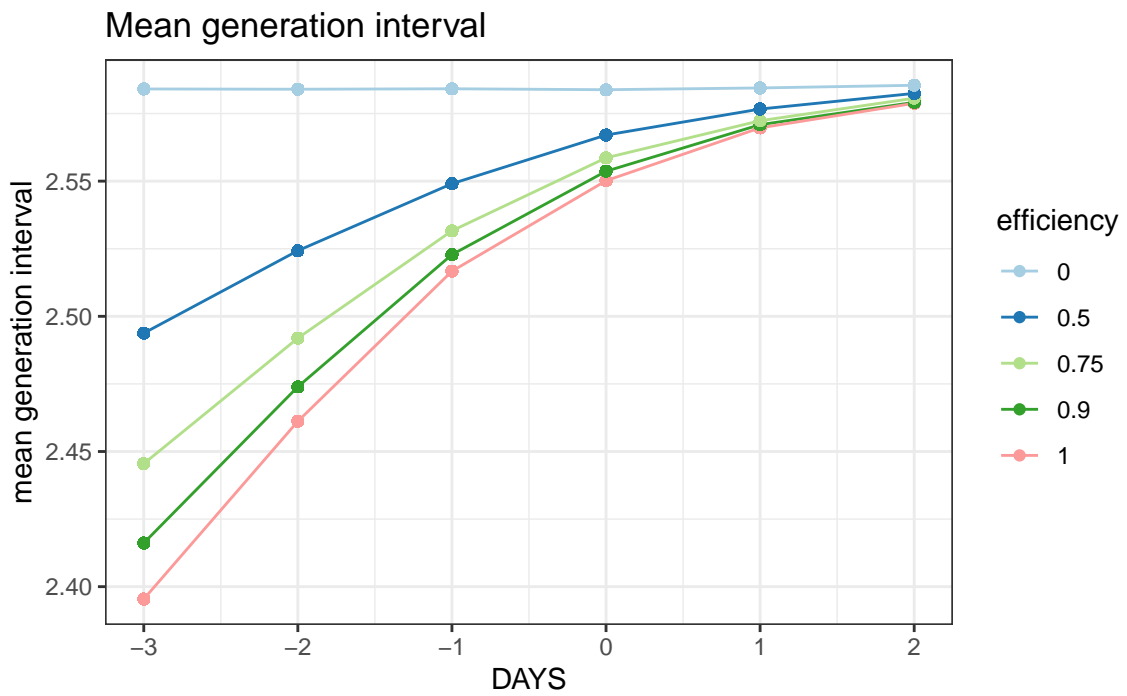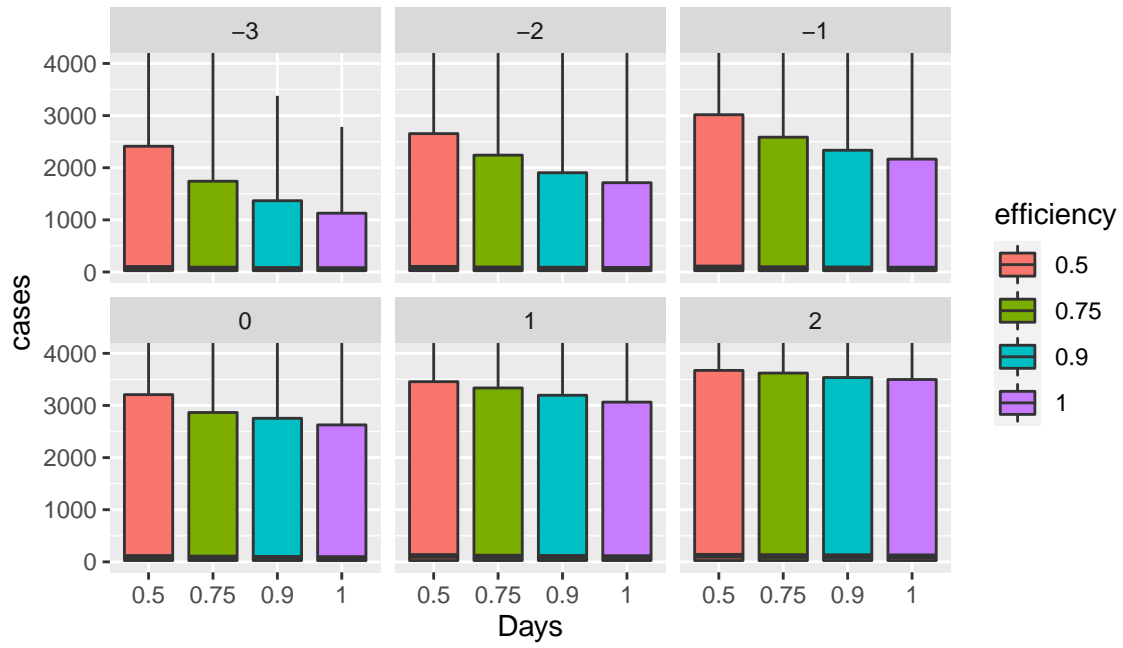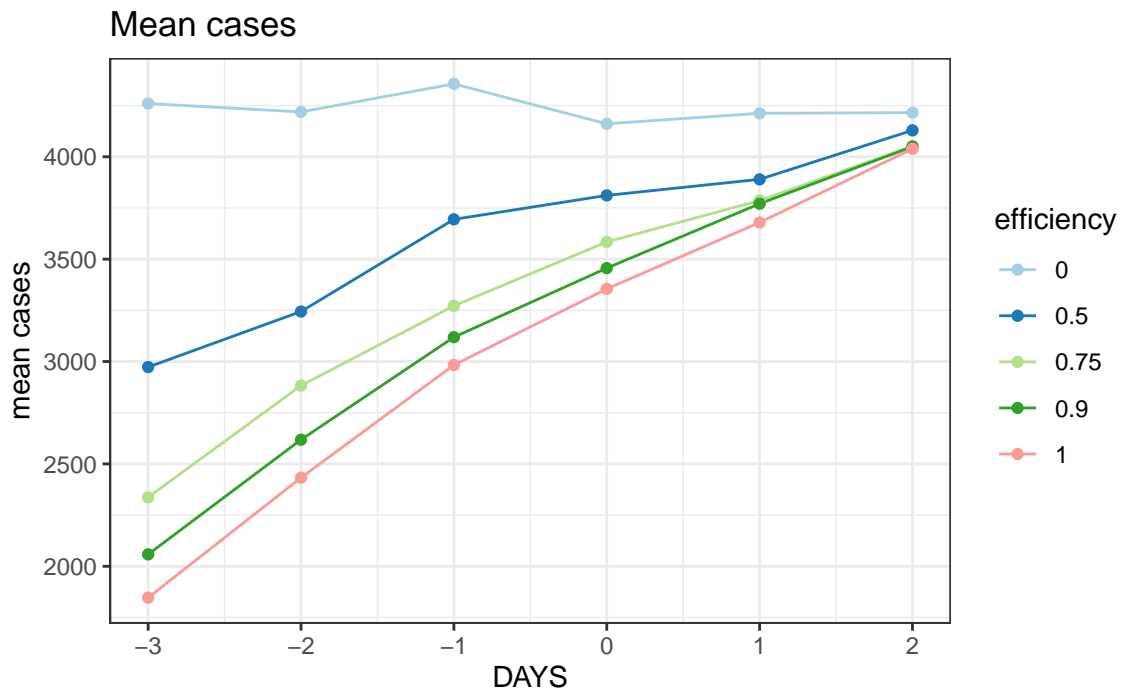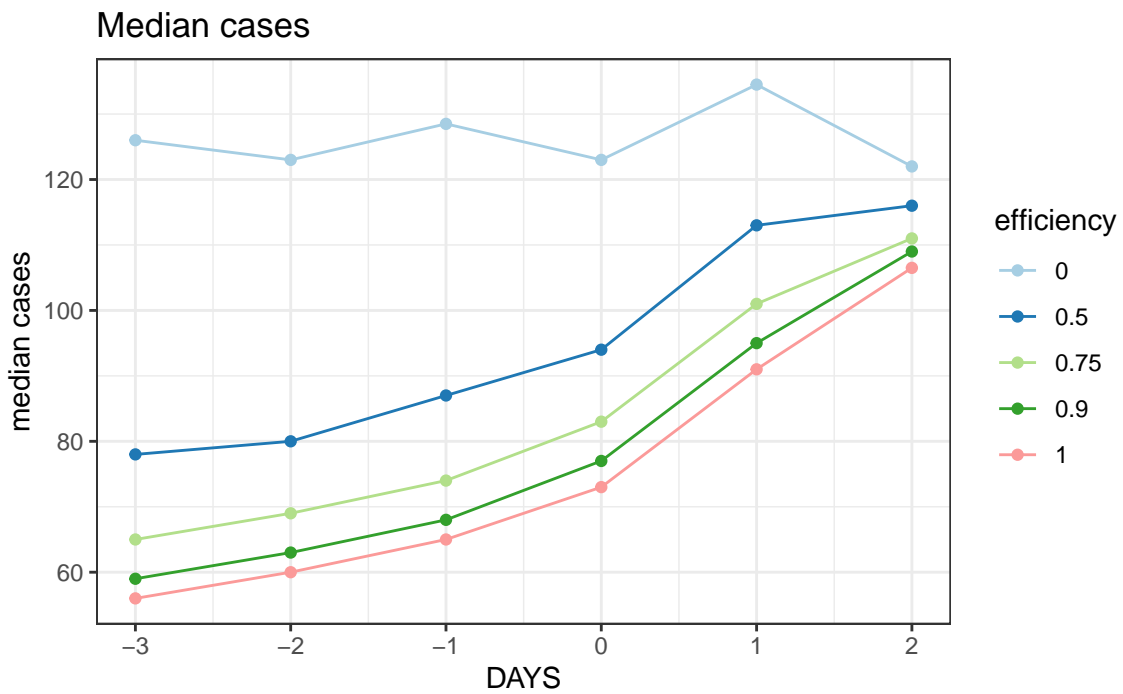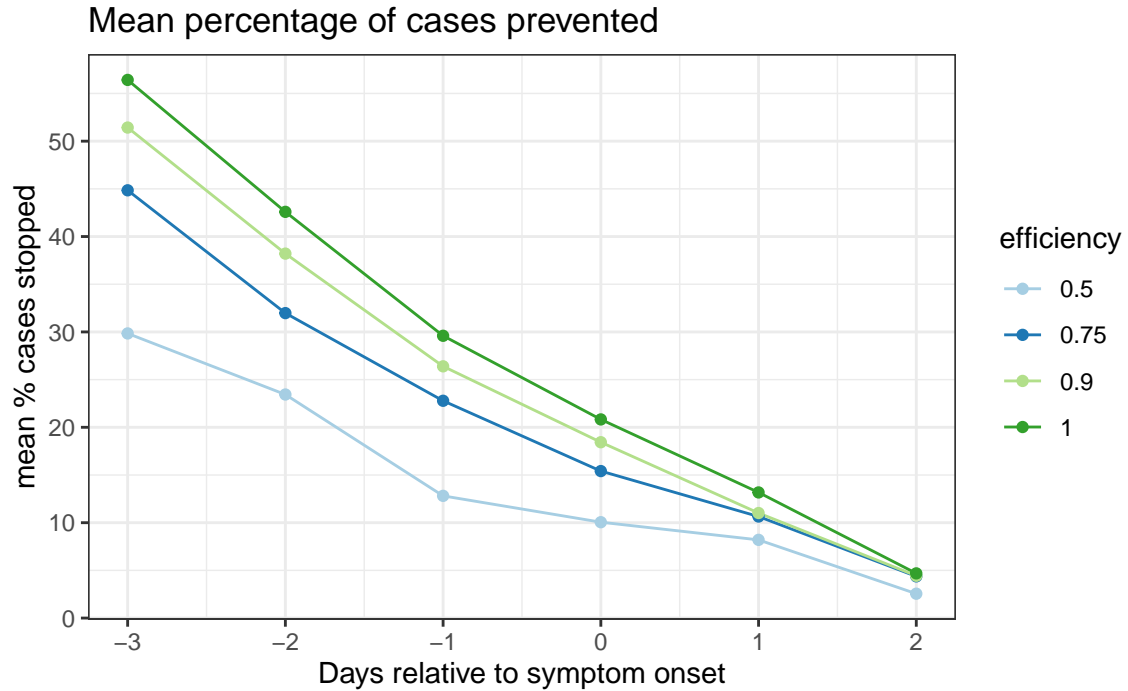## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
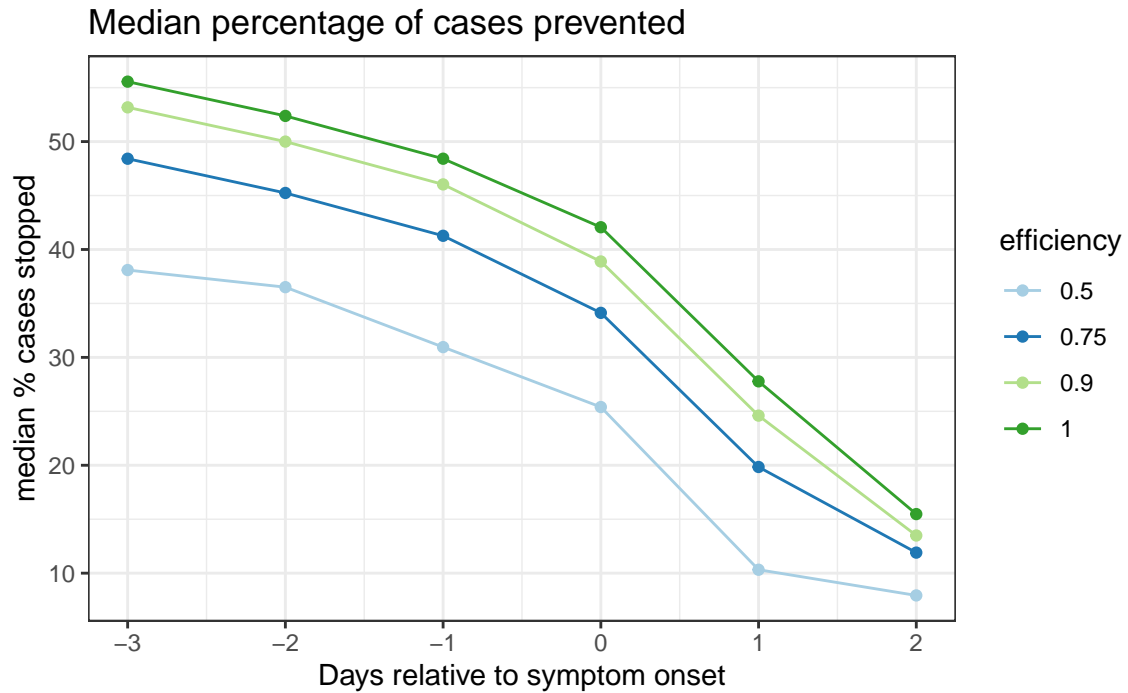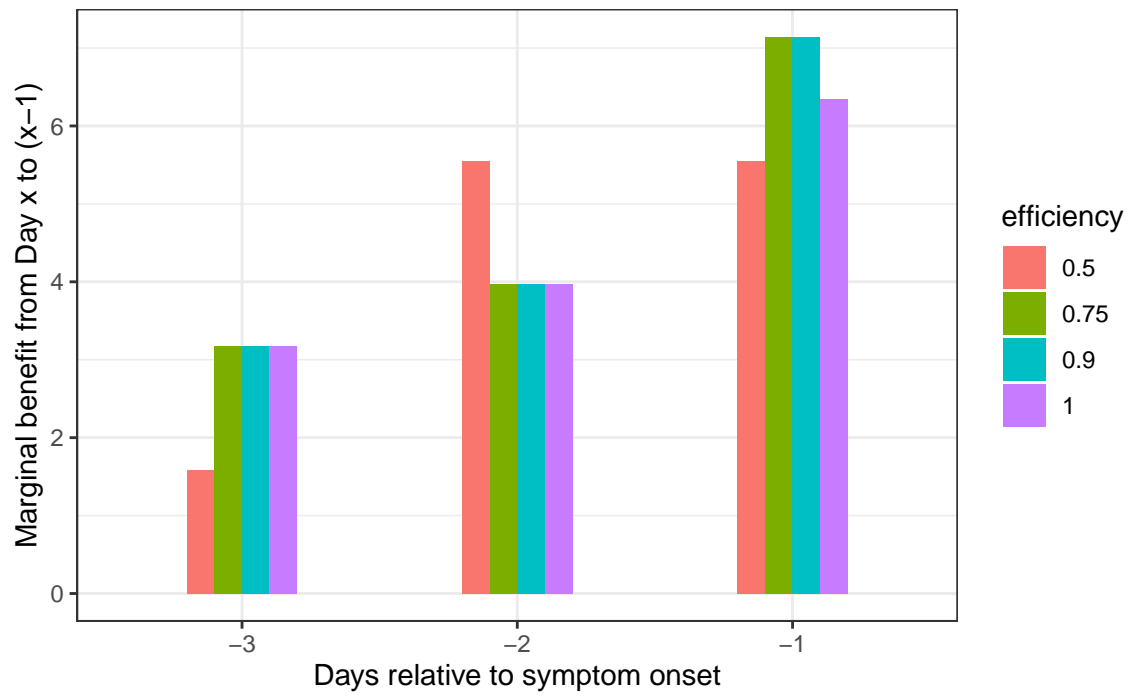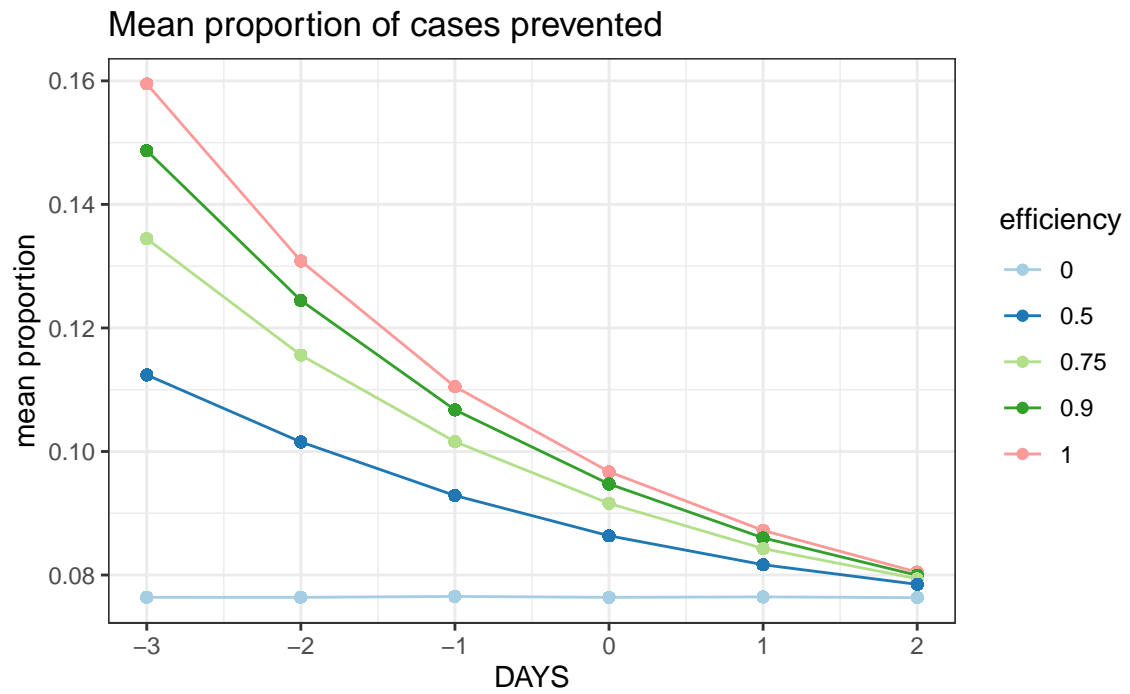
Median cases

`summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
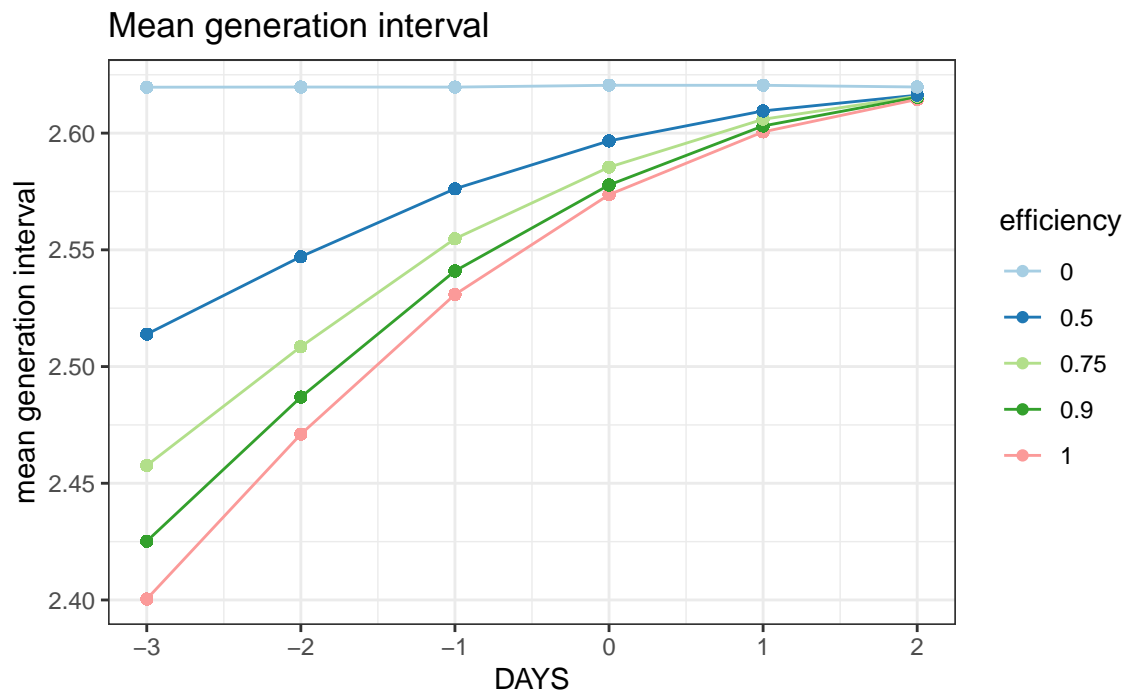
Mean percentage of cases prevented

`summarise()` regrouping output by 'DAYS' (override with `.groups` argument)

Median percentage of cases prevented

`summarise()` regrouping output by 'DAYS' (override with `.groups` argument)

1.2.3 Cases prevented (proportion)

Mean proportion of cases prevented

1.2.4 Actual generation interval

Mean generation interval

2 Not snowball - Secondary cases traced

## 2.1 n = 2000, offset =1, gamma shape = 2, scale = 1

2.1.1 Case numbers

`summarise()` regrouping output by 'DAYS' (override with `.groups` argument)

| DAYS	pc	mean	median	min	max	n_sims
-3	0.00	4134.384	123.0	12	326421	20000
-3	0.50	3660.398	87.5	12	375738	20000
-3	0.75	3434.372	77.0	12	367087	20000
-3	0.90	3320.129	72.0	12	307418	20000
-3	1.00	3363.618	70.0	12	298430	20000
-2	0.00	4194.842	123.0	12	385370	20000
-2	0.50	3659.352	87.5	12	369331	20000
-2	0.75	3482.303	79.0	12	315242	20000
-2	0.90	3408.288	74.0	12	331757	20000
-2	1.00	3339.031	72.0	12	385959	20000
-1	0.00	3957.546	121.0	12	347425	20000
-1	0.50	3681.714	96.0	12	352565	20000
-1	0.75	3512.851	84.0	12	321097	20000
-1	0.90	3442.772	79.0	12	376914	20000
-1	1.00	3330.257	75.0	12	364876	20000
0	0.00	4127.263	121.5	12	289424	20000
0	0.50	3788.985	96.0	12	387273	20000
0	0.75	3706.621	88.0	12	254596	20000
0	0.90	3569.247	83.0	12	209950	20000
0	1.00	3512.969	80.0	12	249264	20000
1	0.00	4051.899	117.0	12	254215	20000
1	0.50	3925.443	101.0	12	287724	20000
1	0.75	3785.841	94.0	12	186929	20000
1	0.90	3779.509	92.0	12	247478	20000
1	1.00	3722.952	90.0	12	217987	20000
2	0.00	4191.128	127.0	12	372664	20000
2	0.50	4182.850	118.5	12	350454	20000
2	0.75	4034.367	115.0	12	317090	20000
2	0.90	4027.151	114.0	12	397815	20000
2	1.00	3979.673	113.0	12	351094	20000

Box plot of cases (axis limited at 4000)
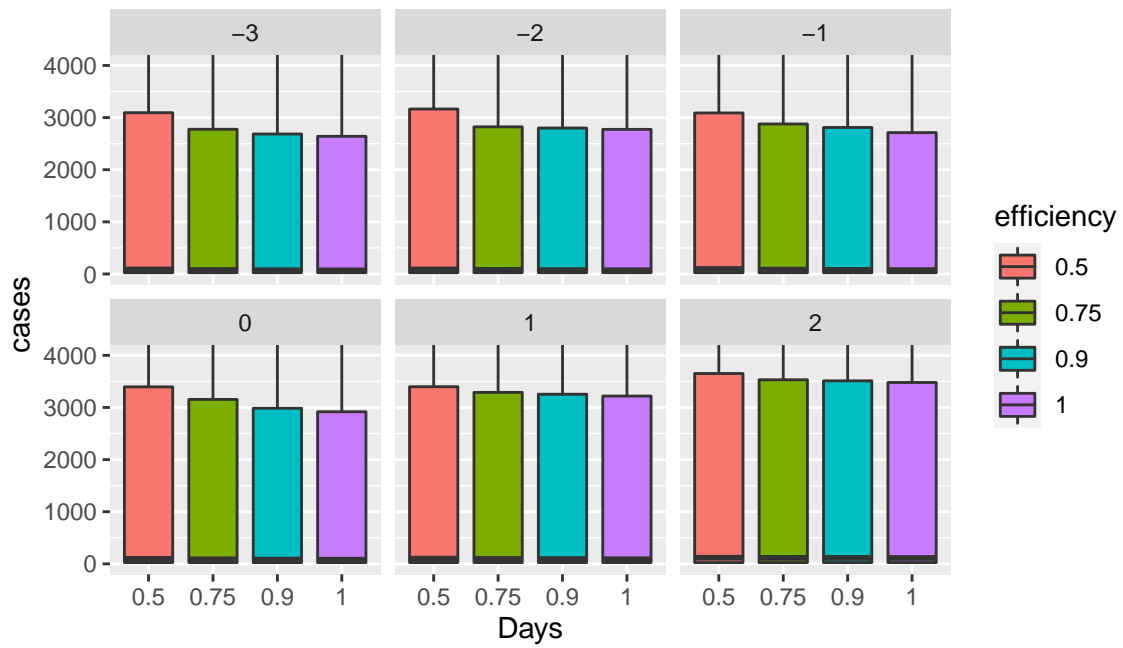
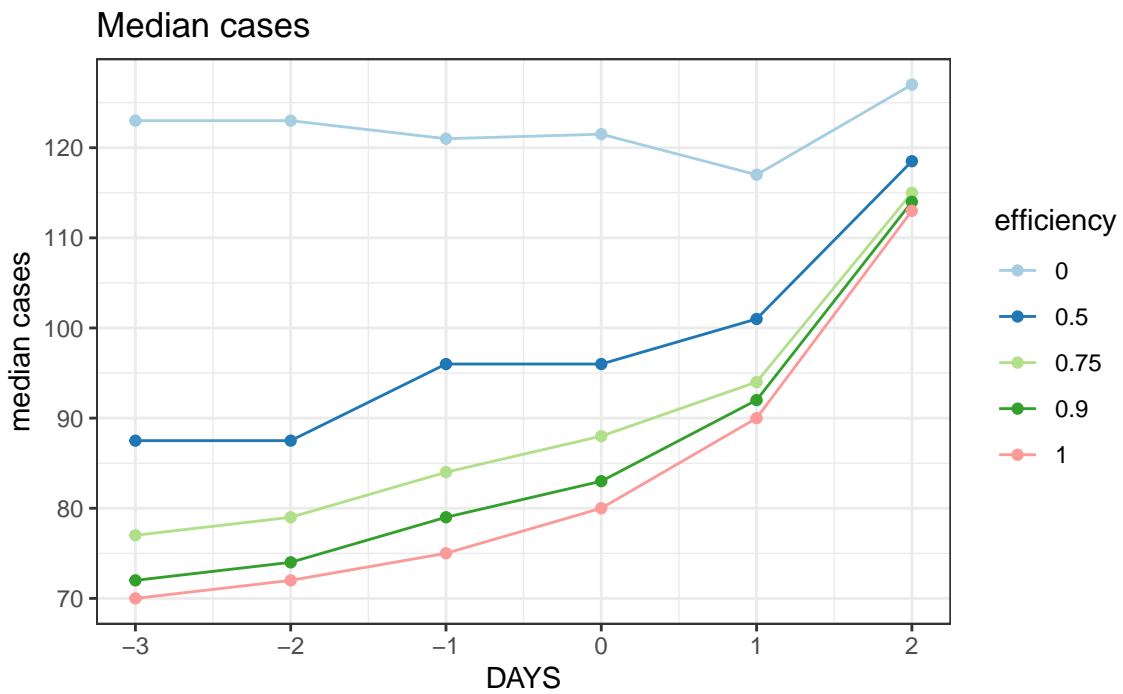Box plot of cases (axis limited at 100)
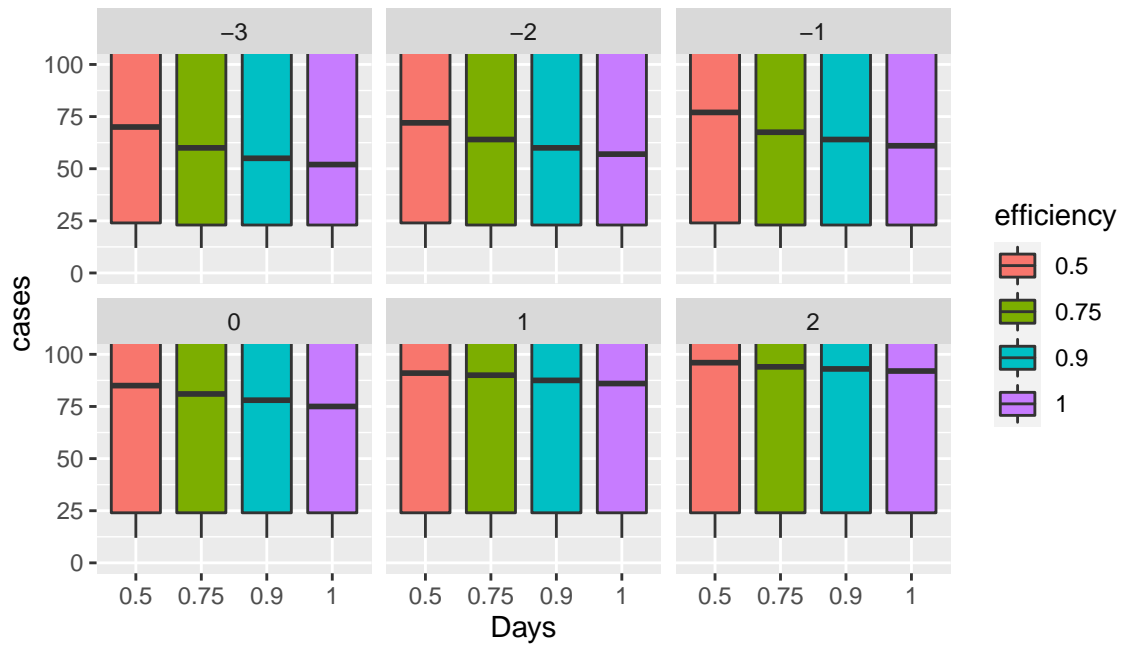
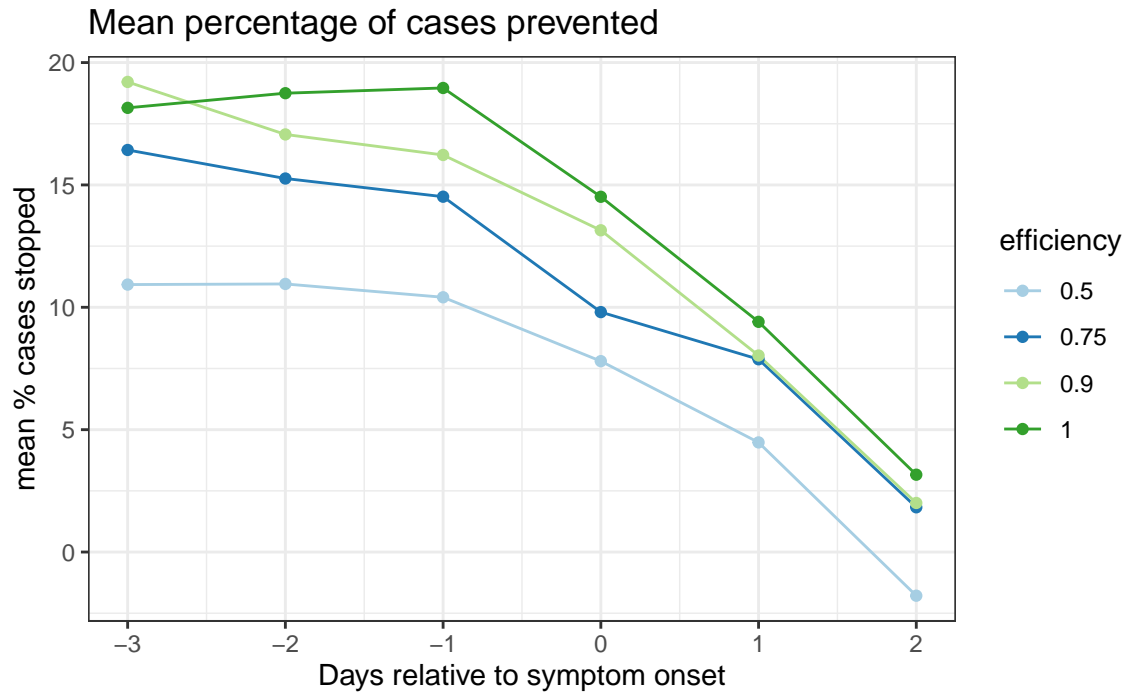## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
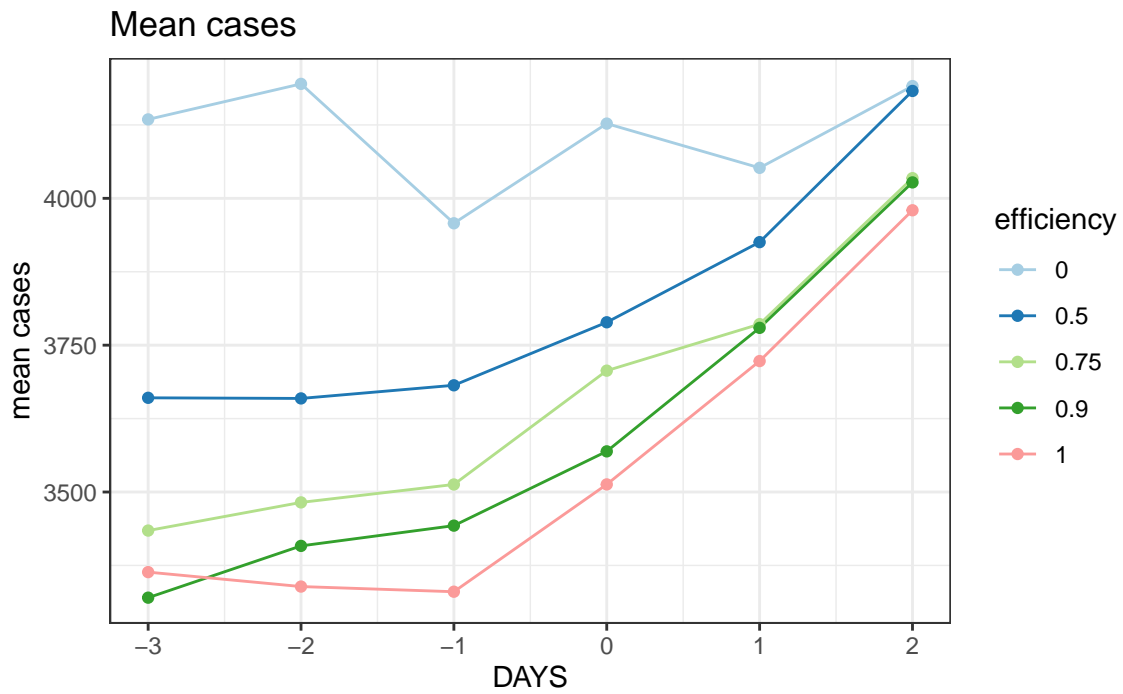
`summarise()` regrouping output by 'DAYS' (override with `.groups` argument)

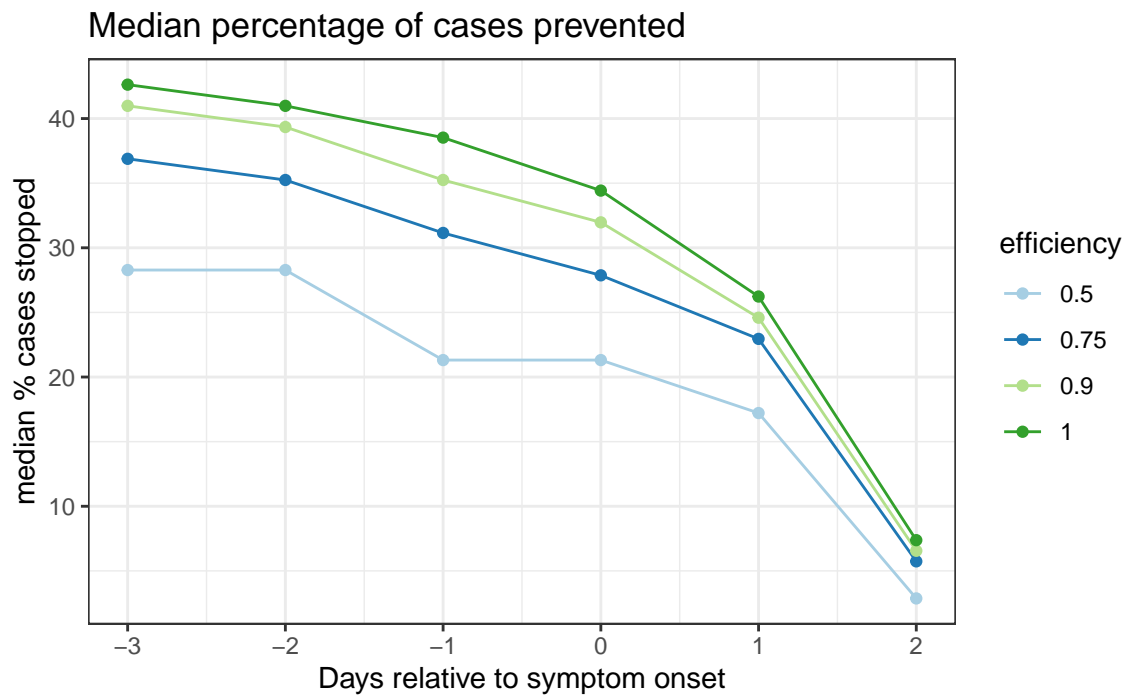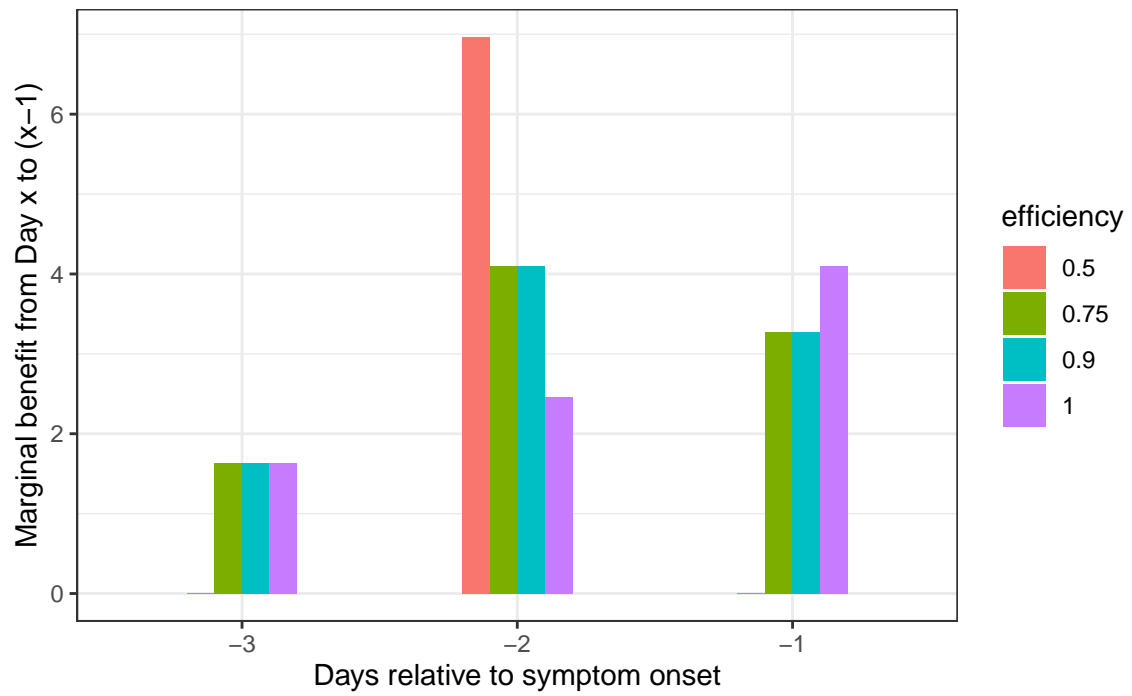### 2.1.2 Cases prevented (summary statistics)

```
## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
```
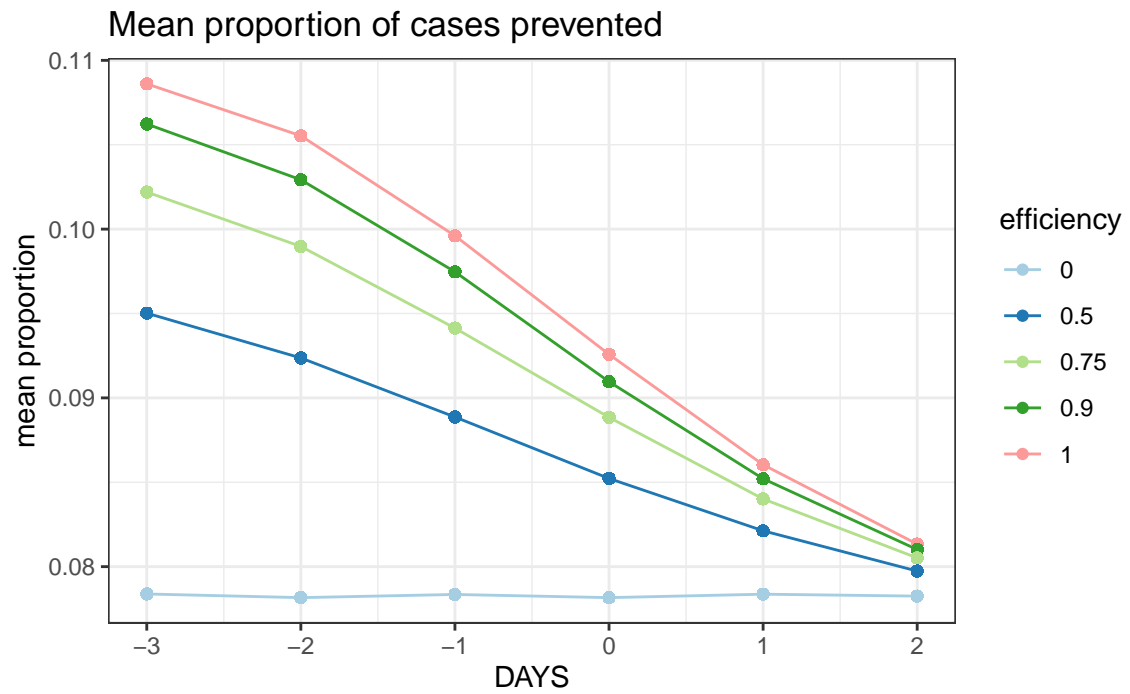

Mean percentage of cases prevented

```
## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
```


Median percentage of cases prevented

```
## `summarise()` regrouping output by 'DAYS' (override with `.groups` argument)
```

2.1.3 Cases prevented (proportion)

Mean proportion of cases prevented

2.1.4 Actual generation interval

Mean generation interval