CovidInCanadaAnalysis

May 4, 2020

1 AUTOMATIC

2020-04-03

1.1 CDF Fitting and testing rates

1.1.1 The Cruve for everywhere

1.1.2 Main calls

Last updated: 2020-05-04 23:19:16

    Waqar Muhammad - mwaqar@snolab.ca

    NOTE:
    All of the following was data is from Health Canada.
    The CDF fit is a logicitsts curve fit.
    The PDF fit is a simple gaussian fit.
    Day 0 is:
    -> 31-01-2020 for Canada
    -> 08-03-2020 for AB
    -> 31-01-2020 for BC
    -> 11-03-2020 for MN
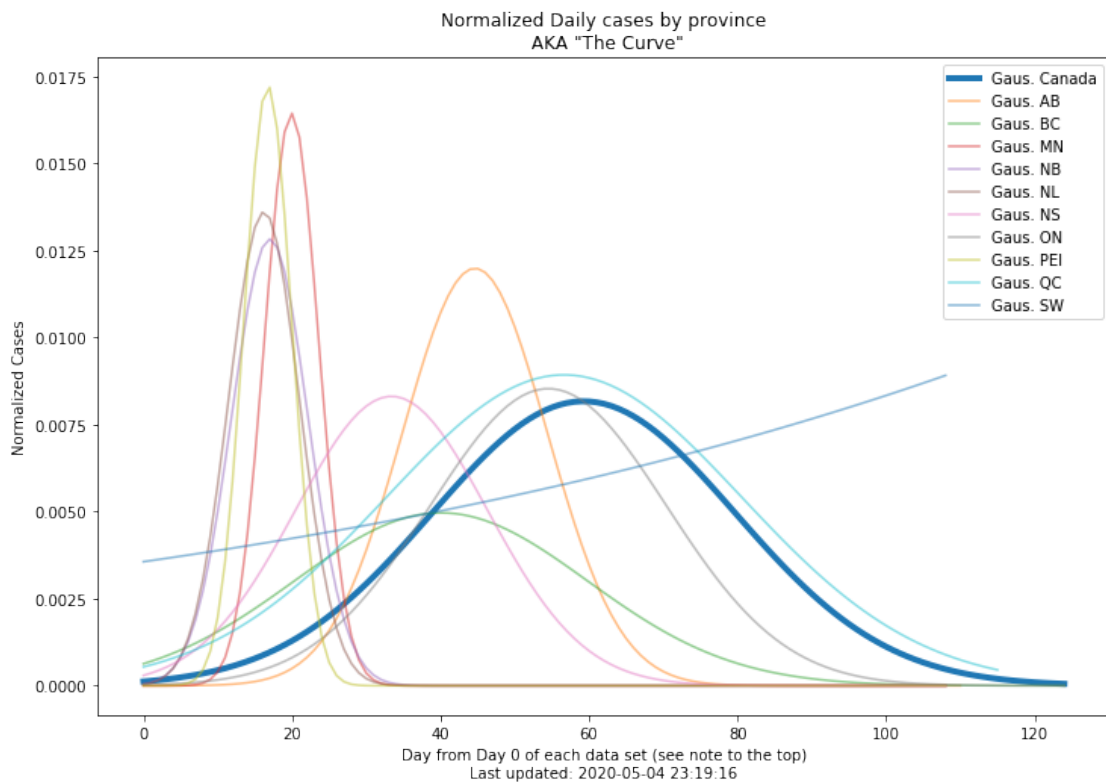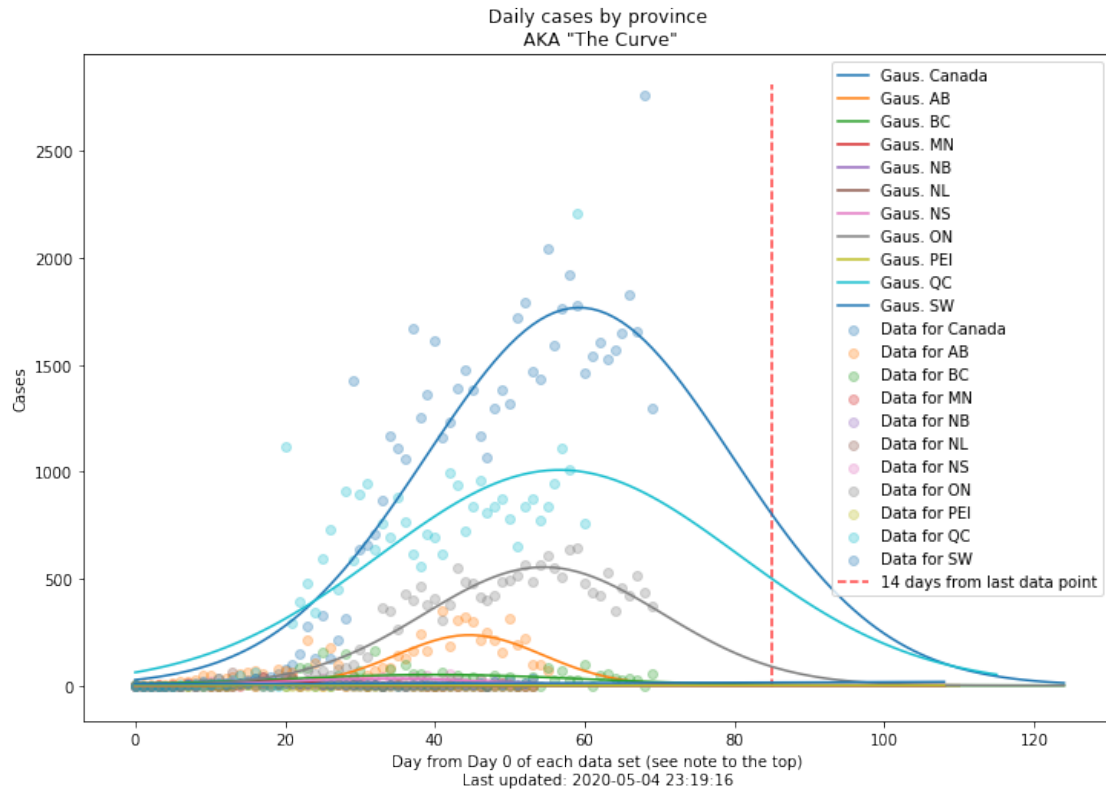   -> 11-03-2020 for NB
    -> 11-03-2020 for NL
    -> 11-03-2020 for NS
    -> 31-01-2020 for ON
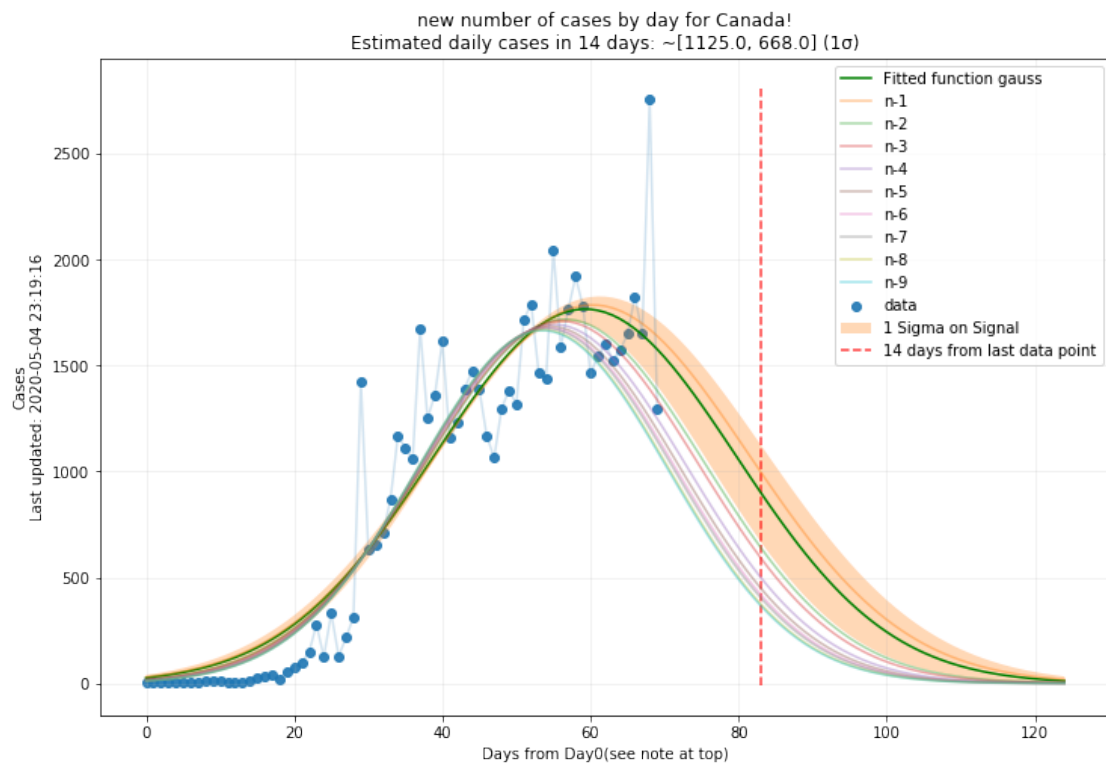   -> 11-03-2020 for PEI
    -> 01-03-2020 for QC
    -> 11-03-2020 for SW

Daily cases by province
AKA "The Curve"

Last updated: 2020-05-04 23:19:16

Normalized Daily cases by province
AKA "The Curve"

Last updated: 2020-05-04 23:19:16

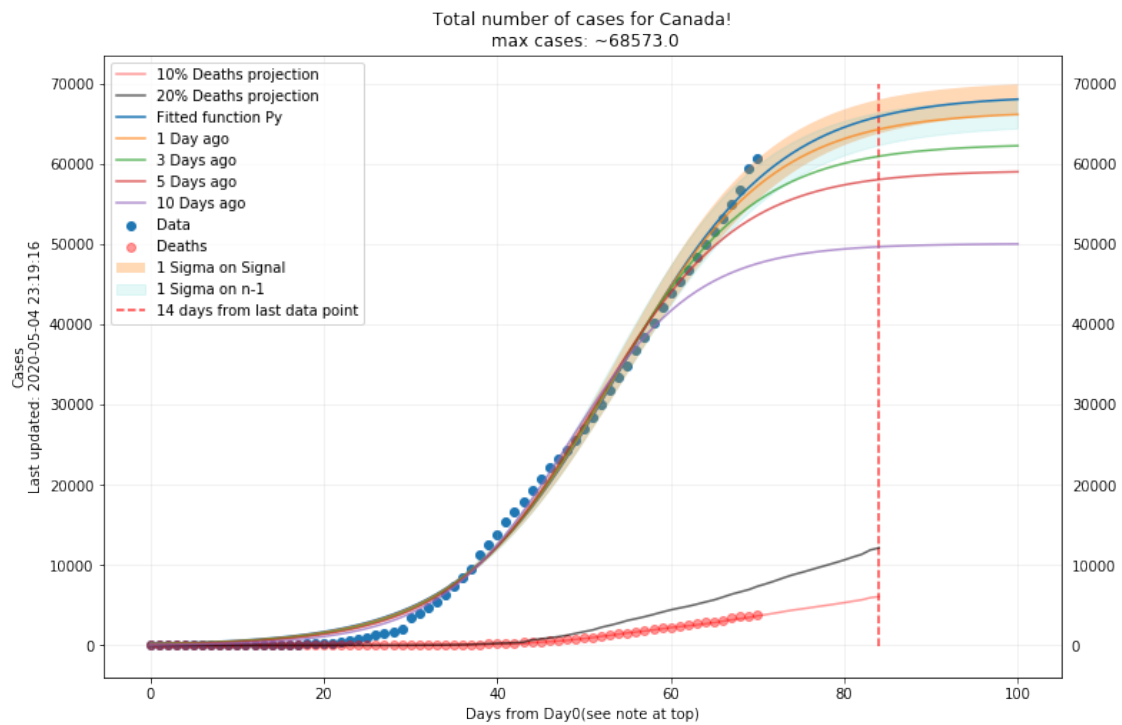The plot above shows total cases normalized to 1 for each province
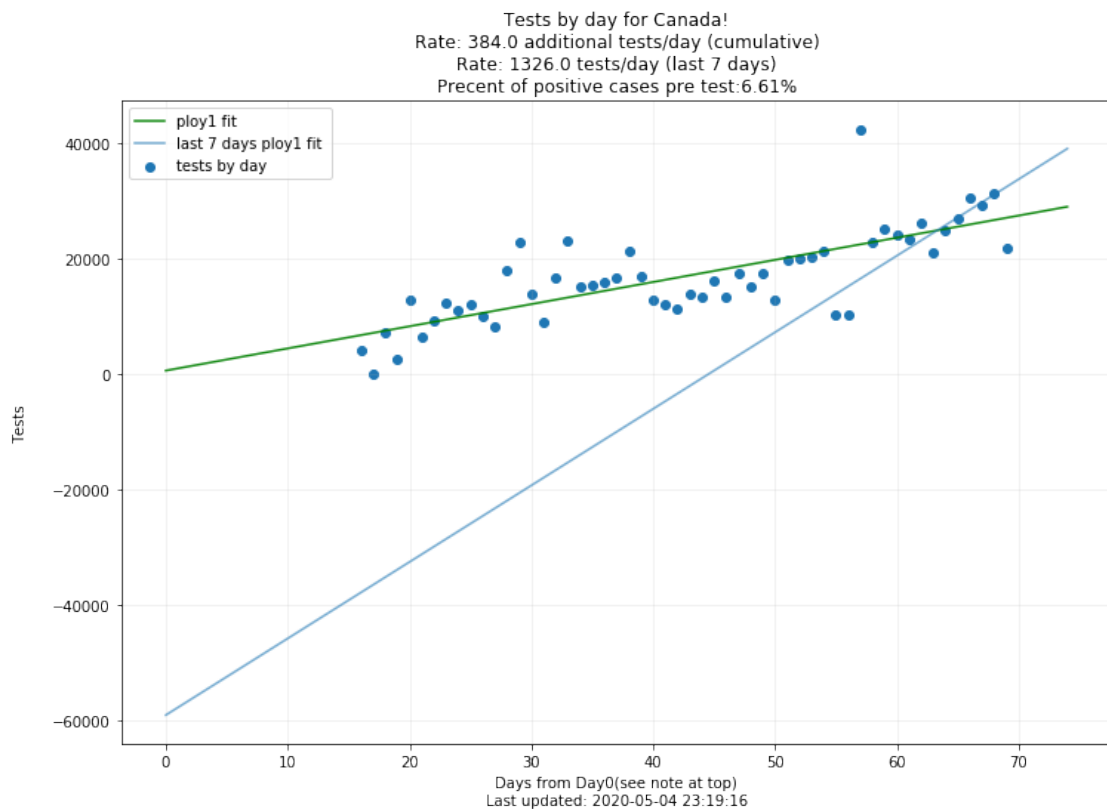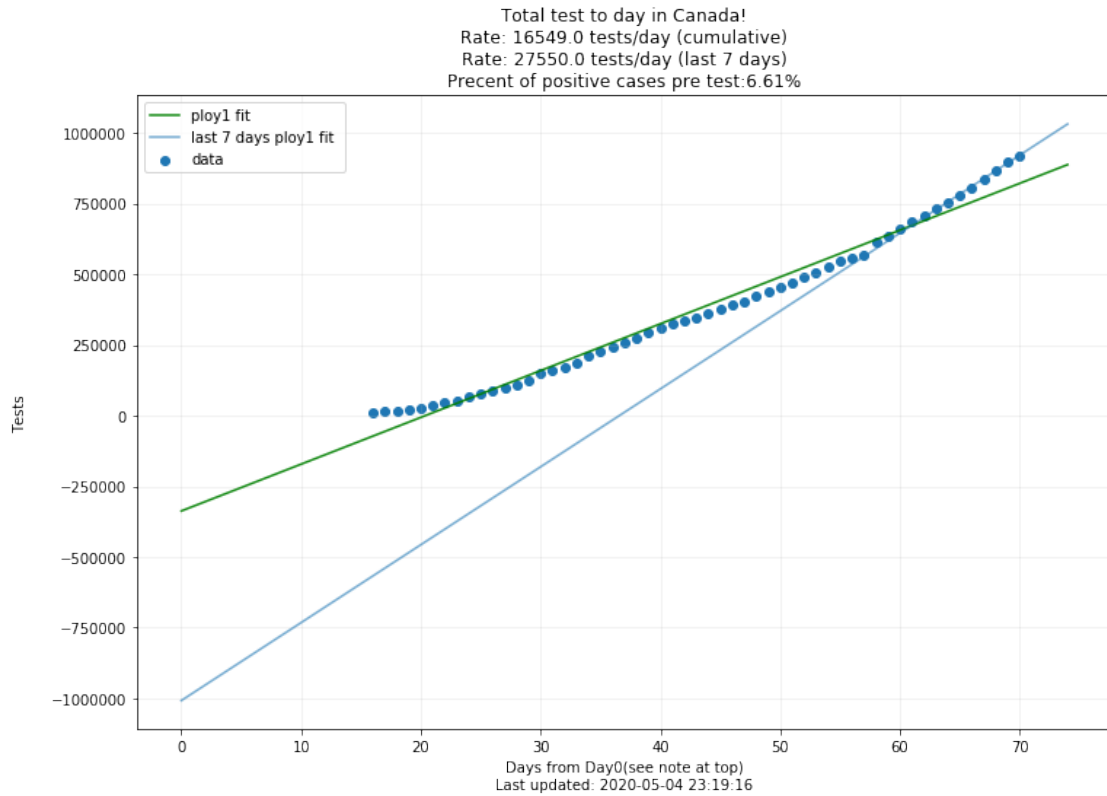
------------- Canada-------------
cases: [4.0000e+00 7.0000e+00 8.0000e+00 9.0000e+00 1.0000e+01 1.1000e+01
 1.2000e+01 1.3000e+01 1.5000e+01 2.4000e+01 3.3000e+01 4.5000e+01
 5.1000e+01 5.7000e+01 6.2000e+01 7.7000e+01 1.0300e+02 1.3800e+02
 1.7600e+02 1.9300e+02 2.4900e+02 3.2400e+02 4.2400e+02 5.6900e+02
 8.4600e+02 9.7100e+02 1.3020e+03 1.4300e+03 1.6460e+03 1.9590e+03
 3.3850e+03 4.0180e+03 4.6750e+03 5.3860e+03 6.2550e+03 7.4240e+03
 8.5360e+03 9.5950e+03 1.1268e+04 1.2519e+04 1.3882e+04 1.5496e+04
 1.6653e+04 1.7883e+04 1.9274e+04 2.0748e+04 2.2133e+04 2.3301e+04
 2.4365e+04 2.5663e+04 2.7046e+04 2.8364e+04 3.0081e+04 3.1872e+04
 3.3341e+04 3.4777e+04 3.6823e+04 3.8413e+04 4.0179e+04 4.2099e+04
 4.3877e+04 4.5341e+04 4.6884e+04 4.8489e+04 5.0015e+04 5.1587e+04
 5.3236e+04 5.5061e+04 5.6714e+04 5.9474e+04 6.0772e+04]

new number of cases by day for Canada!
Estimated daily cases in 14 days: ~[1125.0, 668.0] (1σ)

```
sigma+: 61509.0
n+1: 58989.0
Sigma-: 56466.0
----

params PY:  [6.85726387e+04 1.07668761e-01 5.41211836e+01]
PY sigma:   [1.76821117e+03 3.31591140e-03 6.08814849e-01]
max cases:  68573.0
infection point:  54.0
infection point date:  2020-03-25
```
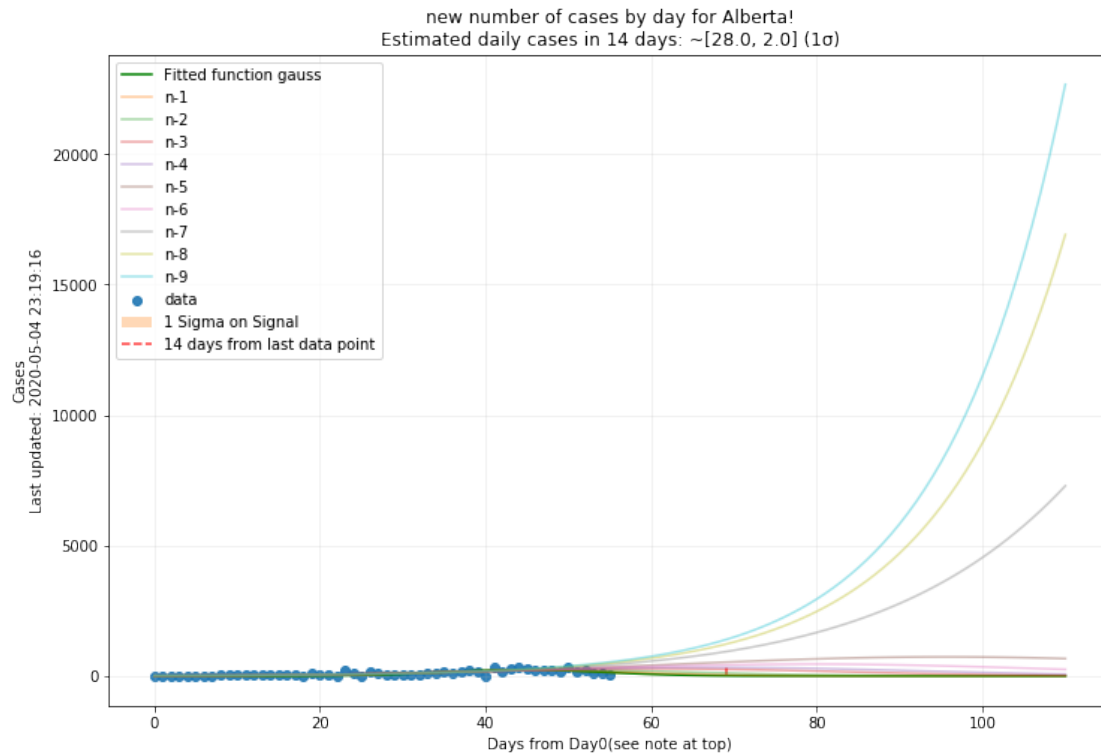

Total number of cases for Canada!
max cases: ~68573.0

Total test to day in Canada!
Rate: 16549.0 tests/day (cumulative)
Rate: 27550.0 tests/day (last 7 days)
Precent of positive cases pre test:6.61%

Tests by day for Canada!
Rate: 384.0 additional tests/day (cumulative)
Rate: 1326.0 tests/day (last 7 days)
Precent of positive cases pre test:6.61%

Precent of positive cases pre test: 6.61 %

------------- Alberta-------------
cases: [1.000e+00 7.000e+00 1.400e+01 1.900e+01 2.300e+01 2.900e+01 3.900e+01
 5.600e+01 7.400e+01 9.700e+01 1.460e+02 1.950e+02 2.260e+02 2.590e+02
 3.010e+02 3.580e+02 4.190e+02 4.860e+02 5.420e+02 5.420e+02 6.210e+02
 6.900e+02 7.540e+02 7.540e+02 9.680e+02 1.075e+03 1.075e+03 1.250e+03
 1.348e+03 1.373e+03 1.423e+03 1.451e+03 1.500e+03 1.569e+03 1.651e+03
 1.732e+03 1.870e+03 1.996e+03 2.158e+03 2.397e+03 2.562e+03 2.562e+03
 2.908e+03 3.095e+03 3.401e+03 3.720e+03 4.017e+03 4.233e+03 4.480e+03
 4.696e+03 4.850e+03 5.165e+03 5.355e+03 5.573e+03 5.670e+03 5.766e+03
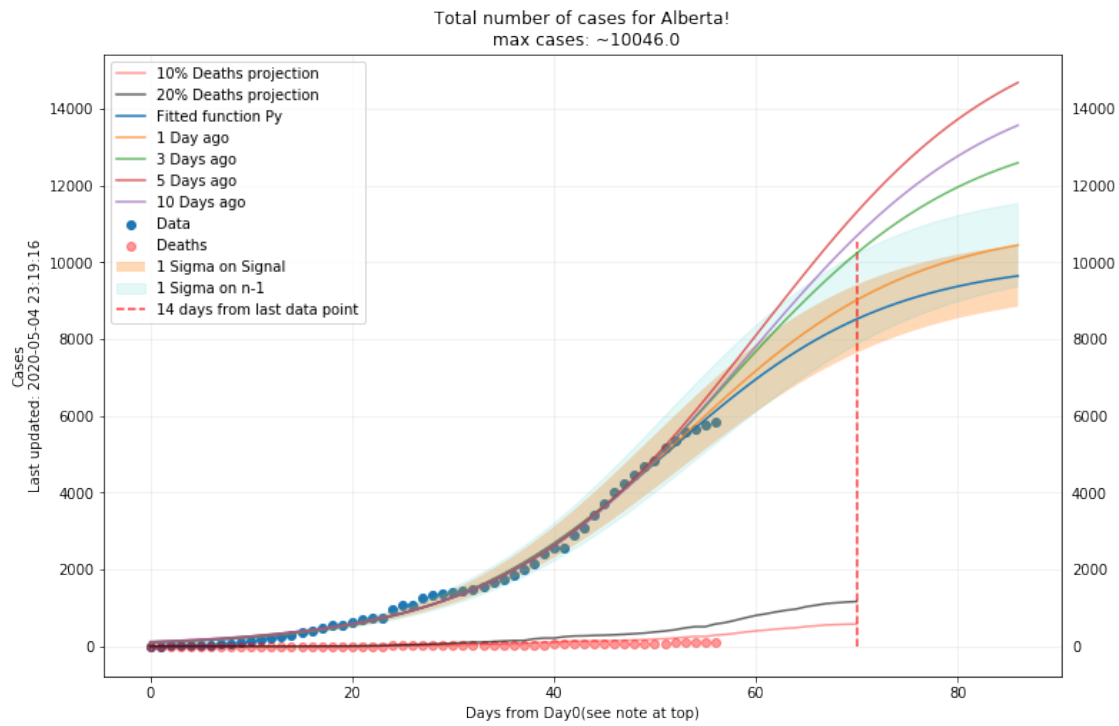 5.836e+03]

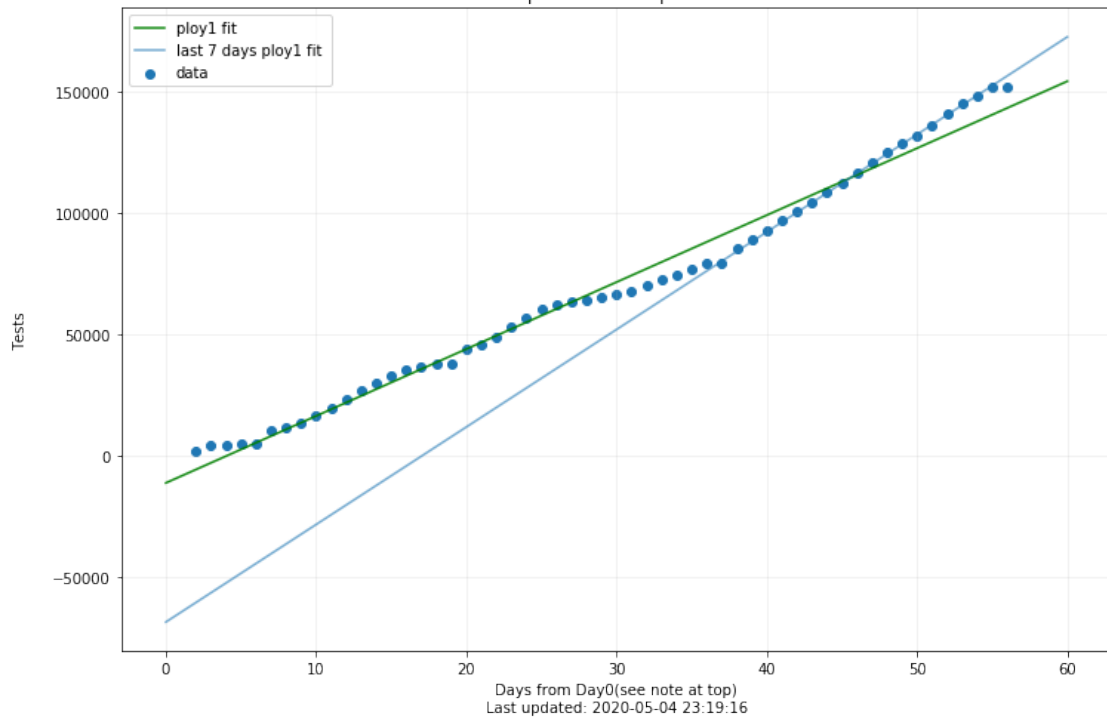new number of cases by day for Alberta!
Estimated daily cases in 14 days: ~[28.0, 2.0] (1σ)
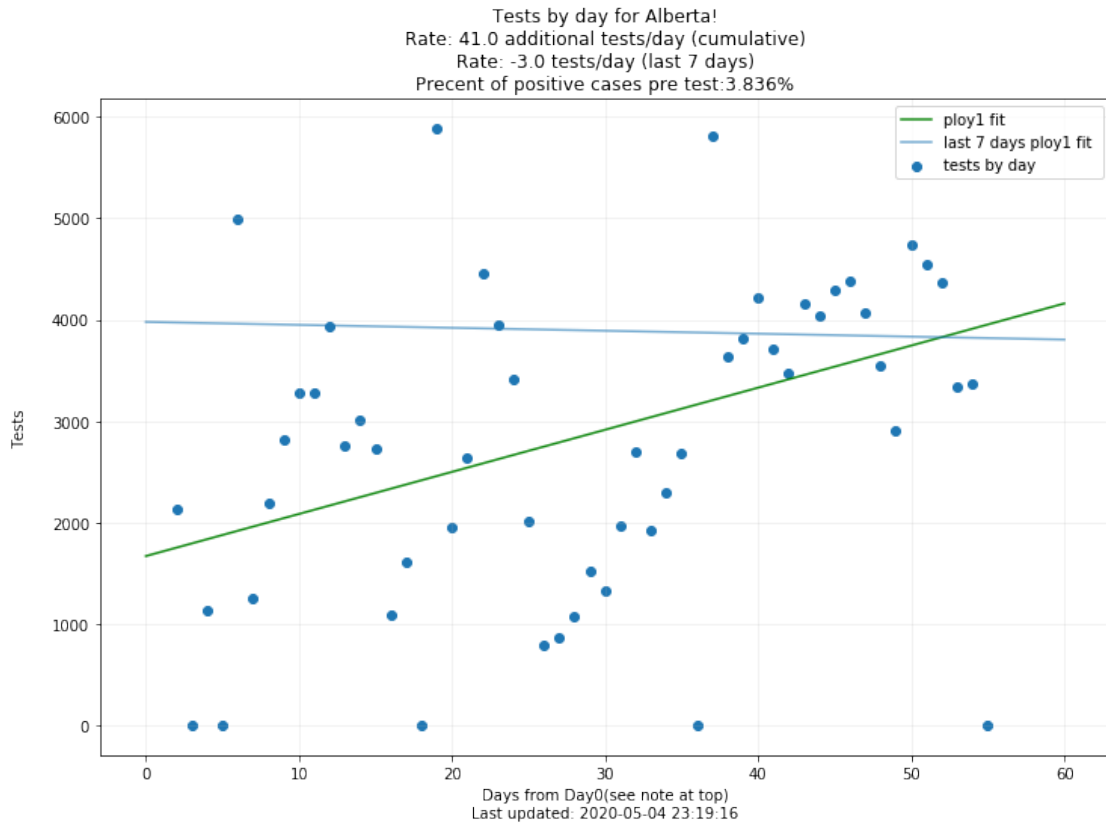
sigma+: 7208.0
n+1: 6334.0
Sigma-: 5524.0

```
params PY:  [1.00456641e+04 9.08938161e-02 5.11202515e+01]
PY sigma:  [7.23934428e+02 3.50965579e-03 1.59004186e+00]
max cases:  10046.0
infection point:  51.0
infection point date:  2020-03-22
```

Total test to day in Alberta!
Rate: 2762.0 tests/day (cumulative)
Rate: 4024.0 tests/day (last 7 days)
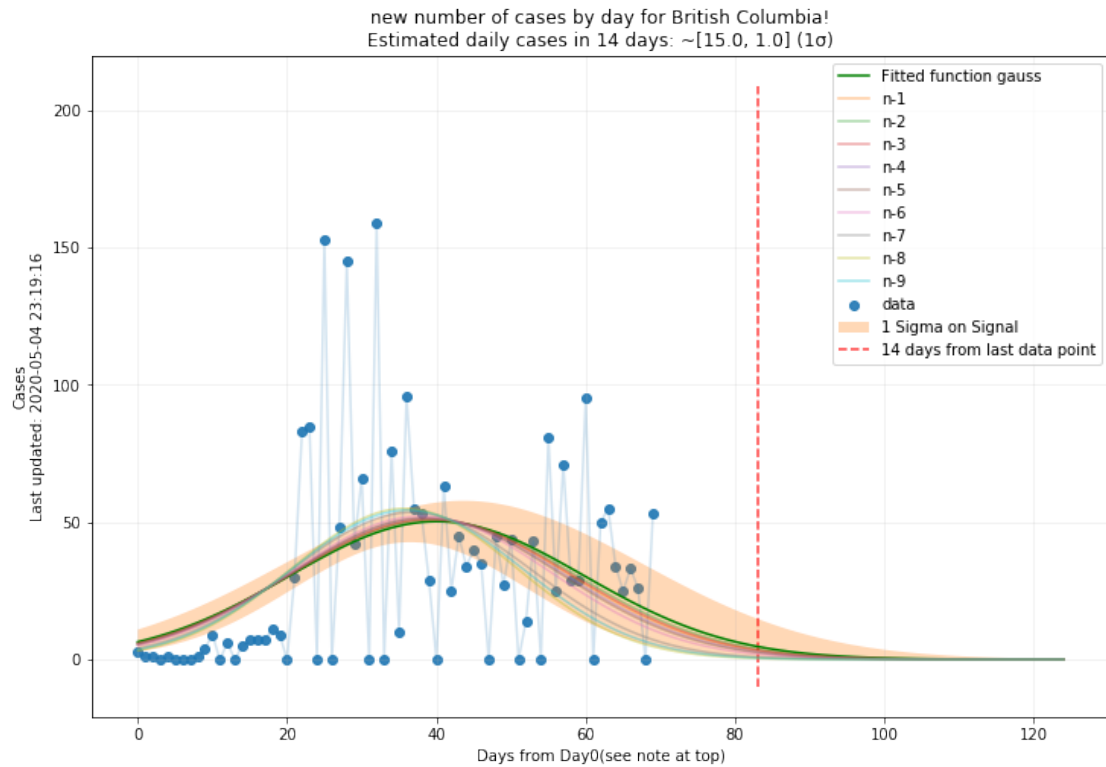Precent of positive cases pre test:3.836%

Tests by day for Alberta!
Rate: 41.0 additional tests/day (cumulative)
Rate: -3.0 tests/day (last 7 days)
Precent of positive cases pre test:3.836%

Last updated: 2020-05-04 23:19:16

Precent of positive cases pre test: 3.836 %

------------- British Columbia-------------
cases: [1.000e+00 4.000e+00 5.000e+00 6.000e+00 6.000e+00 7.000e+00 7.000e+00
 7.000e+00 7.000e+00 8.000e+00 1.200e+01 2.100e+01 2.100e+01 2.700e+01
 2.700e+01 3.200e+01 3.900e+01 4.600e+01 5.300e+01 6.400e+01 7.300e+01
 7.300e+01 1.030e+02 1.860e+02 2.710e+02 2.710e+02 4.240e+02 4.240e+02
 4.720e+02 6.170e+02 6.590e+02 7.250e+02 7.250e+02 8.840e+02 8.840e+02
 9.600e+02 9.700e+02 1.066e+03 1.121e+03 1.174e+03 1.203e+03 1.203e+03
 1.266e+03 1.291e+03 1.336e+03 1.370e+03 1.410e+03 1.445e+03 1.445e+03
 1.490e+03 1.517e+03 1.561e+03 1.561e+03 1.575e+03 1.618e+03 1.618e+03
 1.699e+03 1.724e+03 1.795e+03 1.824e+03 1.853e+03 1.948e+03 1.948e+03
 1.998e+03 2.053e+03 2.087e+03 2.112e+03 2.145e+03 2.171e+03 2.171e+03
 2.224e+03]

new number of cases by day for British Columbia!
Estimated daily cases in 14 days: ~[15.0, 1.0] (1σ)

sigma+: 2104.0
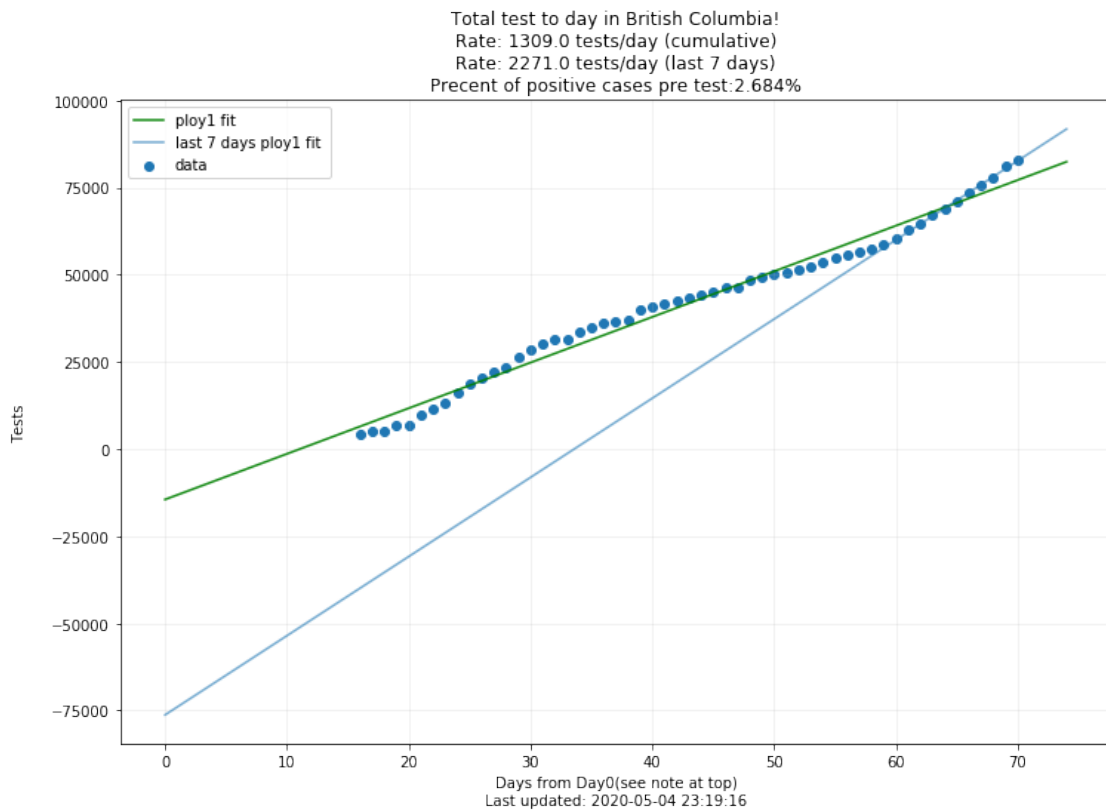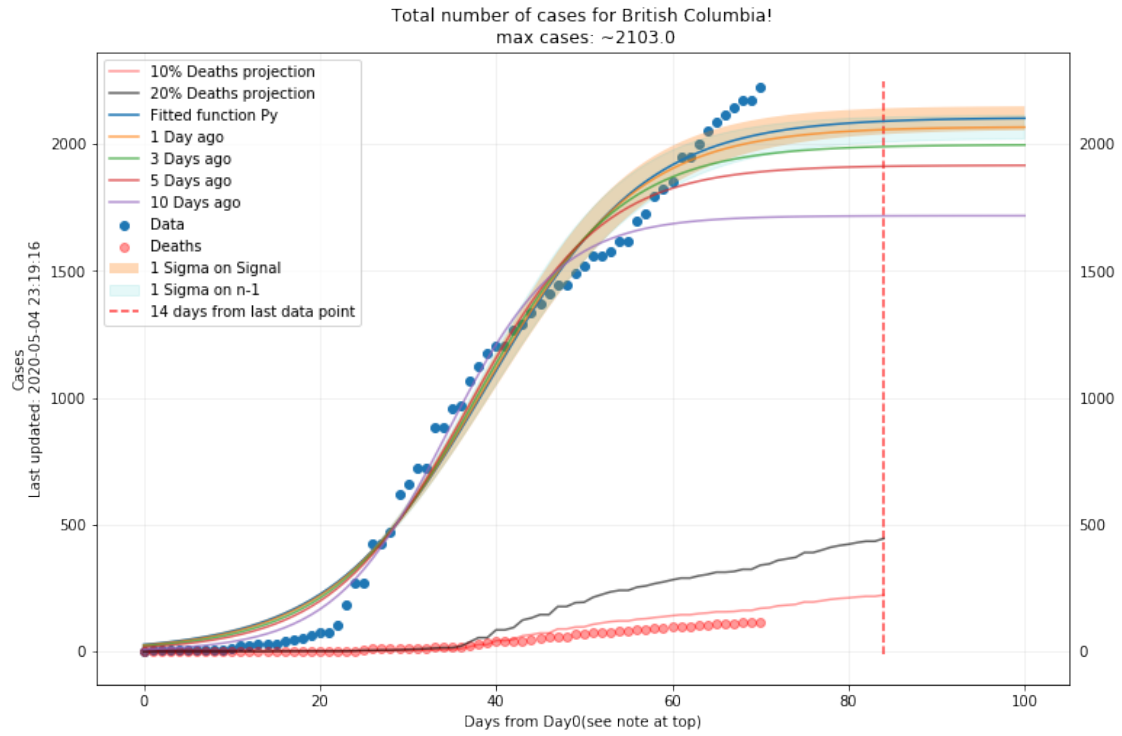n+1: 2045.0
Sigma-: 1983.0
----

params PY: [2.10312530e+03 1.11317624e-01 3.90599301e+01]
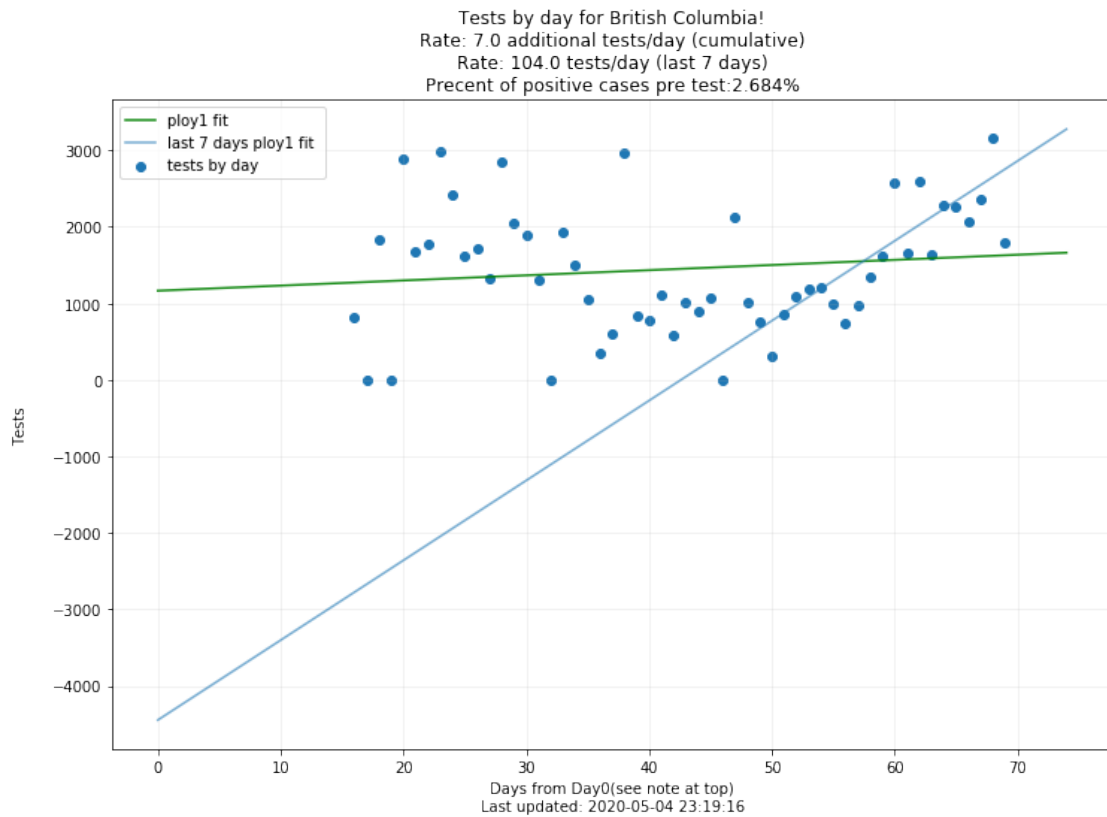PY sigma: [4.63573614e+01 5.97561866e-03 6.68894371e-01]
max cases: 2103.0
infection point: 39.0
infection point date: 2020-03-10

Total number of cases for British Columbia!
max cases: ~2103.0

Total test to day in British Columbia!
Rate: 1309.0 tests/day (cumulative)
Rate: 2271.0 tests/day (last 7 days)
Precent of positive cases pre test:2.684%

Last updated: 2020-05-04 23:19:16

Tests by day for British Columbia!
Rate: 7.0 additional tests/day (cumulative)
Rate: 104.0 tests/day (last 7 days)
Precent of positive cases pre test:2.684%

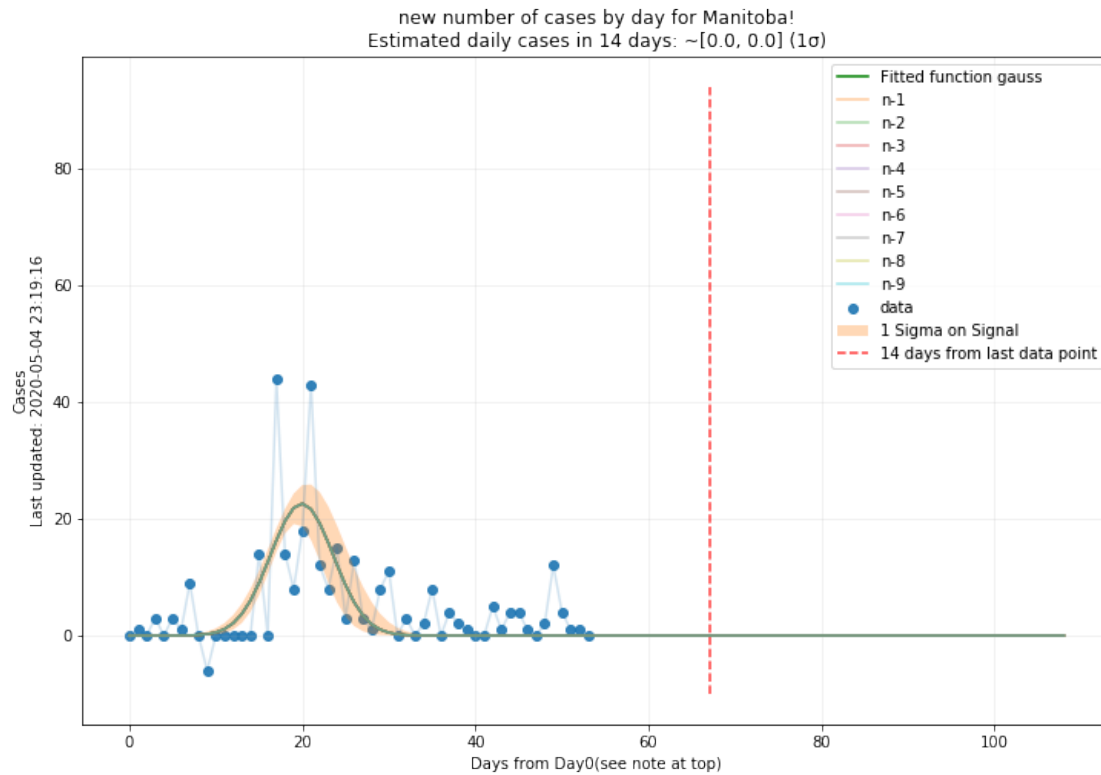Last updated: 2020-05-04 23:19:16

Precent of positive cases pre test: 2.684 %

------------- Manitoba-------------
cases: [0.   0.   1.   1.   4.   4.   7.   8.   17. 17. 11. 11. 11. 11.
   11. 11. 25. 25. 69. 83. 91. 109. 152. 164. 172. 187. 190. 203.
  206. 207. 215. 226. 226. 229. 229. 231. 239. 239. 243. 245. 246. 246.
  246. 251. 252. 256. 260. 261. 261. 263. 275. 279. 280. 281. 281.]

new number of cases by day for Manitoba!
Estimated daily cases in 14 days: ~[0.0, 0.0] (1σ)

sigma+: 259.0
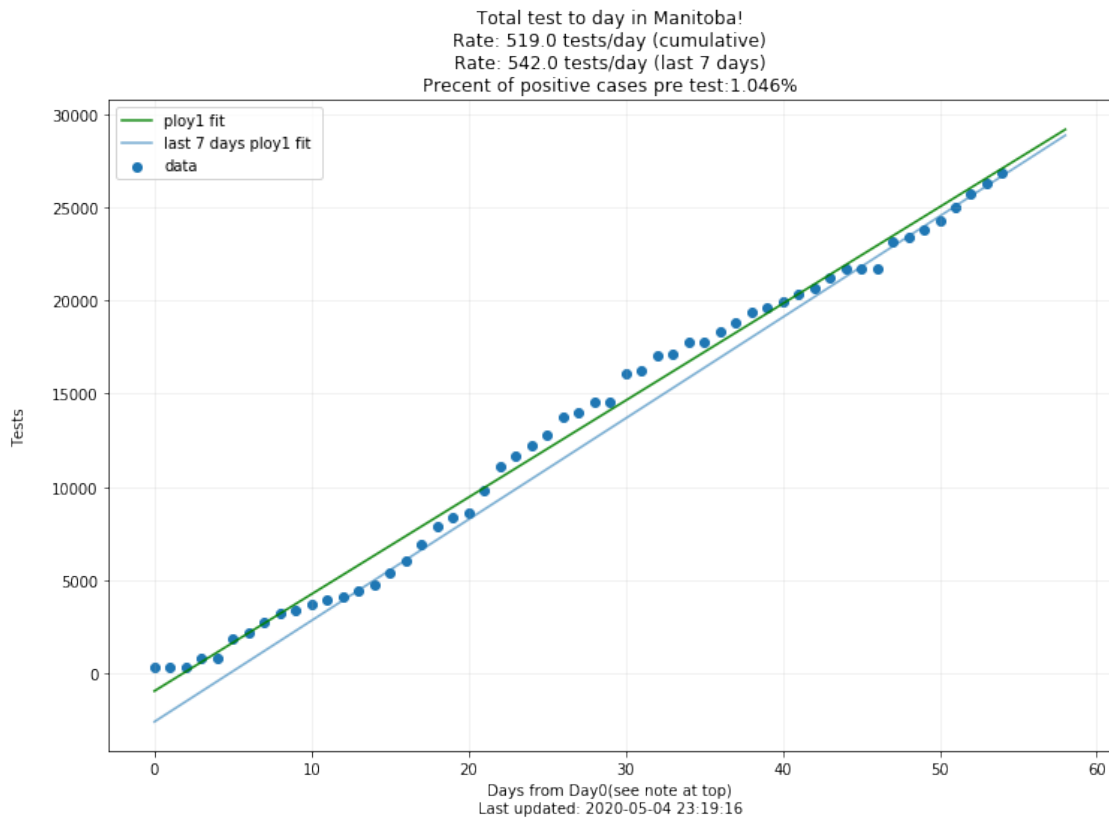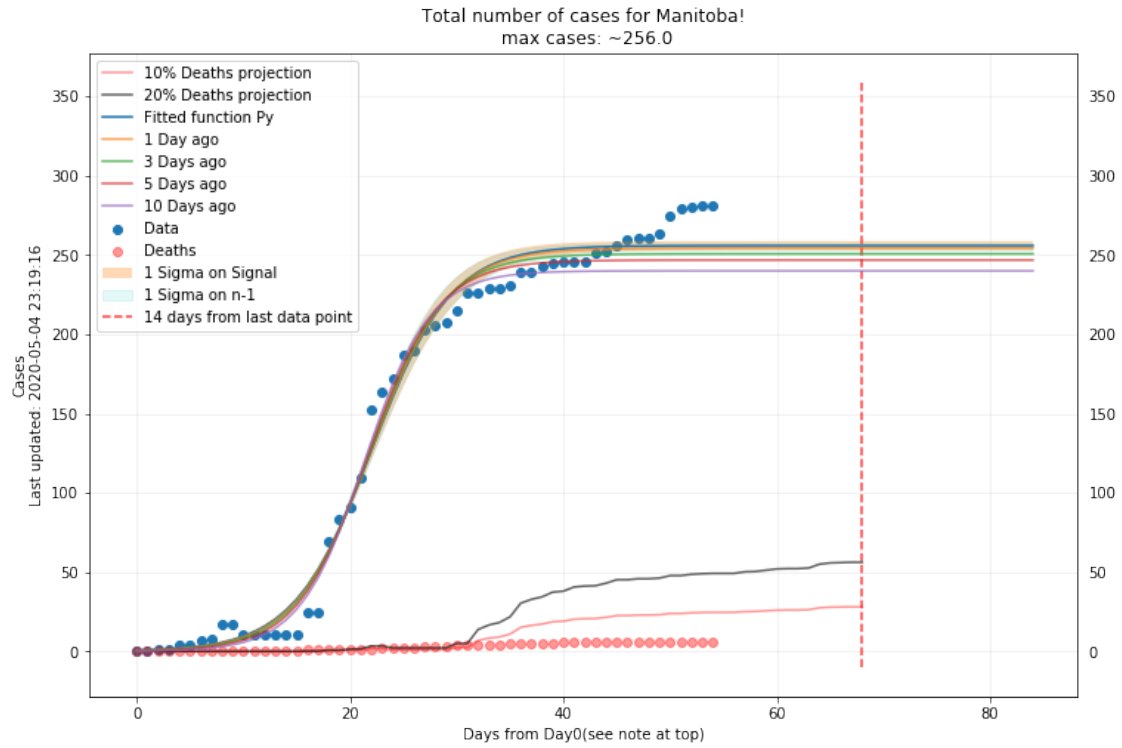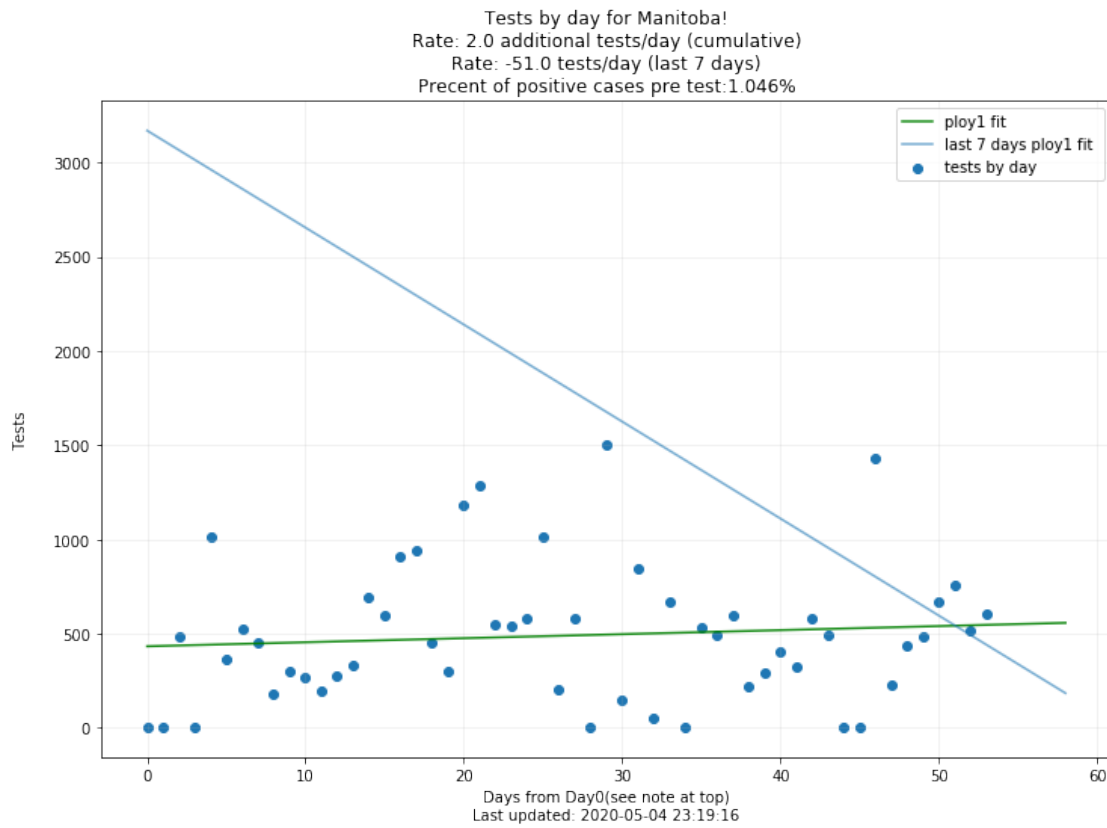n+1: 256.0
Sigma-: 253.0
----

params PY: [255.92180732   0.26963314   22.09637315]
PY sigma: [2.94621995 0.01672474 0.2682956]
max cases: 256.0
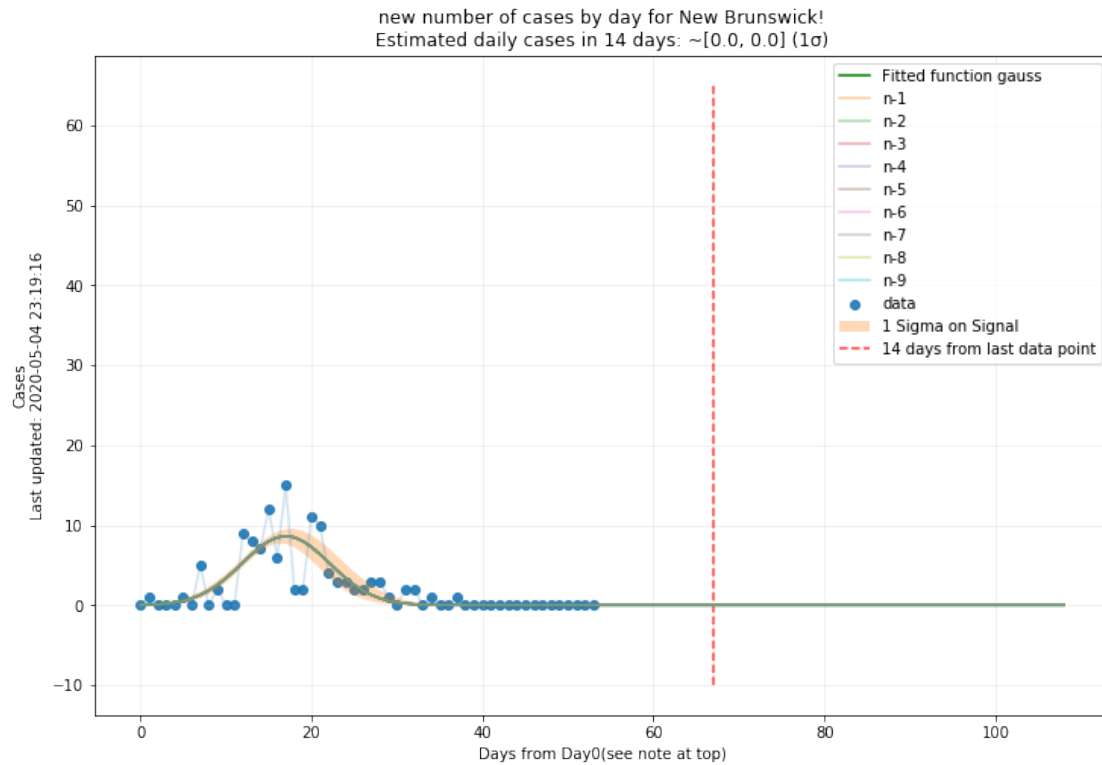infection point: 22.0
infection point date: 2020-02-22

Total number of cases for Manitoba!
max cases: ~256.0

Total test to day in Manitoba!
Rate: 519.0 tests/day (cumulative)
Rate: 542.0 tests/day (last 7 days)
Precent of positive cases pre test:1.046%

Tests by day for Manitoba!
Rate: 2.0 additional tests/day (cumulative)
Rate: -51.0 tests/day (last 7 days)
Precent of positive cases pre test:1.046%

Precent of positive cases pre test: 1.046 %

------------- New Brunswick-------------
cases: [0.   0.   1.   1.   1.   1.   2.   2.   7.   7.   9.   9.   9.   18.
  26.   33.   45.   51.   66.   68.   70.   81.   91.   95.   98. 101. 103. 105.
 108. 111. 112. 112. 114. 116. 116. 117. 117. 117. 118. 118. 118. 118.
 118. 118. 118. 118. 118. 118. 118. 118. 118. 118. 118. 118. 118. 118.]

15

new number of cases by day for New Brunswick!
Estimated daily cases in 14 days: ~[0.0, 0.0] (1σ)

```
sigma+: 118.0
n+1: 117.0
Sigma-: 117.0
----

params PY:  [117.20514093    0.29383546   18.14113028]
PY sigma:  [0.48779828 0.00755053 0.10127373]
max cases:  117.0
infection point:  18.0
infection point date:  2020-02-18
```
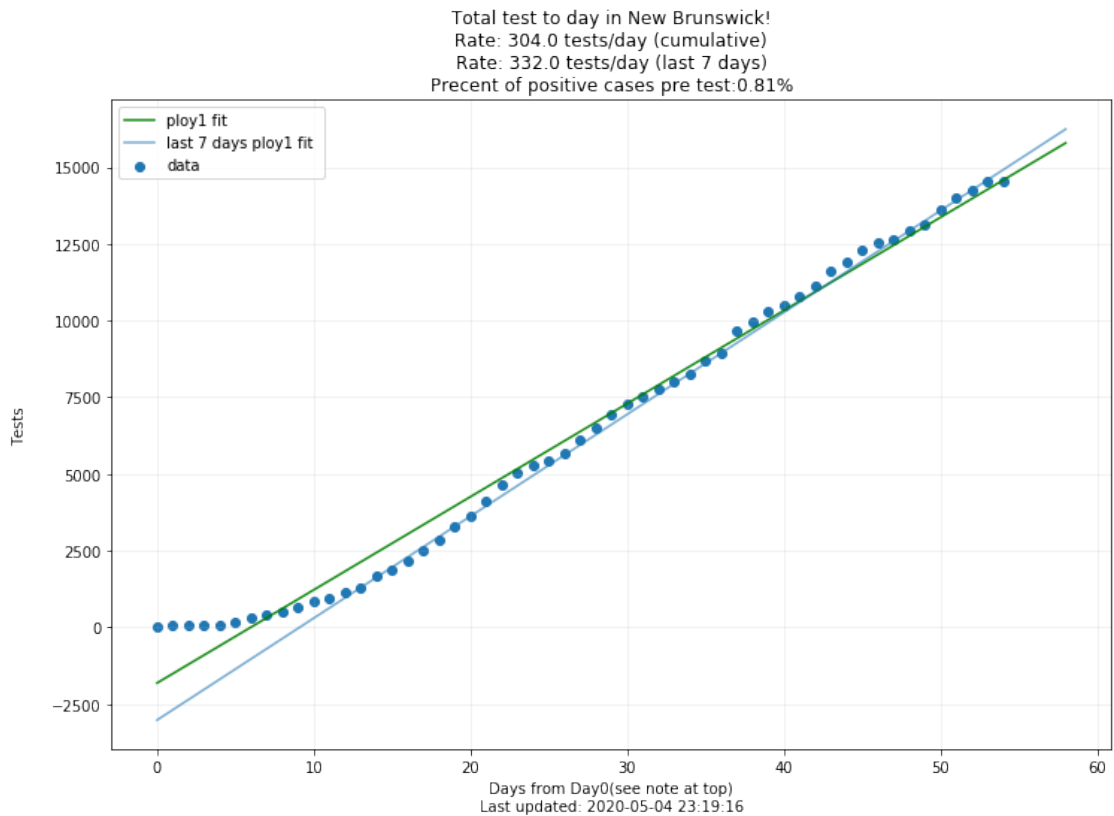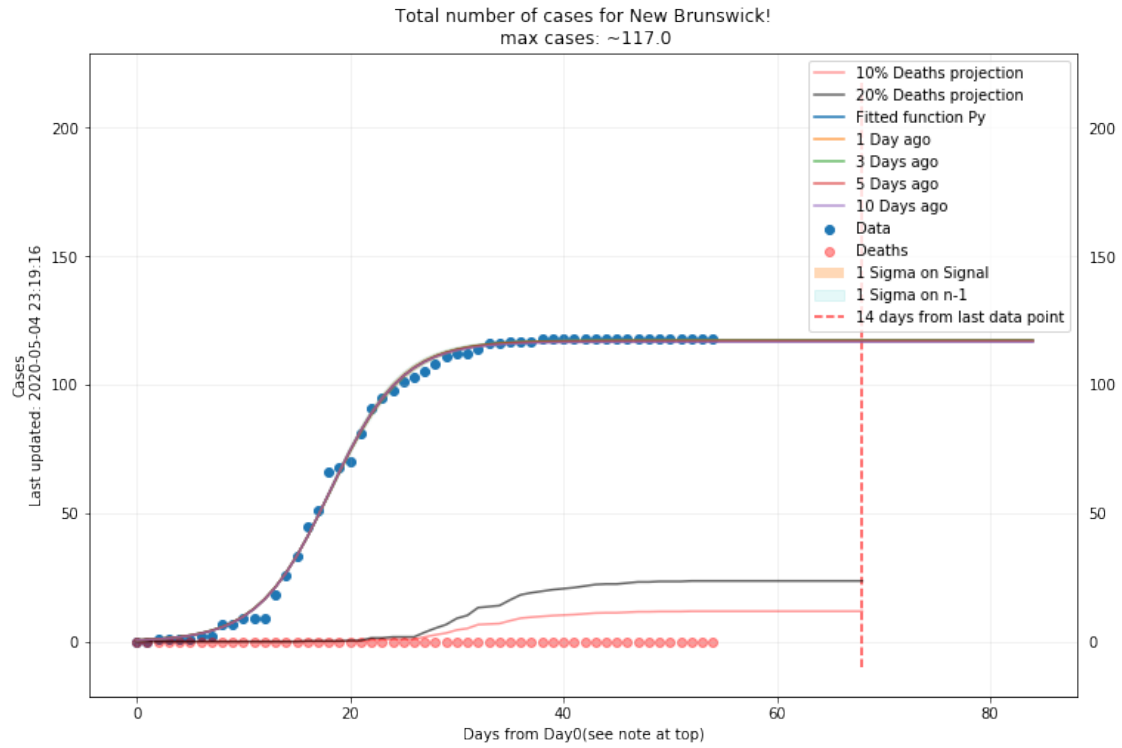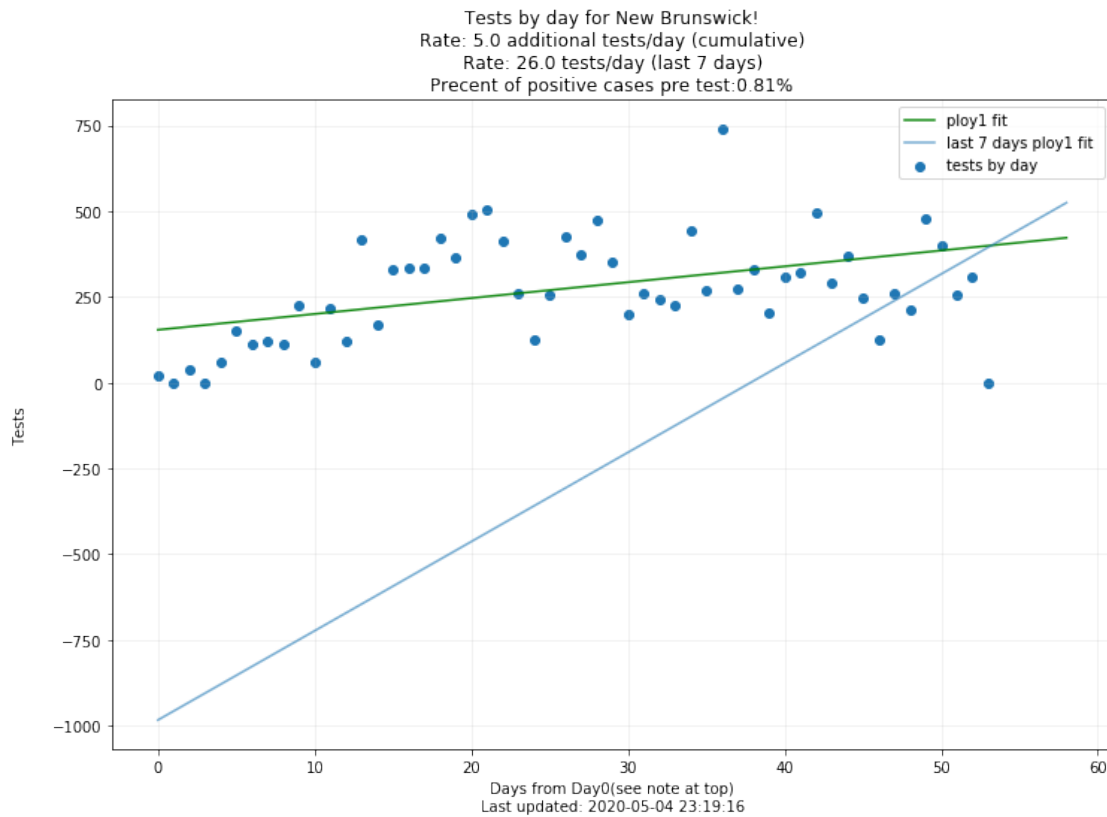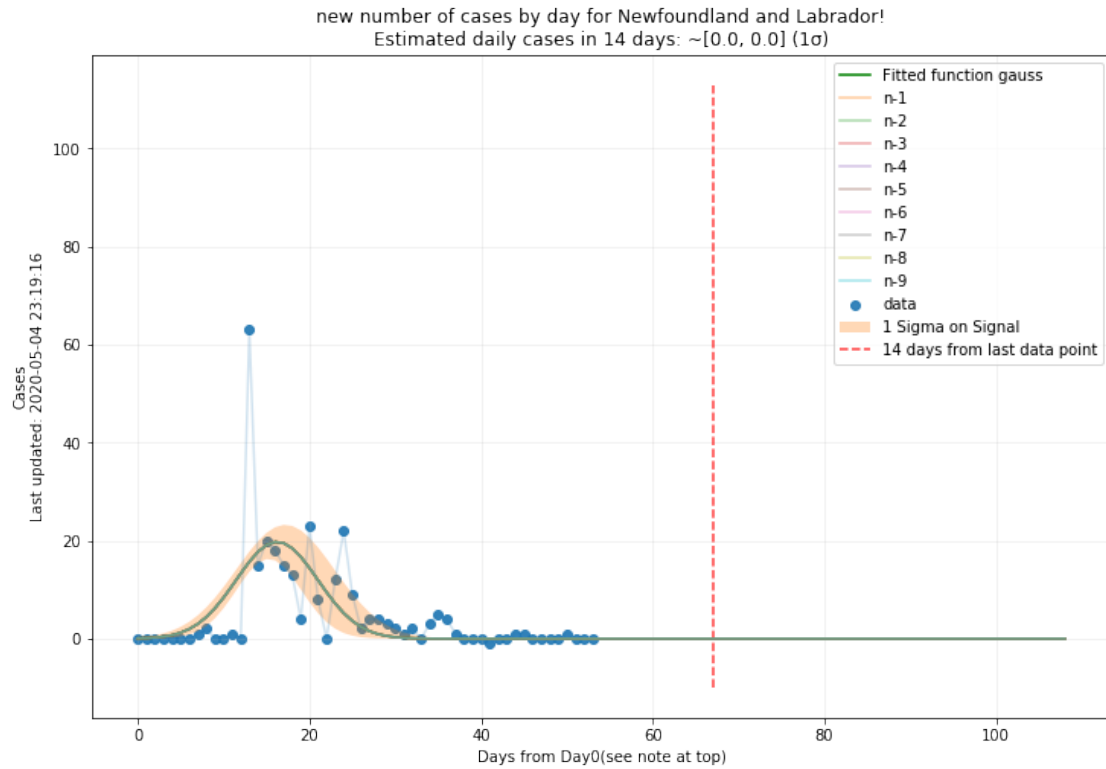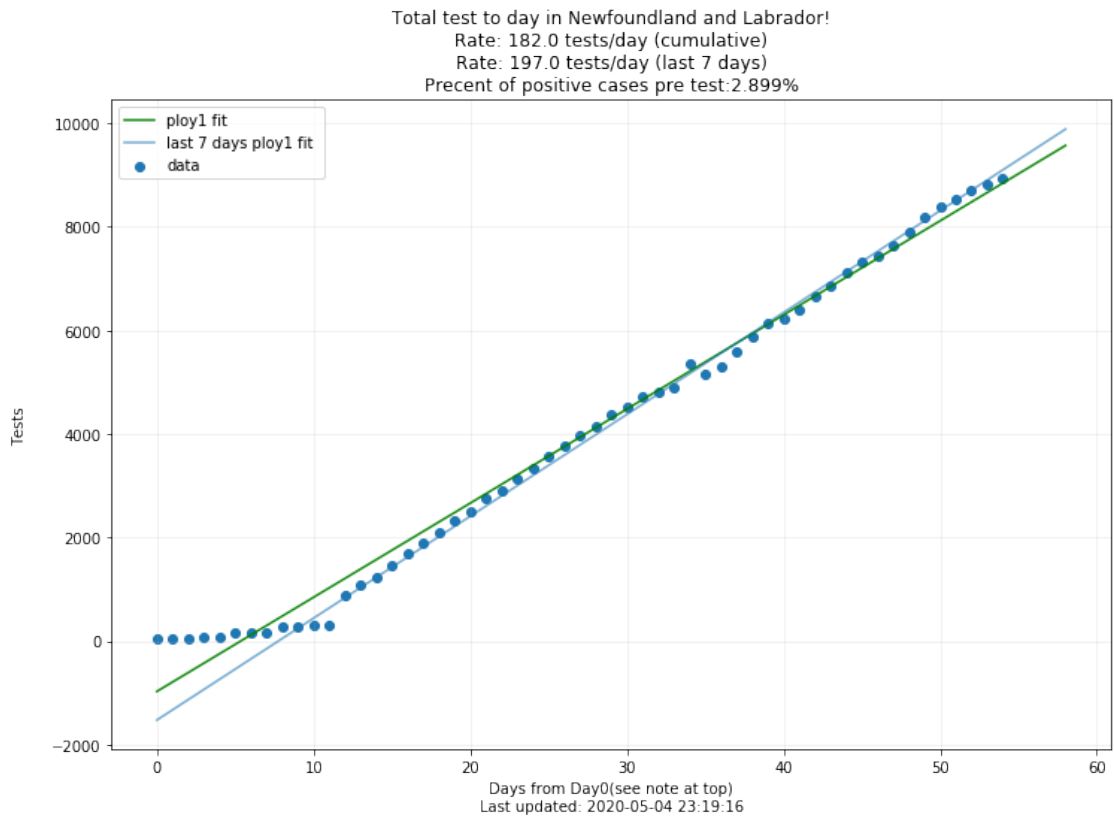
Total number of cases for New Brunswick!
max cases: ~117.0

Total test to day in New Brunswick!
Rate: 304.0 tests/day (cumulative)
Rate: 332.0 tests/day (last 7 days)
Precent of positive cases pre test:0.81%

Tests by day for New Brunswick!
Rate: 5.0 additional tests/day (cumulative)
Rate: 26.0 tests/day (last 7 days)
Precent of positive cases pre test:0.81%
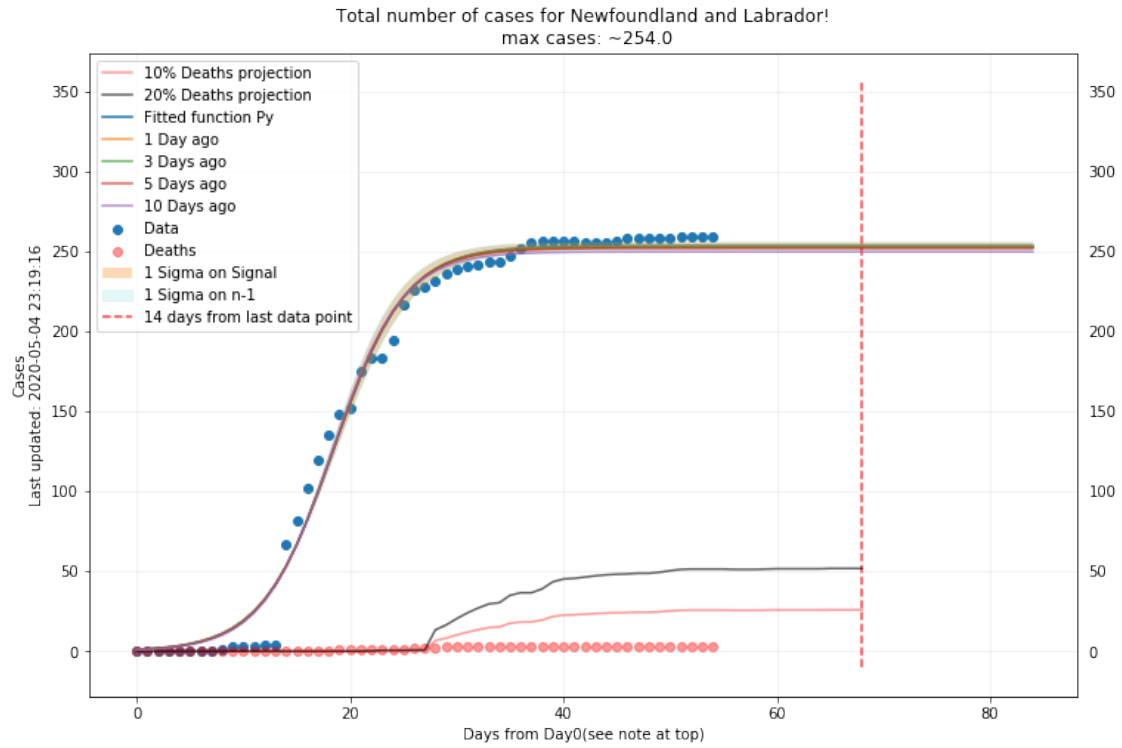

Precent of positive cases pre test: 0.81 %

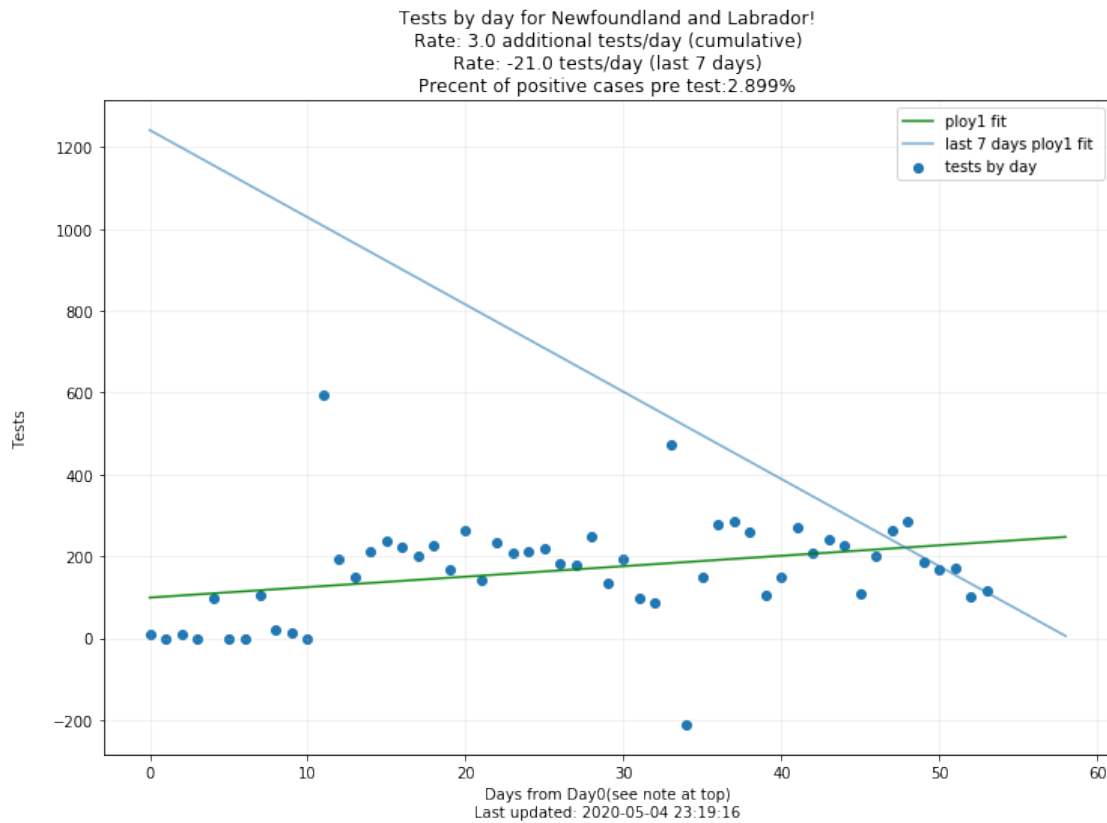------------- Newfoundland and Labrador-------------
cases: [0.   0.   0.   0.   0.   0.   0.   0.   1.   3.   3.   3.   4.   4.
  67. 82. 102. 120. 135. 148. 152. 175. 183. 183. 195. 217. 226. 228.
 232. 236. 239. 241. 242. 244. 244. 247. 252. 256. 257. 257. 257. 257.
 256. 256. 256. 257. 258. 258. 258. 258. 258. 259. 259. 259. 259.]

new number of cases by day for Newfoundland and Labrador!
Estimated daily cases in 14 days: ~[0.0, 0.0] (1σ)

sigma+: 256.0
n+1: 254.0
Sigma-: 251.0
----

params PY: [253.61127712   0.29580019 18.48398647]
PY sigma: [2.28545047 0.0164256   0.2174475]
max cases: 254.0
infection point: 18.0
infection point date: 2020-02-18

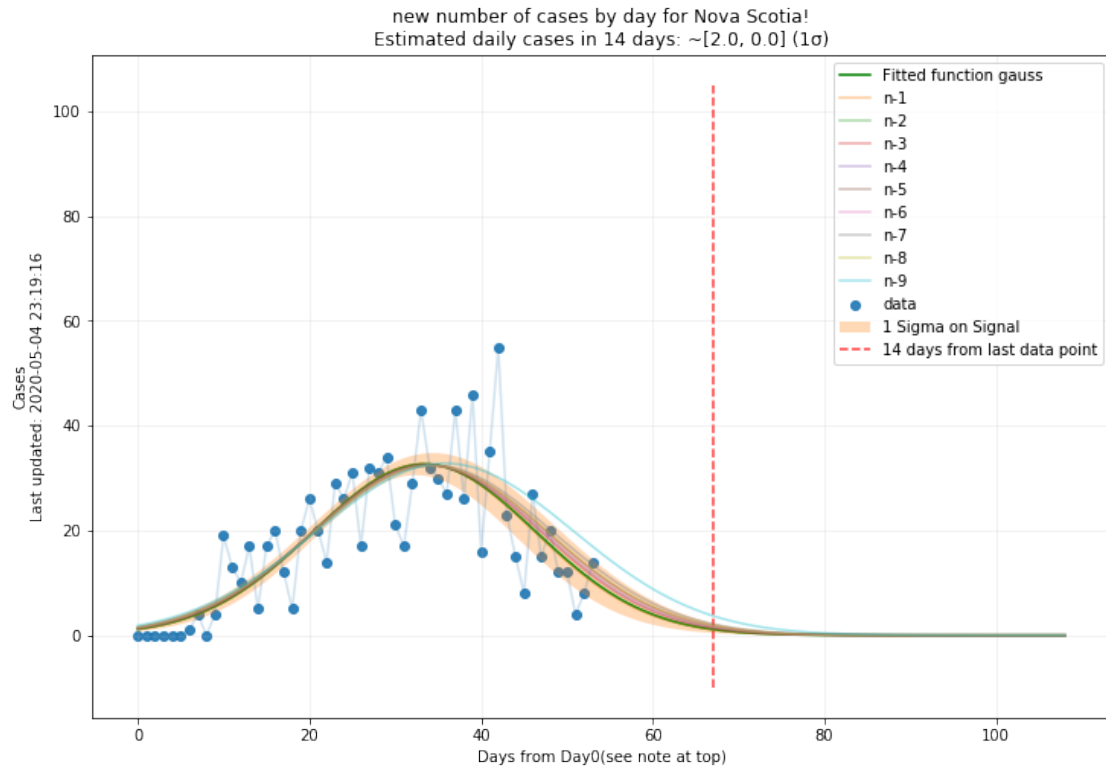Total number of cases for Newfoundland and Labrador!
max cases: ~254.0

Total test to day in Newfoundland and Labrador!
Rate: 182.0 tests/day (cumulative)
Rate: 197.0 tests/day (last 7 days)
Precent of positive cases pre test:2.899%

Last updated: 2020-05-04 23:19:16

Tests by day for Newfoundland and Labrador!
Rate: 3.0 additional tests/day (cumulative)
Rate: -21.0 tests/day (last 7 days)
Precent of positive cases pre test:2.899%

Last updated: 2020-05-04 23:19:16

Precent of positive cases pre test: 2.899 %

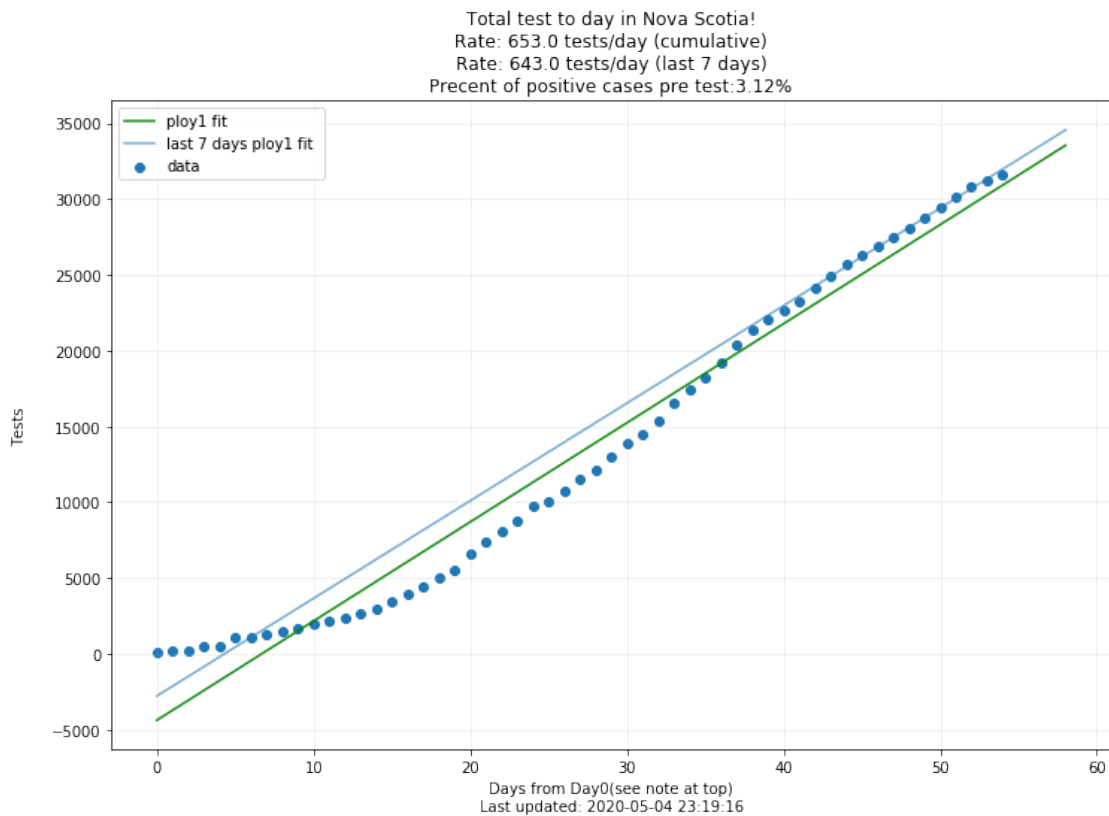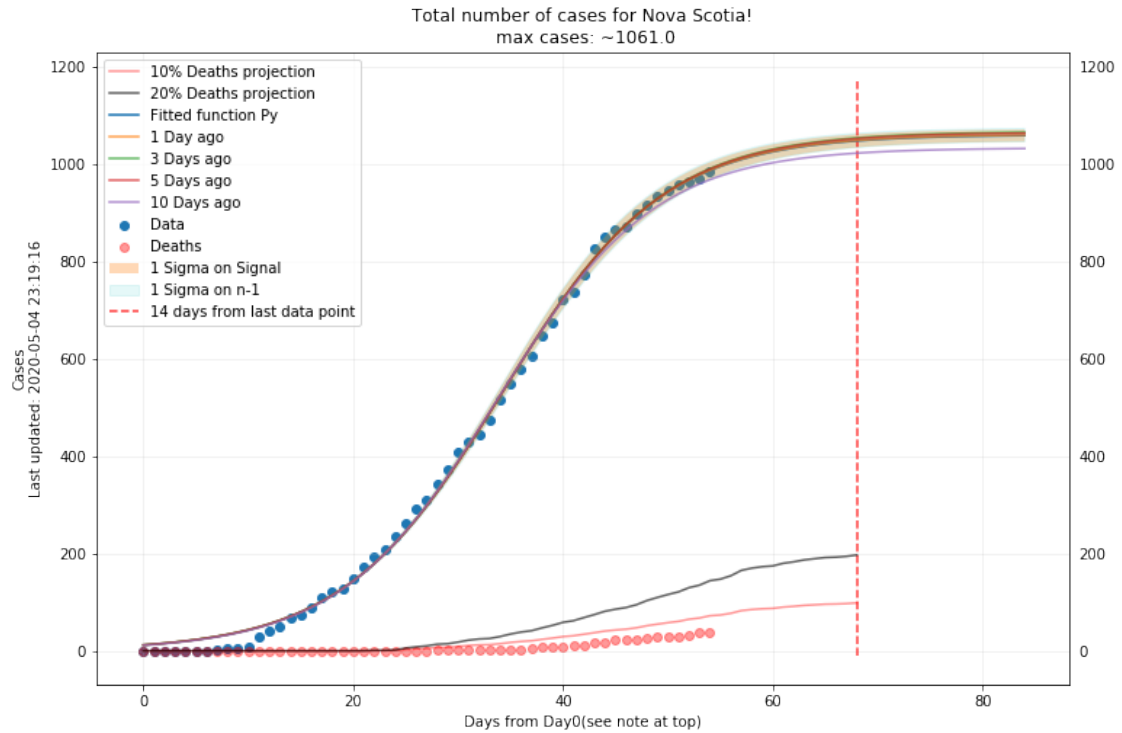------------- Nova Scotia-------------
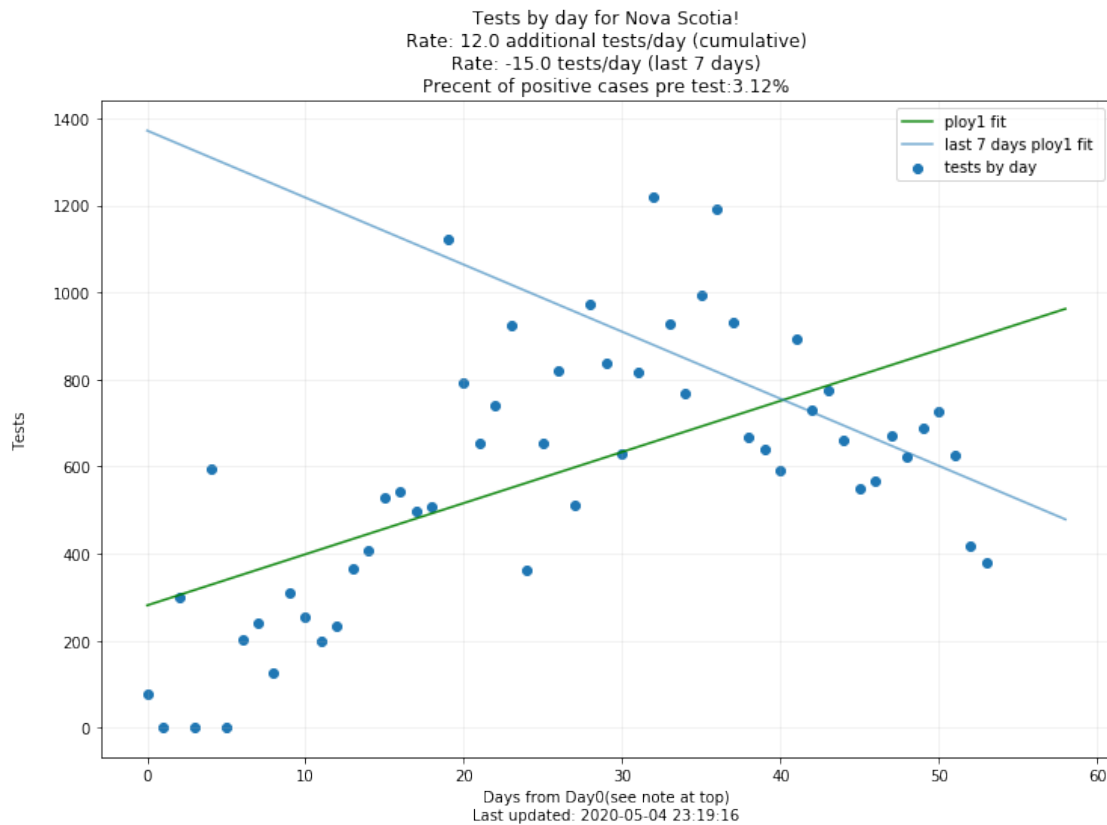cases: [0.   0.   0.   0.   0.   0.   0.   1.   5.   5.   9.   28.   41.   51.
   68.   73.   90. 110. 122. 127. 147. 173. 193. 207. 236. 262. 293. 310.
  342. 373. 407. 428. 445. 474. 517. 549. 579. 606. 649. 675. 721. 737.
  772. 827. 850. 865. 873. 900. 915. 935. 947. 959. 963. 971. 985.]

new number of cases by day for Nova Scotia!
Estimated daily cases in 14 days: ~[2.0, 0.0] (1σ)

```
sigma+: 1012.0
n+1: 996.0
Sigma-: 979.0
----

params PY:  [1.06066034e+03 1.31013192e-01 3.41699231e+01]
PY sigma:  [1.20501859e+01 2.70827451e-03 2.55546107e-01]
max cases:  1061.0
infection point:  34.0
infection point date:  2020-03-05
```
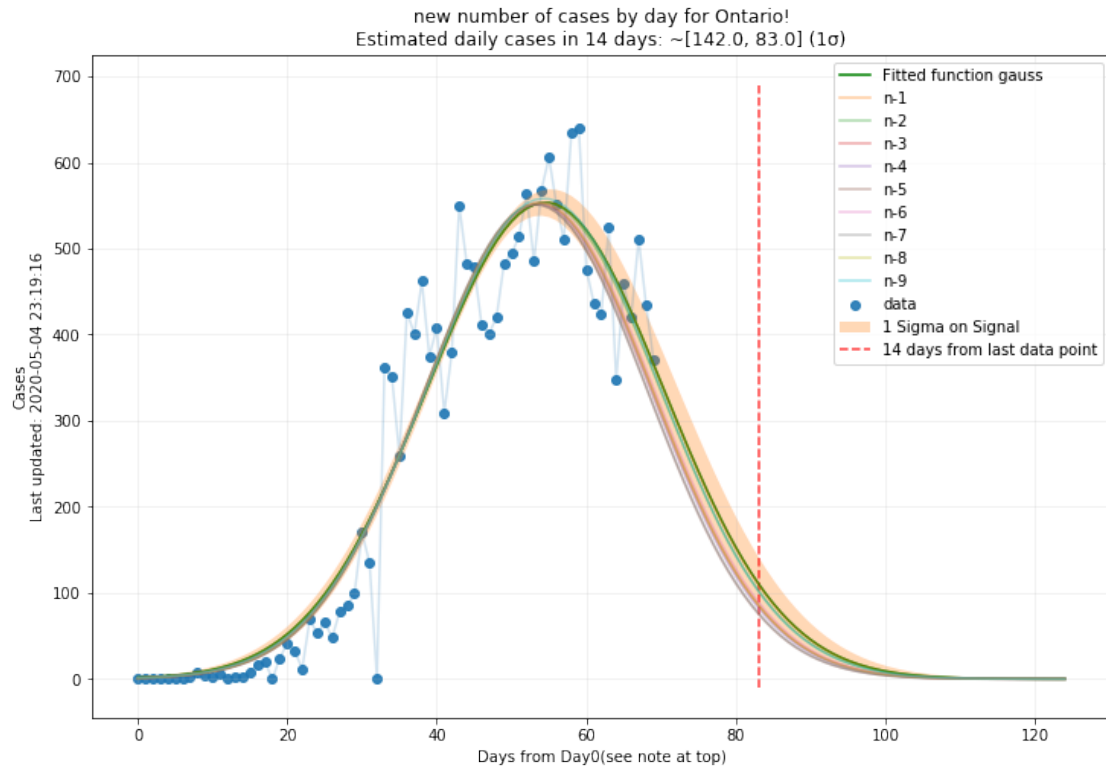
Total number of cases for Nova Scotia!
max cases: ~1061.0

Total test to day in Nova Scotia!
Rate: 653.0 tests/day (cumulative)
Rate: 643.0 tests/day (last 7 days)
Precent of positive cases pre test:3.12%

Tests by day for Nova Scotia!
Rate: 12.0 additional tests/day (cumulative)
Rate: -15.0 tests/day (last 7 days)
Precent of positive cases pre test:3.12%

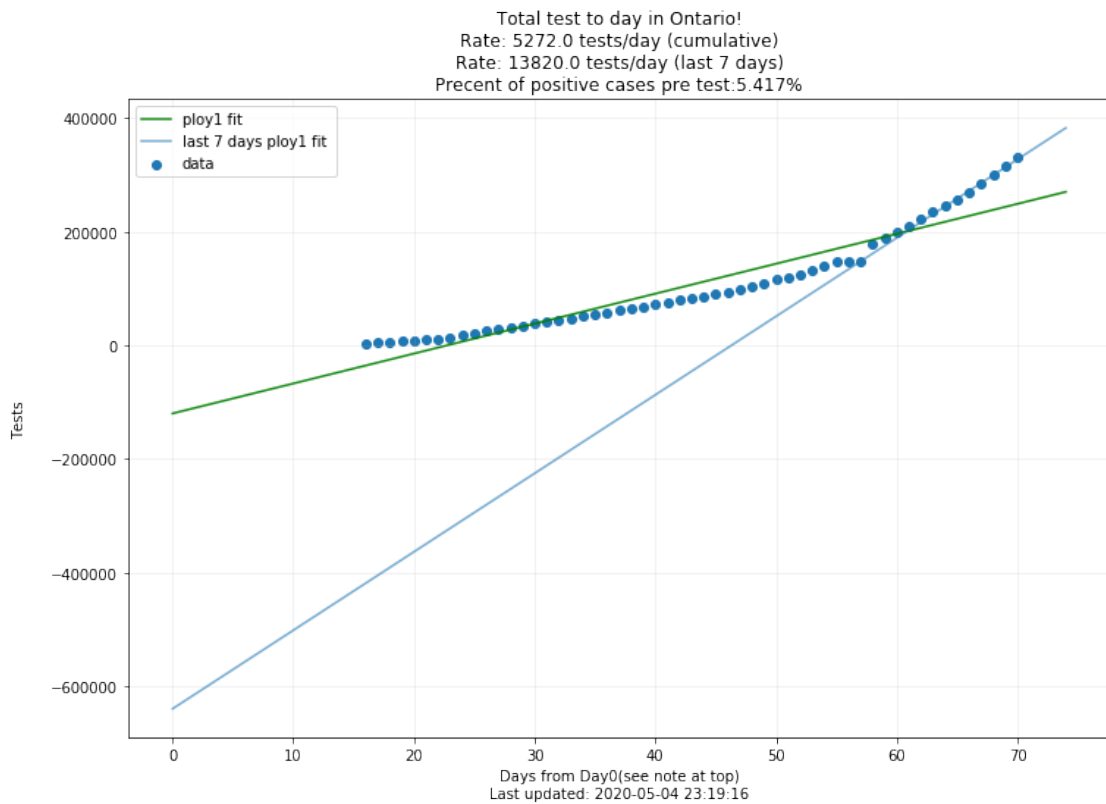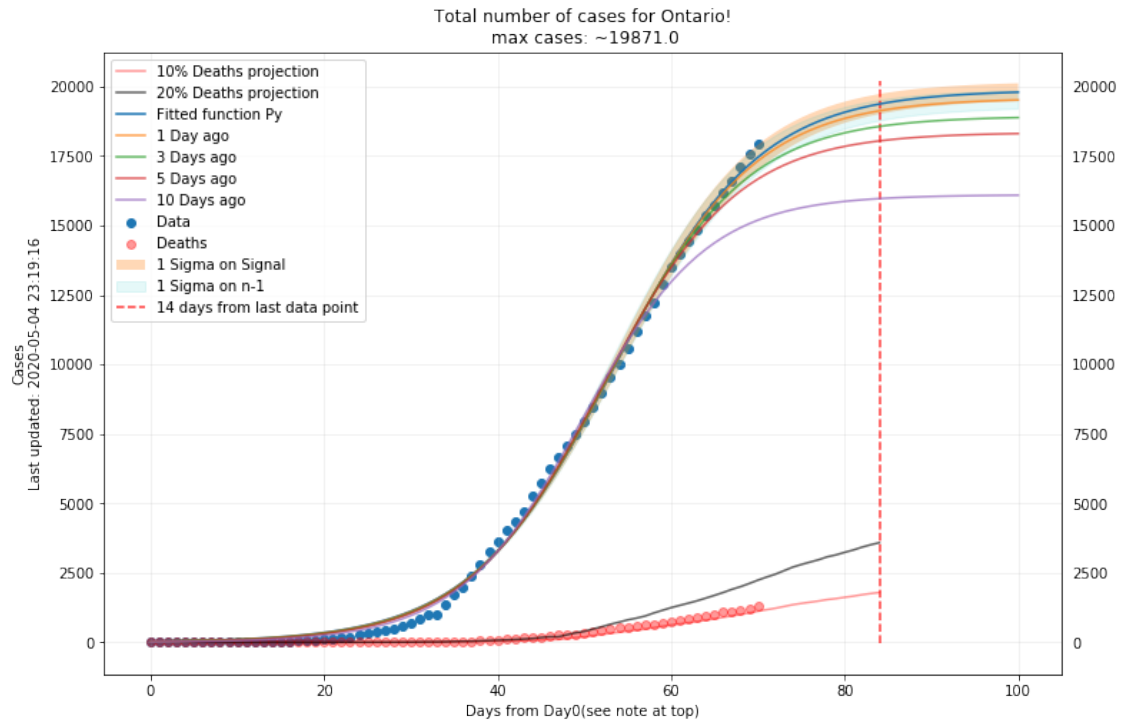Precent of positive cases pre test: 3.12 %

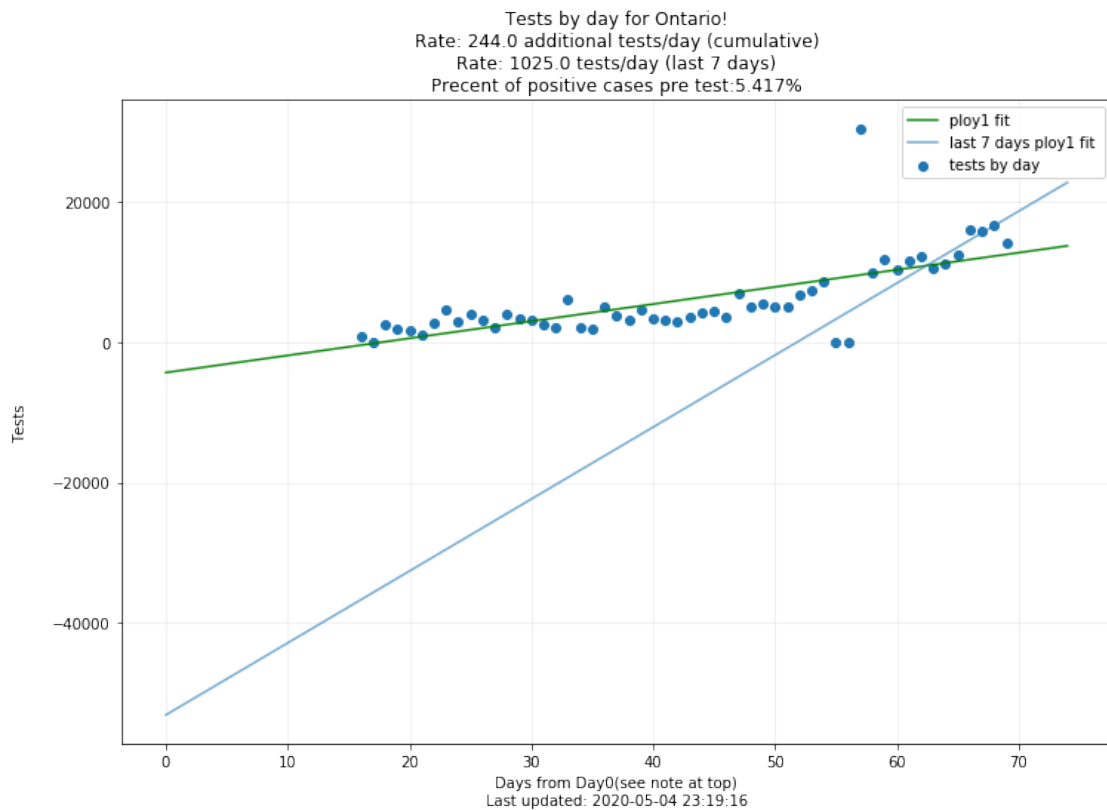------------- Ontario-------------
cases: [3.0000e+00 3.0000e+00 3.0000e+00 3.0000e+00 4.0000e+00 4.0000e+00
 5.0000e+00 6.0000e+00 8.0000e+00 1.5000e+01 2.0000e+01 2.2000e+01
 2.8000e+01 2.8000e+01 3.1000e+01 3.4000e+01 4.2000e+01 5.9000e+01
 7.9000e+01 7.9000e+01 1.0300e+02 1.4500e+02 1.7700e+02 1.8900e+02
 2.5800e+02 3.1100e+02 3.7700e+02 4.2500e+02 5.0300e+02 5.8800e+02
 6.8800e+02 8.5800e+02 9.9300e+02 9.9300e+02 1.3550e+03 1.7060e+03
 1.9660e+03 2.3920e+03 2.7930e+03 3.2550e+03 3.6300e+03 4.0380e+03
 4.3470e+03 4.7260e+03 5.2760e+03 5.7590e+03 6.2370e+03 6.6480e+03
 7.0490e+03 7.4700e+03 7.9530e+03 8.4470e+03 8.9610e+03 9.5250e+03
 1.0010e+04 1.0578e+04 1.1184e+04 1.1735e+04 1.2245e+04 1.2879e+04
 1.3519e+04 1.3995e+04 1.4432e+04 1.4856e+04 1.5381e+04 1.5728e+04
 1.6187e+04 1.6608e+04 1.7119e+04 1.7553e+04 1.7923e+04]

24

new number of cases by day for Ontario!
Estimated daily cases in 14 days: ~[142.0, 83.0] (1σ)

```
sigma+: 18141.0
n+1: 17698.0
Sigma-: 17253.0
----

params PY:  [1.98706847e+04 1.19884914e-01 5.35026756e+01]
PY sigma:  [3.10517678e+02 2.57317060e-03 3.46956523e-01]
max cases:  19871.0
infection point:  54.0
infection point date:  2020-03-25
```
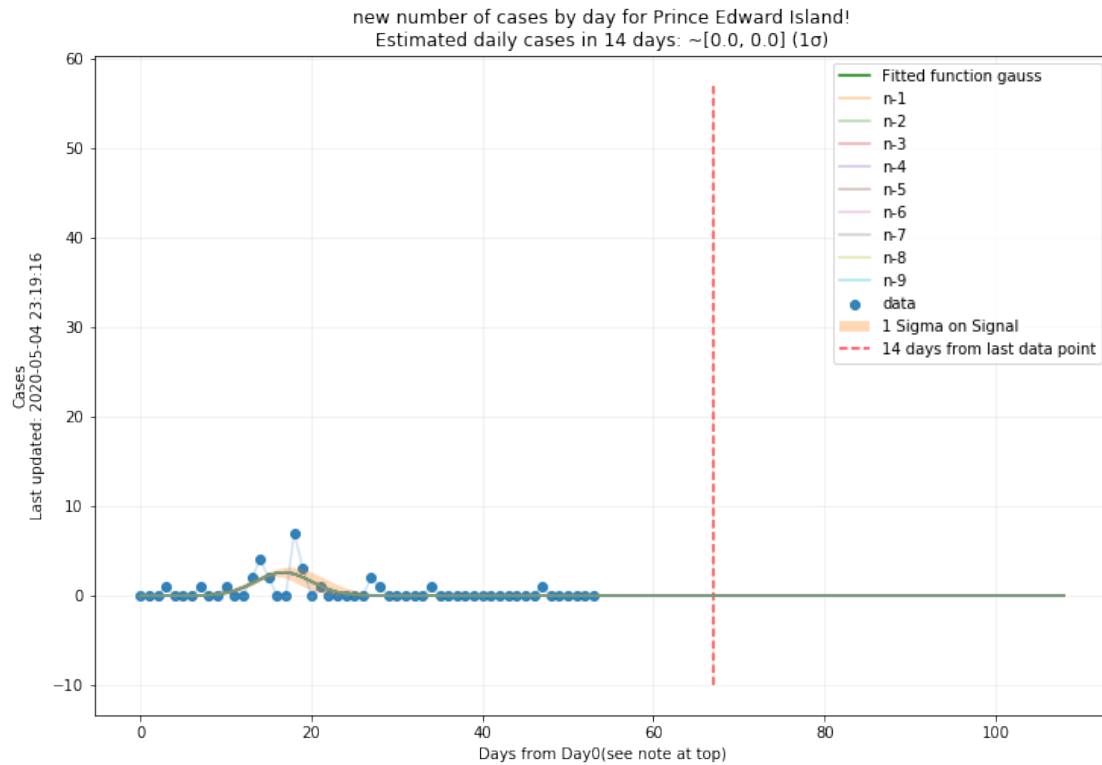
Total number of cases for Ontario!
max cases: ~19871.0

Total test to day in Ontario!
Rate: 5272.0 tests/day (cumulative)
Rate: 13820.0 tests/day (last 7 days)
Precent of positive cases pre test:5.417%

Tests by day for Ontario!
Rate: 244.0 additional tests/day (cumulative)
Rate: 1025.0 tests/day (last 7 days)
Precent of positive cases pre test:5.417%

Precent of positive cases pre test: 5.417 %

------------- Prince Edward Island-------------
cases: [0. 0. 0. 0. 1. 1. 1. 1. 2. 2. 2. 3. 3. 3. 5. 9. 11. 11.
 11. 18. 21. 21. 22. 22. 22. 22. 22. 22. 24. 25. 25. 25. 25. 25. 25. 26.
 26. 26. 26. 26. 26. 26. 26. 26. 26. 26. 26. 26. 27. 27. 27. 27. 27. 27.
 27.]

new number of cases by day for Prince Edward Island!
Estimated daily cases in 14 days: ~[0.0, 0.0] (1σ)

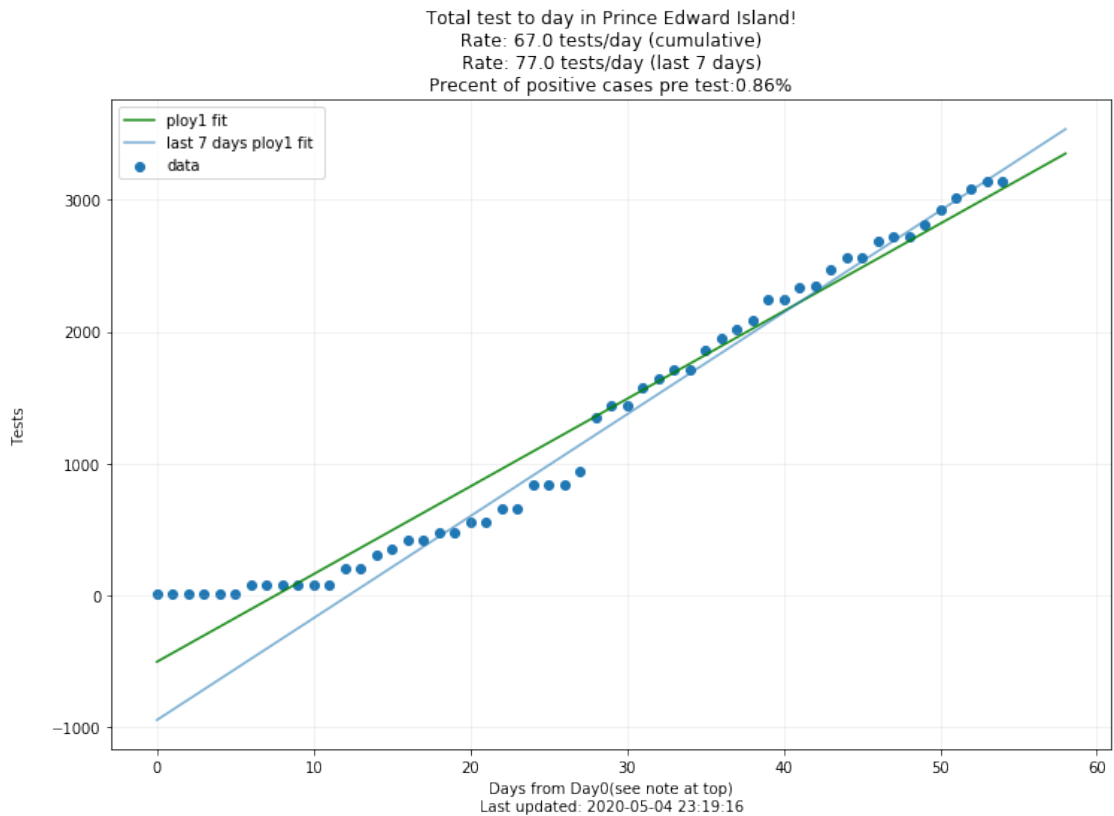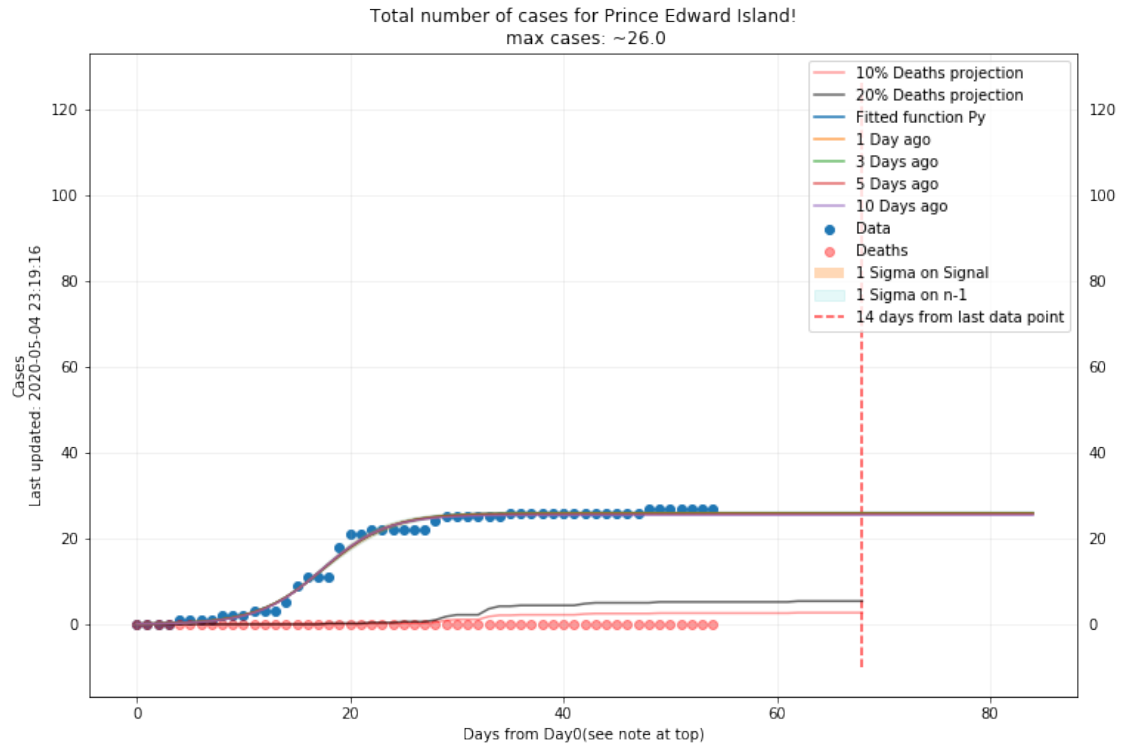sigma+: 26.0
n+1: 26.0
Sigma-: 26.0
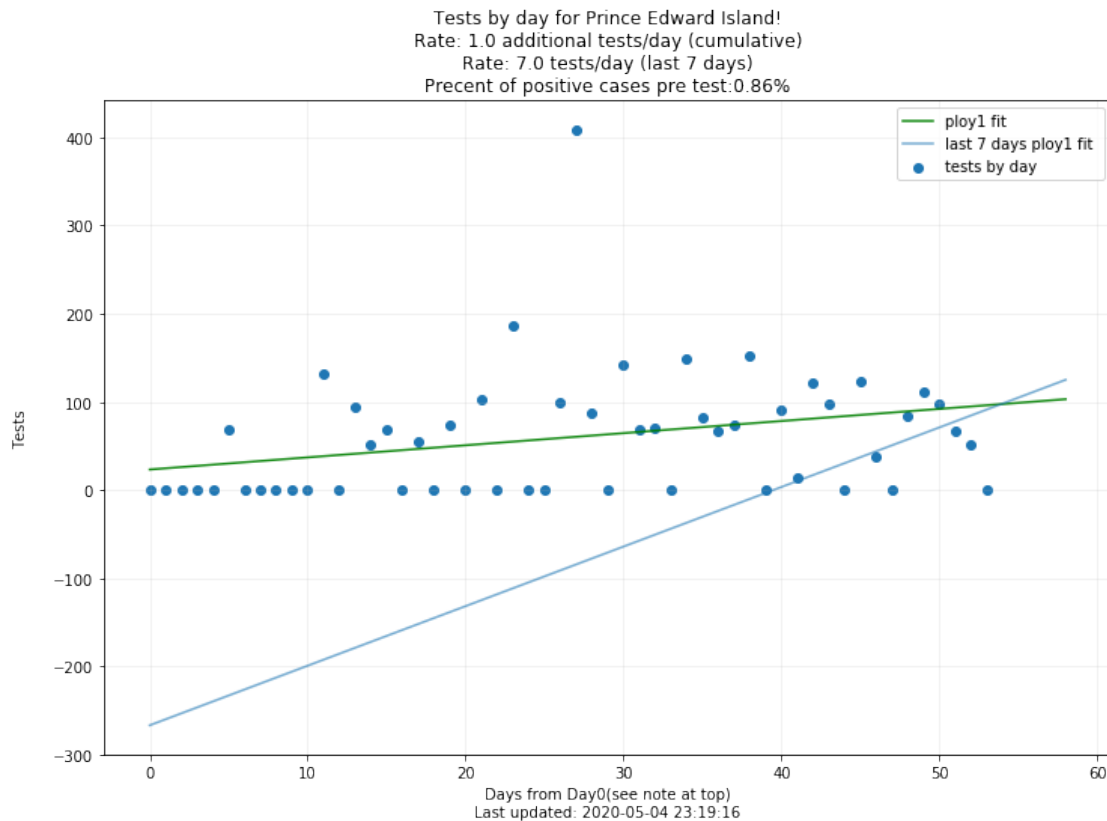----

params PY: [25.94343801   0.31900459 17.53005792]
PY sigma: [0.22281905 0.01802127 0.20465692]
max cases: 26.0
infection point: 18.0
infection point date: 2020-02-18

Total number of cases for Prince Edward Island!
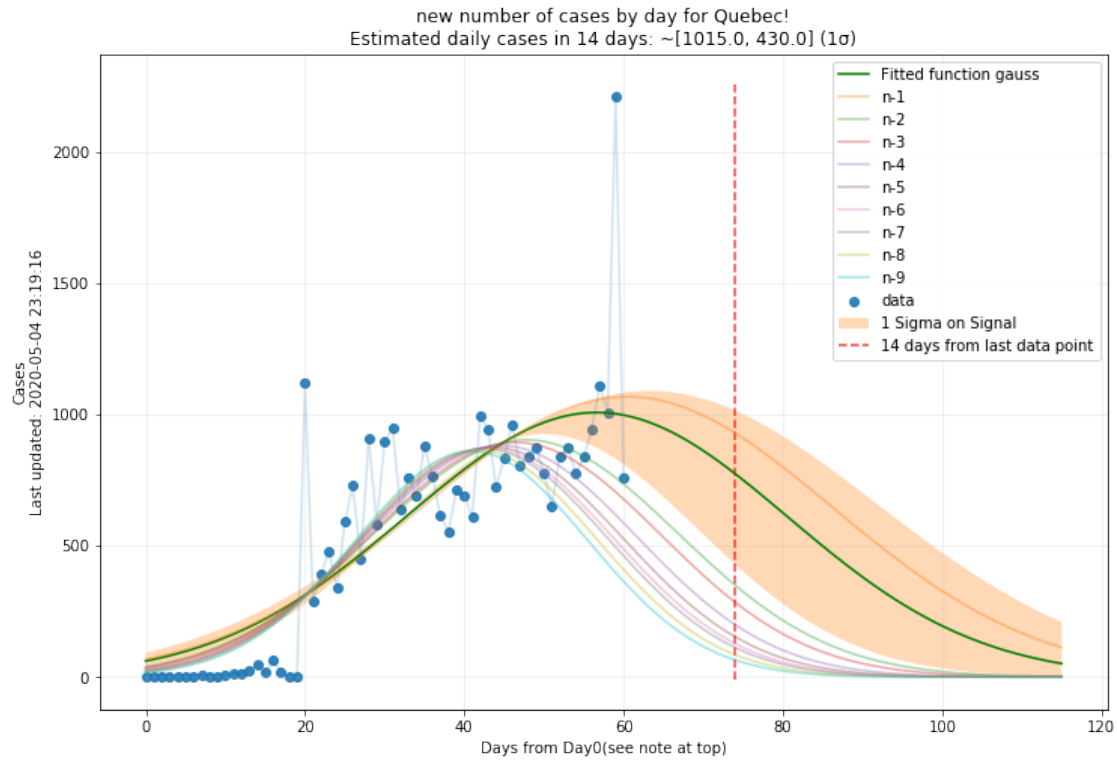### max cases: ~26.0

Total test to day in Prince Edward Island!
Rate: 67.0 tests/day (cumulative)
Rate: 77.0 tests/day (last 7 days)
Precent of positive cases pre test:0.86%

Last updated: 2020-05-04 23:19:16

Tests by day for Prince Edward Island!
Rate: 1.0 additional tests/day (cumulative)
Rate: 7.0 tests/day (last 7 days)
Precent of positive cases pre test:0.86%

Precent of positive cases pre test: 0.86 %

------------- Quebec-------------
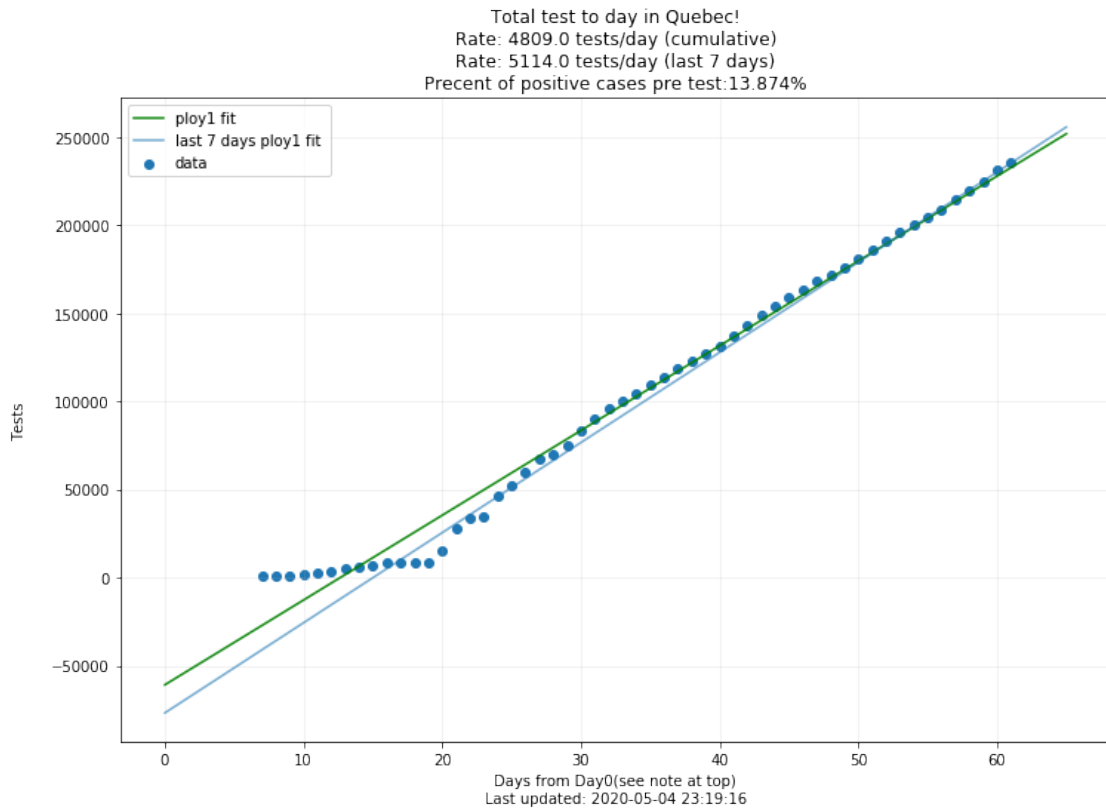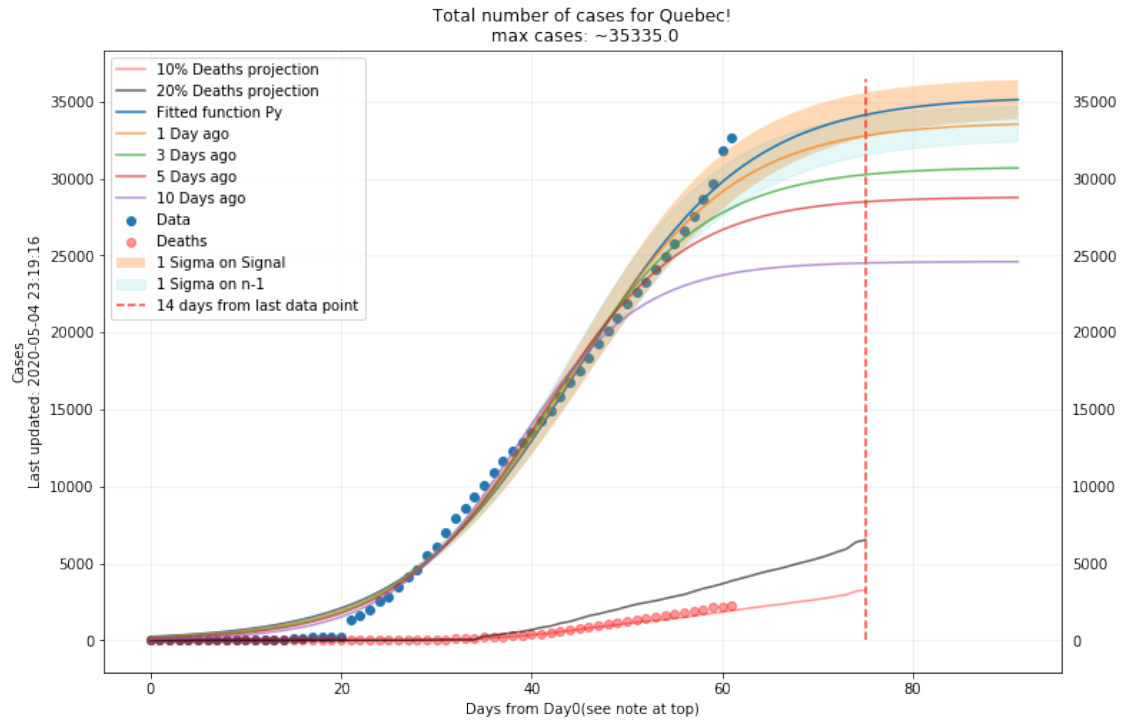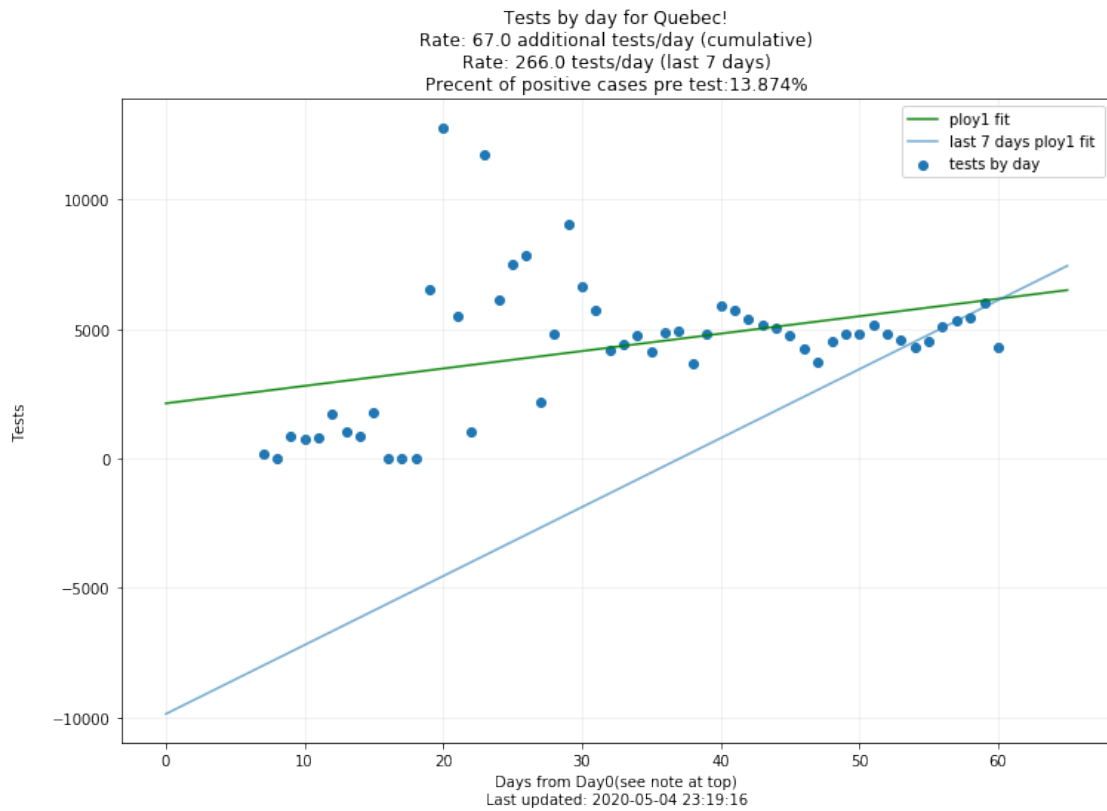cases: [1.0000e+00 1.0000e+00 2.0000e+00 2.0000e+00 2.0000e+00 3.0000e+00
 4.0000e+00 7.0000e+00 1.3000e+01 1.7000e+01 1.7000e+01 2.4000e+01
 3.9000e+01 5.0000e+01 7.4000e+01 1.2100e+02 1.3900e+02 2.0200e+02
 2.2100e+02 2.2100e+02 2.2100e+02 1.3390e+03 1.6290e+03 2.0210e+03
 2.4980e+03 2.8400e+03 3.4300e+03 4.1620e+03 4.6110e+03 5.5180e+03
 6.1010e+03 6.9970e+03 7.9440e+03 8.5800e+03 9.3400e+03 1.0031e+04
 1.0912e+04 1.1677e+04 1.2292e+04 1.2846e+04 1.3557e+04 1.4248e+04
 1.4860e+04 1.5857e+04 1.6798e+04 1.7521e+04 1.8357e+04 1.9319e+04
 2.0126e+04 2.0965e+04 2.1838e+04 2.2616e+04 2.3267e+04 2.4107e+04
 2.4982e+04 2.5757e+04 2.6594e+04 2.7538e+04 2.8648e+04 2.9656e+04
 3.1865e+04 3.2623e+04]

new number of cases by day for Quebec!
Estimated daily cases in 14 days: ~[1015.0, 430.0] (1σ)

```
sigma+: 32487.0
n+1: 30749.0
Sigma-: 29003.0
----

params PY:  [3.53354797e+04 1.11227036e-01 4.48922821e+01]
PY sigma:   [1.21925448e+03 4.79618295e-03 7.99693775e-01]
max cases:  35335.0
infection point:  45.0
infection point date:  2020-03-16
```
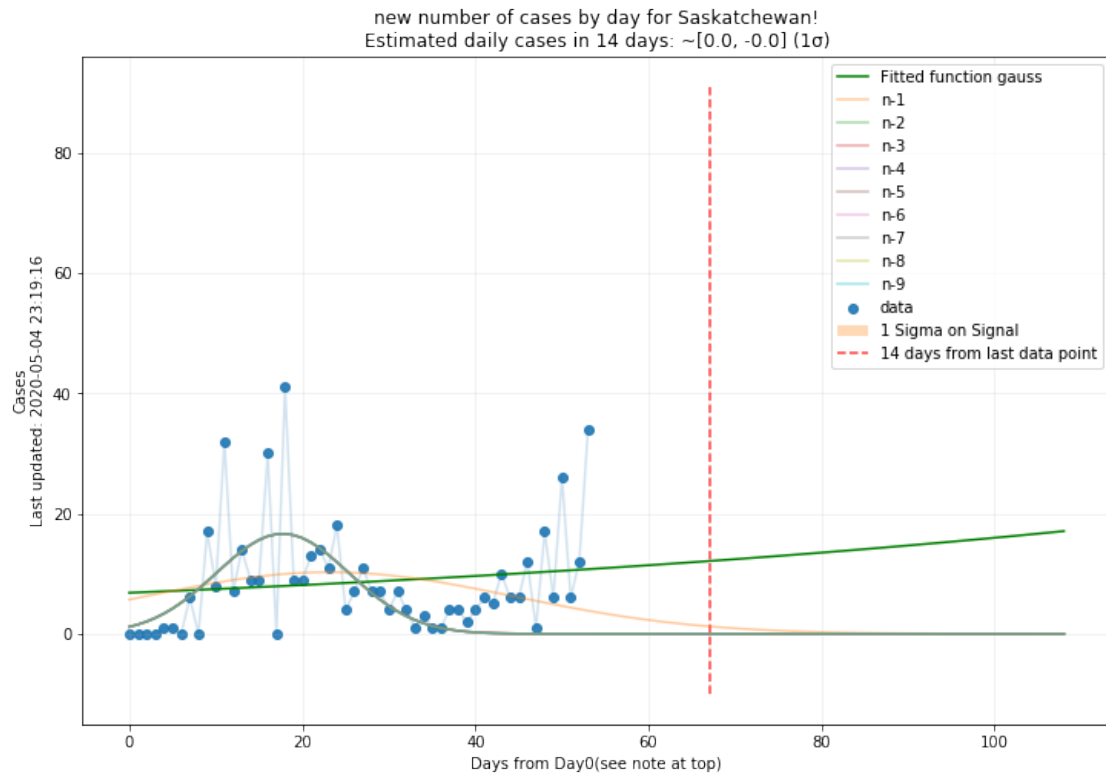
Total number of cases for Quebec!
max cases: ~35335.0

Total test to day in Quebec!
Rate: 4809.0 tests/day (cumulative)
Rate: 5114.0 tests/day (last 7 days)
Precent of positive cases pre test:13.874%

Tests by day for Quebec!
Rate: 67.0 additional tests/day (cumulative)
Rate: 266.0 tests/day (last 7 days)
Precent of positive cases pre test:13.874%

Precent of positive cases pre test: 13.874 %

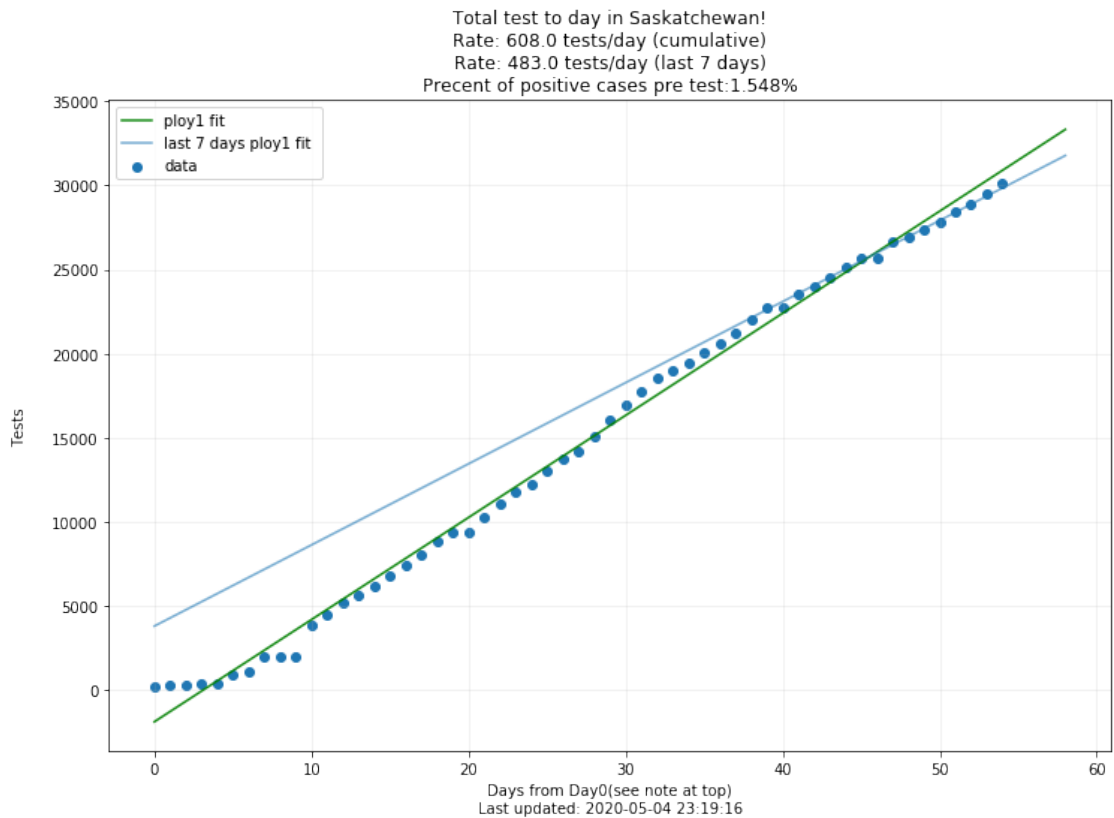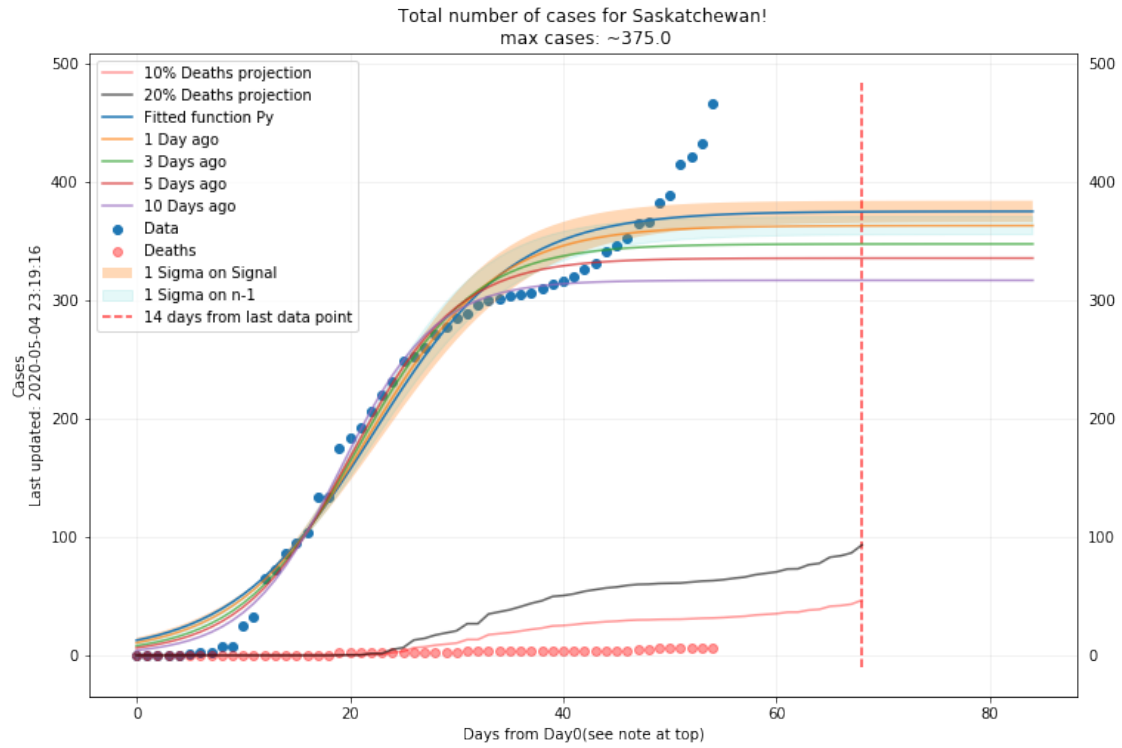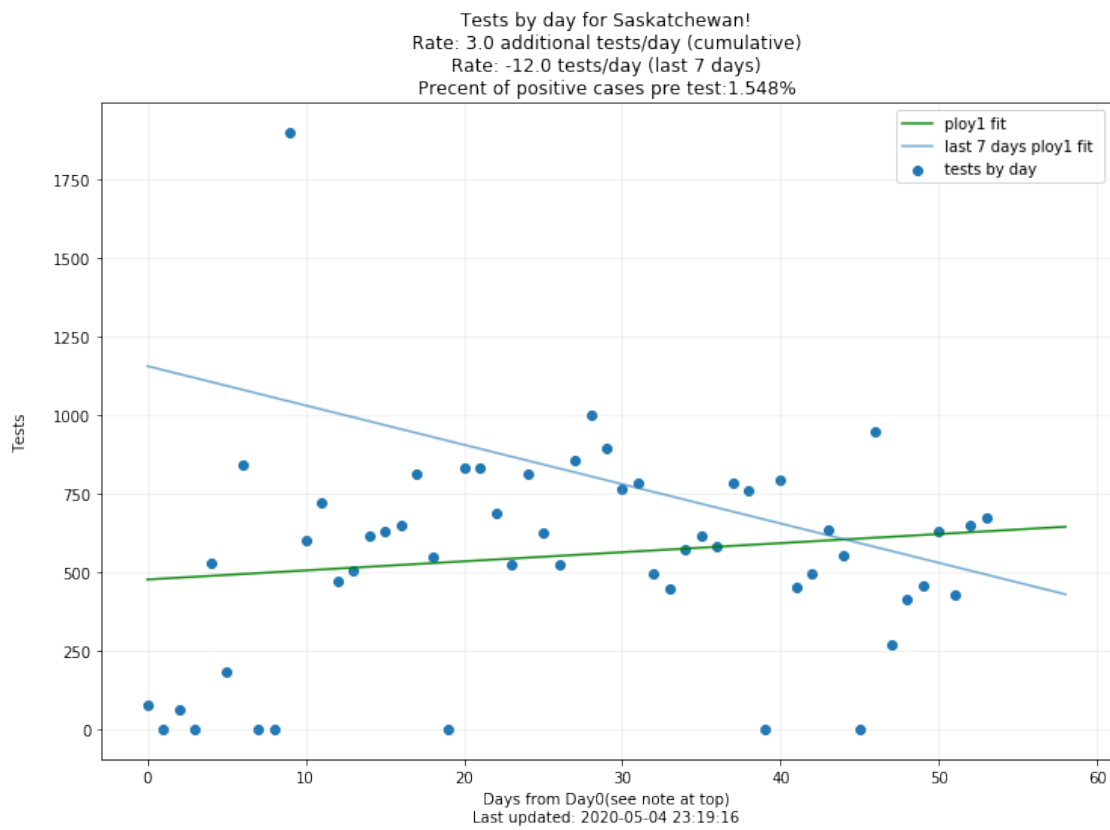------------- Saskatchewan-------------
cases: [0.   0.   0.   0.   0.   1.   2.   2.   8.   8. 25. 33. 65. 72.
  86. 95. 104. 134. 134. 175. 184. 193. 206. 220. 231. 249. 253. 260.
 271. 278. 285. 289. 296. 300. 301. 304. 305. 306. 310. 314. 316. 320.
 326. 331. 341. 347. 353. 365. 366. 383. 389. 415. 421. 433. 467.]

new number of cases by day for Saskatchewan!
Estimated daily cases in 14 days: ~[0.0, -0.0] (1σ)

sigma+: 383.0
n+1: 373.0
Sigma-: 362.0
----

params PY: [3.75357178e+02 1.50769987e-01 2.21980167e+01]
PY sigma: [9.05178471 0.0124698 0.66495042]
max cases: 375.0
infection point: 22.0
infection point date: 2020-02-22

Total number of cases for Saskatchewan!
max cases: ~375.0

Total test to day in Saskatchewan!
Rate: 608.0 tests/day (cumulative)
Rate: 483.0 tests/day (last 7 days)
Precent of positive cases pre test:1.548%

Tests by day for Saskatchewan!
Rate: 3.0 additional tests/day (cumulative)
Rate: -12.0 tests/day (last 7 days)
Precent of positive cases pre test:1.548%

Precent of positive cases pre test: 1.548 %