CovidInCanadaAnalysis

May 3, 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: 2020-05-03 21:16:17

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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
```
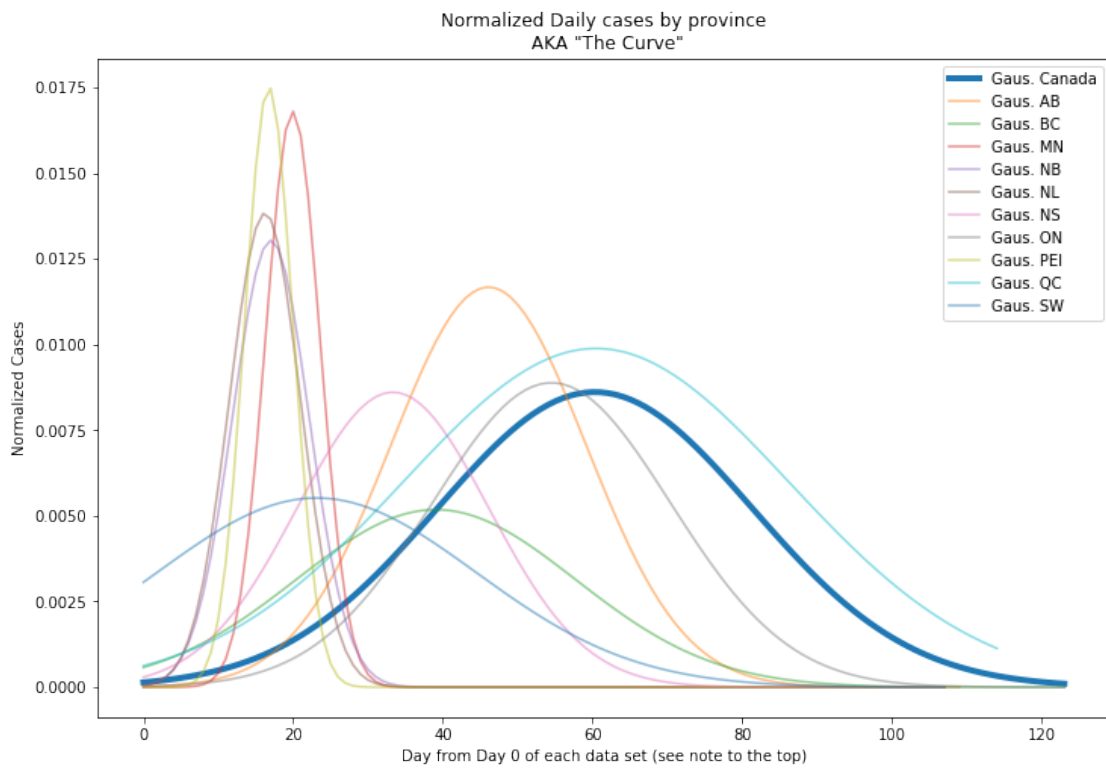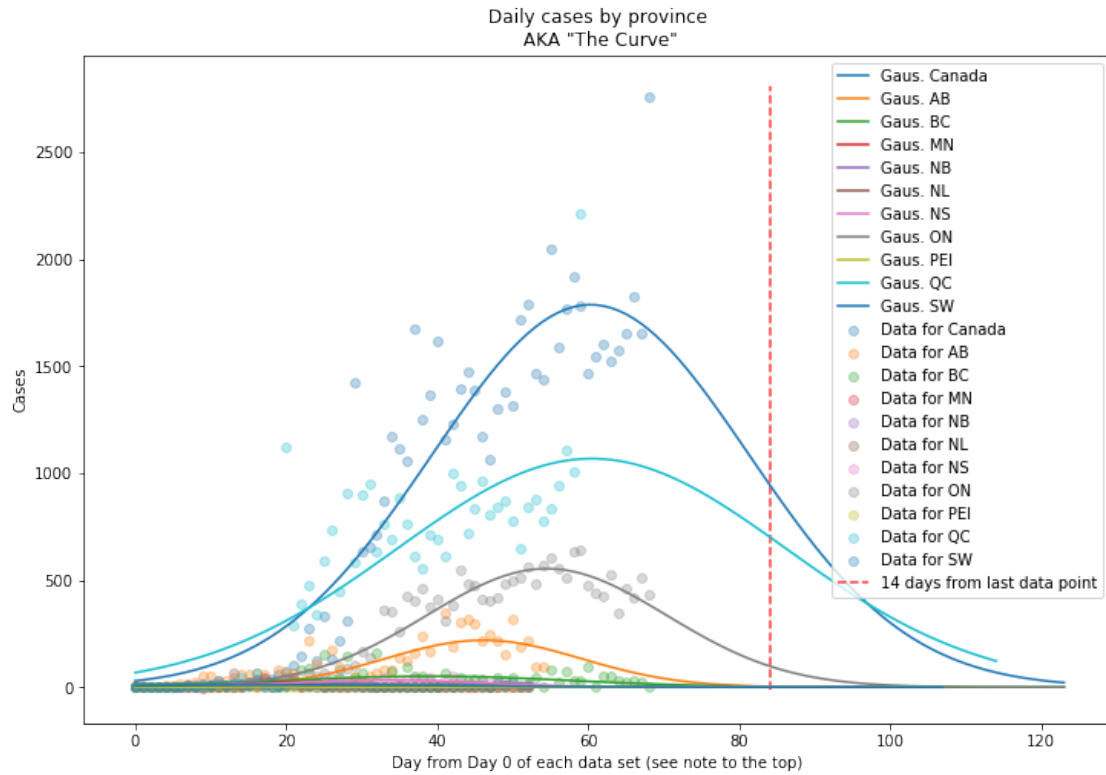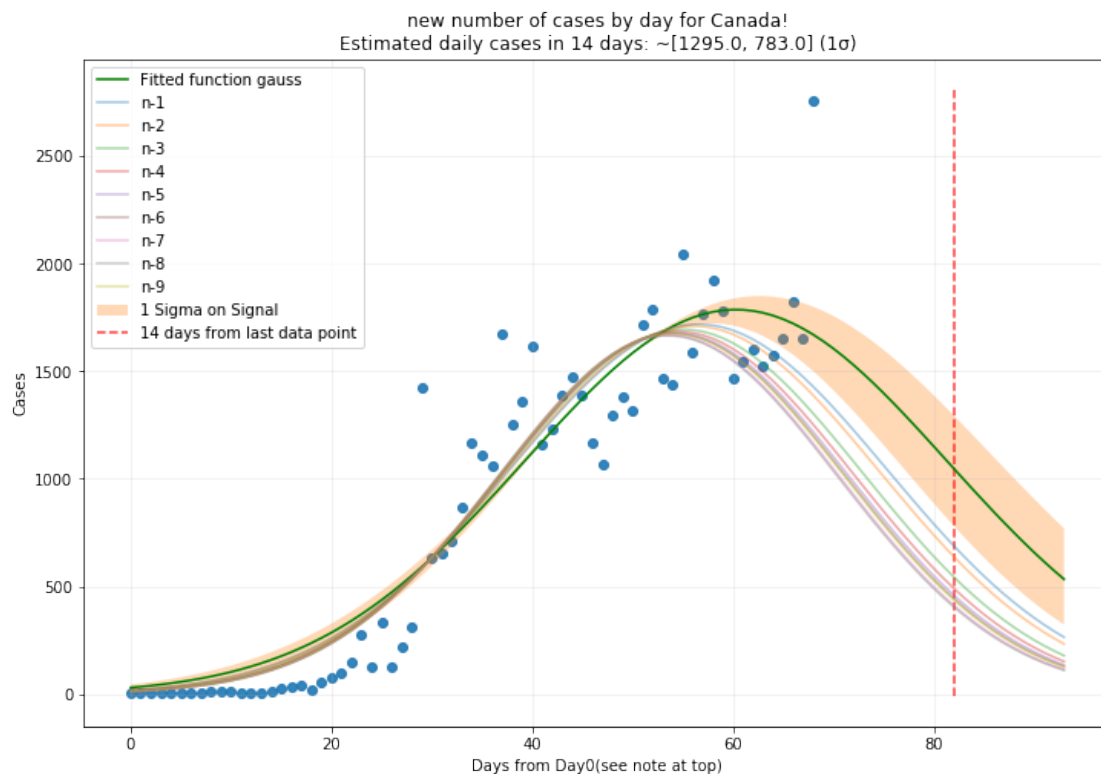
Daily cases by province
AKA "The Curve"

Normalized Daily cases by province
AKA "The Curve"

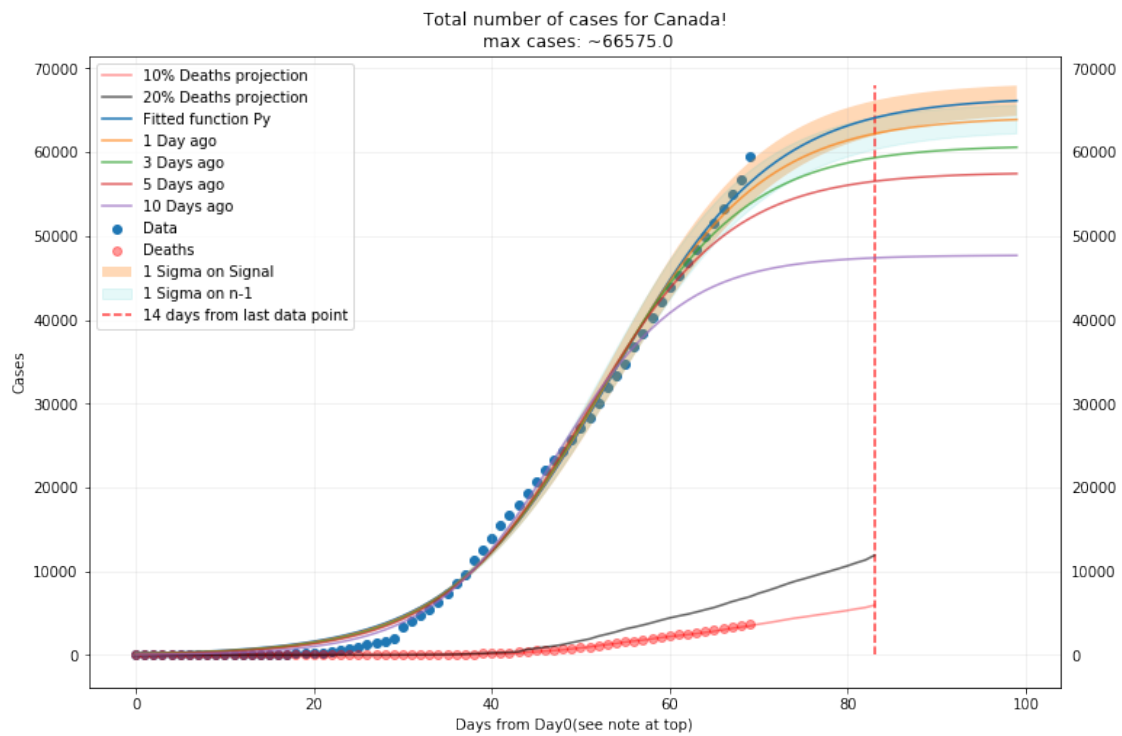The plot above shows total cases normalized to 1 for each province
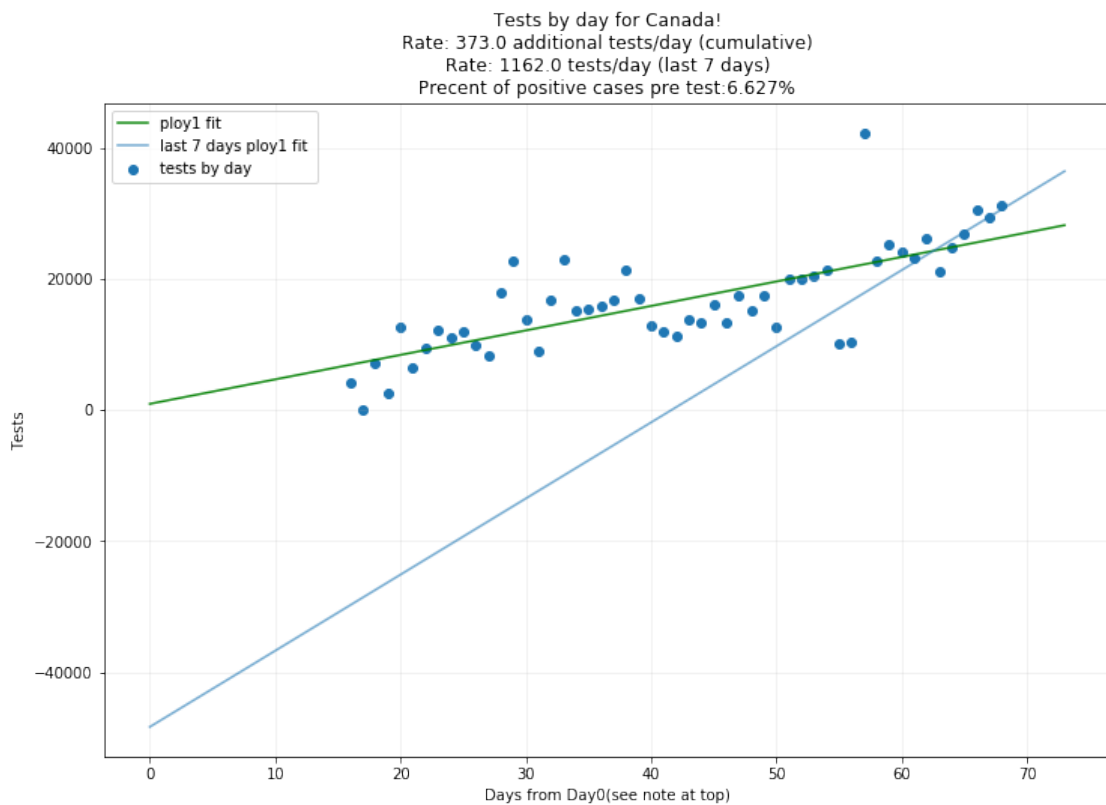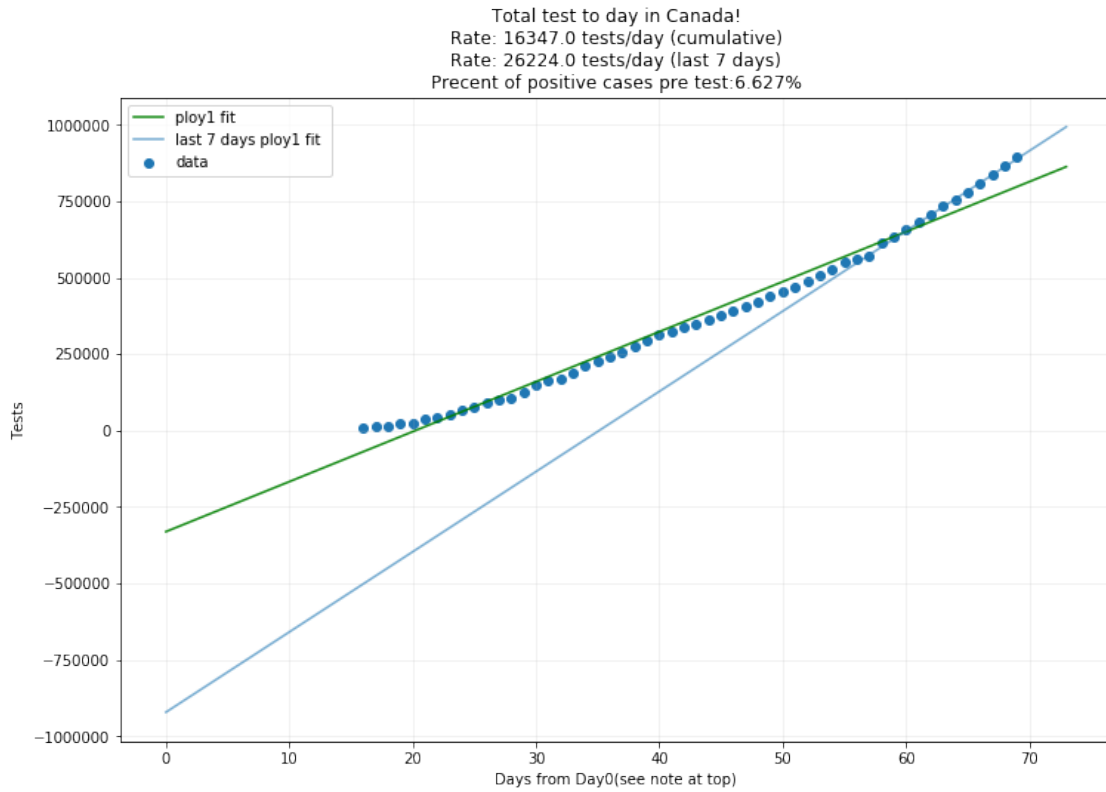
------------- Canada-------------
cases: [4.0000e+00 7.0000e+00 8.0000e+00 9.0000e+00 1.0000e+01 1.1000e+01
 1.2000e+01 1.3000e+01 1.5000e+01 2.4000e+01 3.3000e+01 4.5000e+01
 5.1000e+01 5.7000e+01 6.2000e+01 7.7000e+01 1.0300e+02 1.3800e+02
 1.7600e+02 1.9300e+02 2.4900e+02 3.2400e+02 4.2400e+02 5.6900e+02
 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]

new number of cases by day for Canada!
Estimated daily cases in 14 days: ~[1295.0, 783.0] (1σ)

```
sigma+: 59722.0
n+1: 57263.0
Sigma-: 54803.0
----

params PY:  [6.65745406e+04 1.10033309e-01 5.34918298e+01]
PY sigma:   [1.72521853e+03 3.40144629e-03 5.98483659e-01]
max cases:  66575.0
infection point:  53.0
infection point date:  2020-03-24
```


Total number of cases for Canada!
max cases: ~66575.0

Total test to day in Canada!
Rate: 16347.0 tests/day (cumulative)
Rate: 26224.0 tests/day (last 7 days)
Precent of positive cases pre test:6.627%

Tests by day for Canada!
Rate: 373.0 additional tests/day (cumulative)
Rate: 1162.0 tests/day (last 7 days)
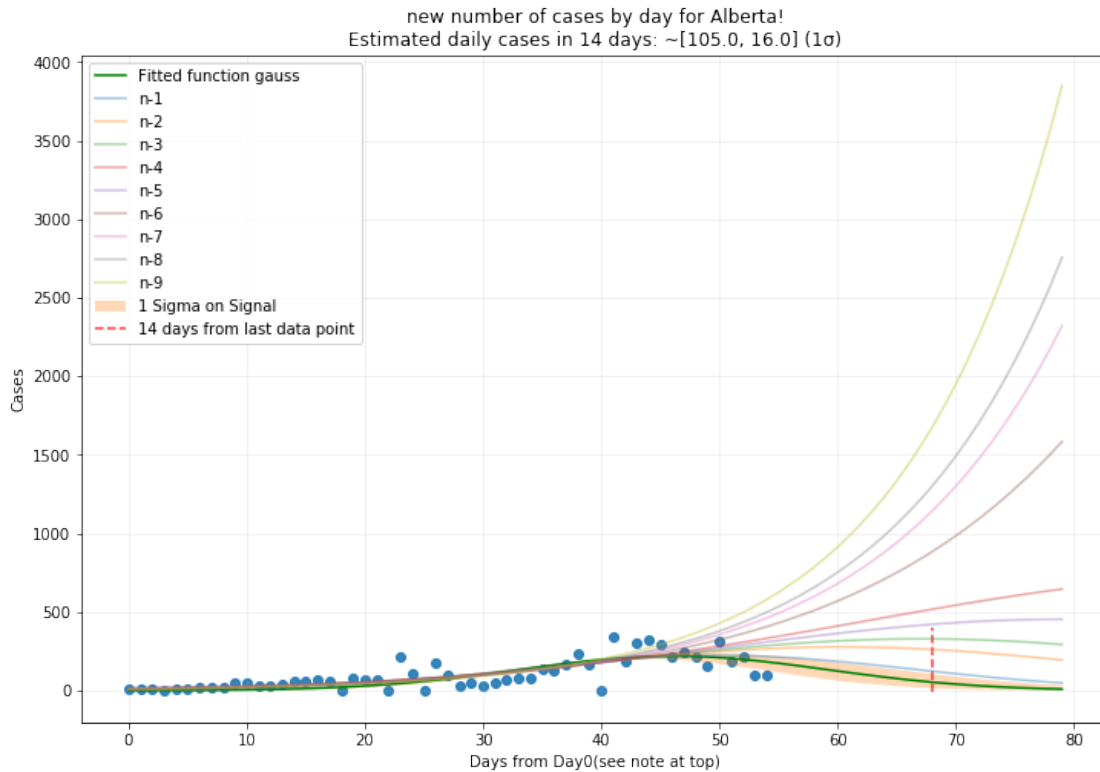Precent of positive cases pre test:6.627%

Precent of positive cases pre test: 6.627 %

------------- 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]

new number of cases by day for Alberta!
Estimated daily cases in 14 days: ~[105.0, 16.0] (1σ)


sigma+: 7335.0
n+1: 6244.0
Sigma-: 5261.0
----

params PY: [1.10077130e+04 8.83136588e-02 5.29370248e+01]

```
PY sigma:  [9.76512430e+02 3.44860681e-03 1.90704397e+00]
max cases:  11008.0
infection point:  53.0
infection point date:  2020-03-24
```


Total number of cases for Alberta!
max cases: ~11008.0
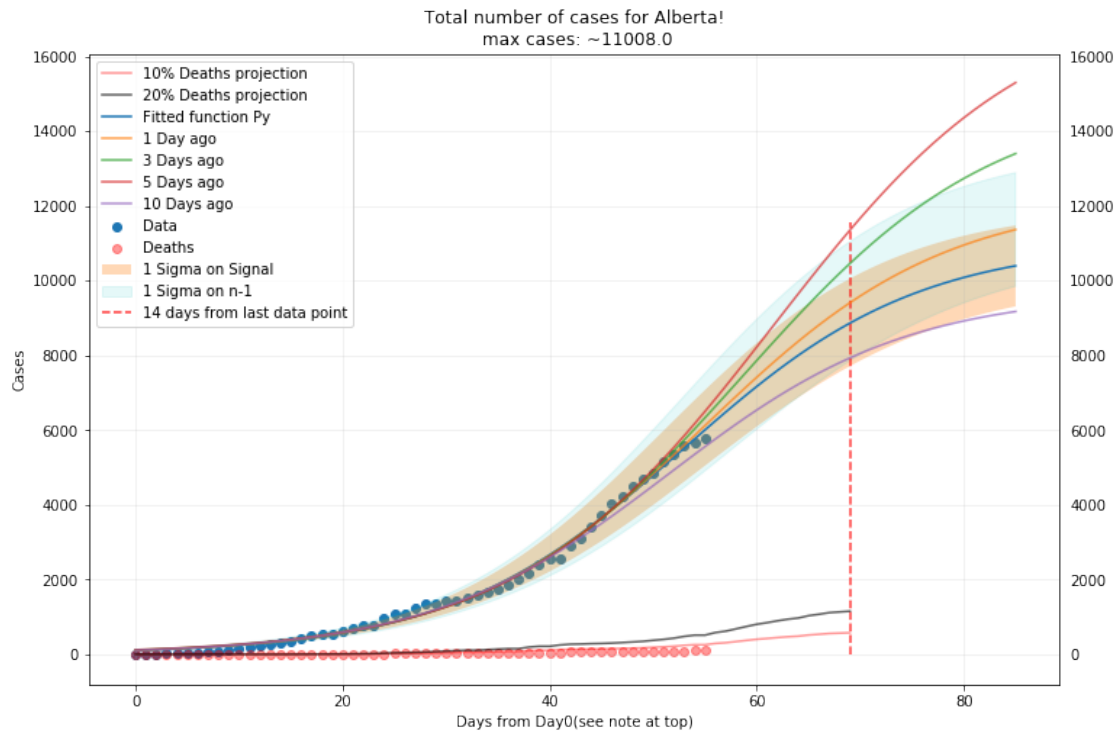
Total test to day in Alberta!
Rate: 2737.0 tests/day (cumulative)
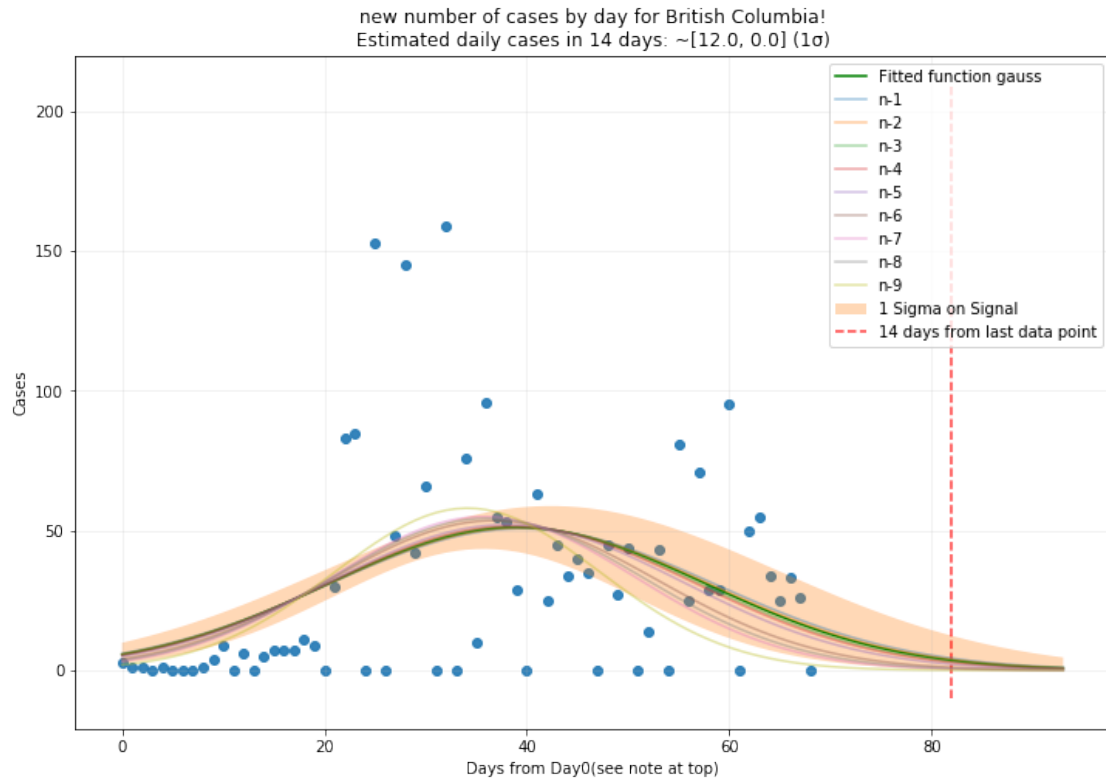Rate: 4027.0 tests/day (last 7 days)
Precent of positive cases pre test:3.79%

Tests by day for Alberta!
Rate: 43.0 additional tests/day (cumulative)
Rate: 38.0 tests/day (last 7 days)
Precent of positive cases pre test:3.79%
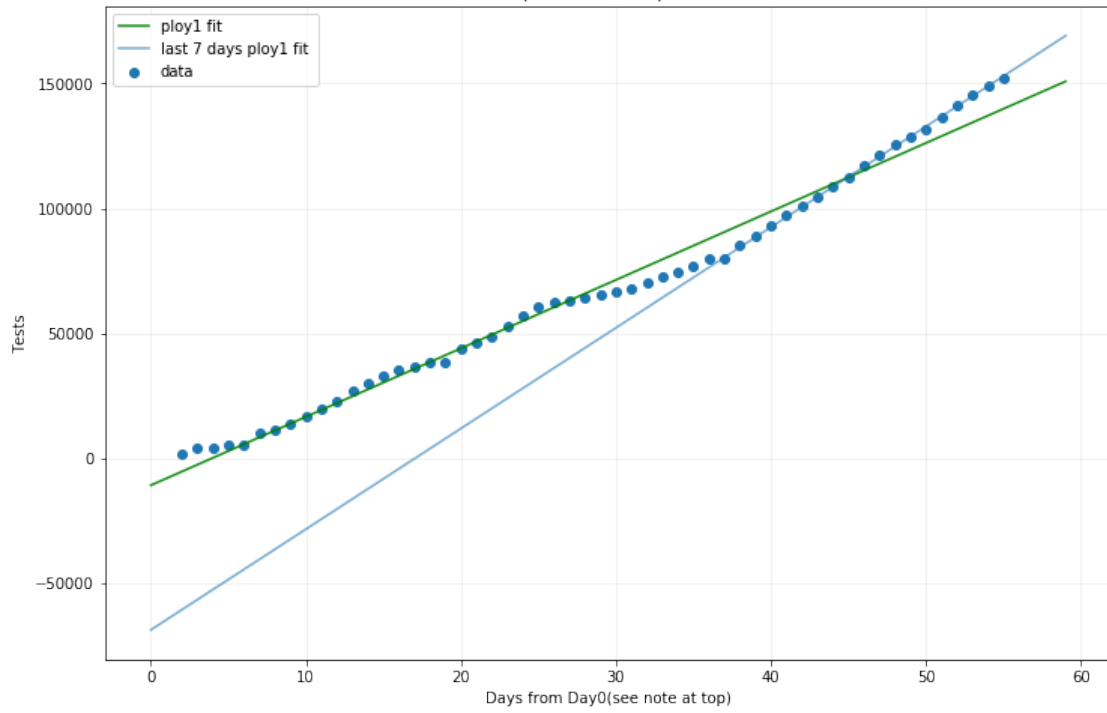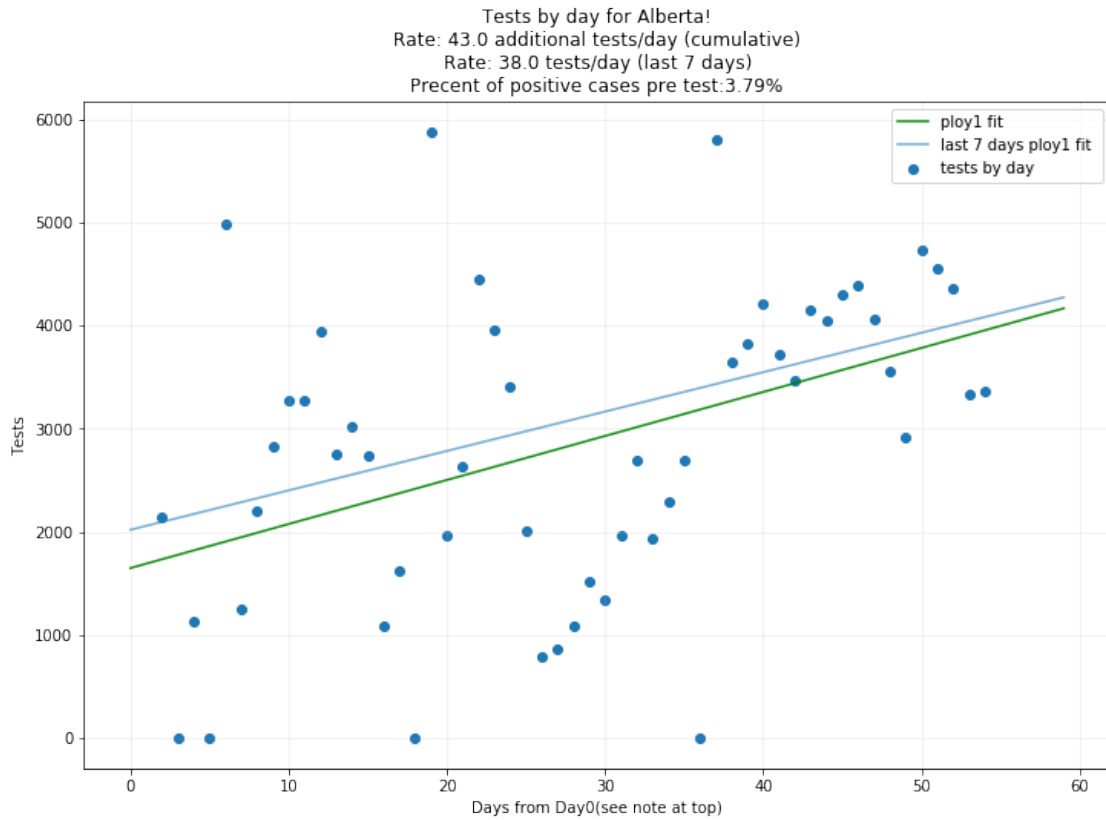
Precent of positive cases pre test: 3.79 %
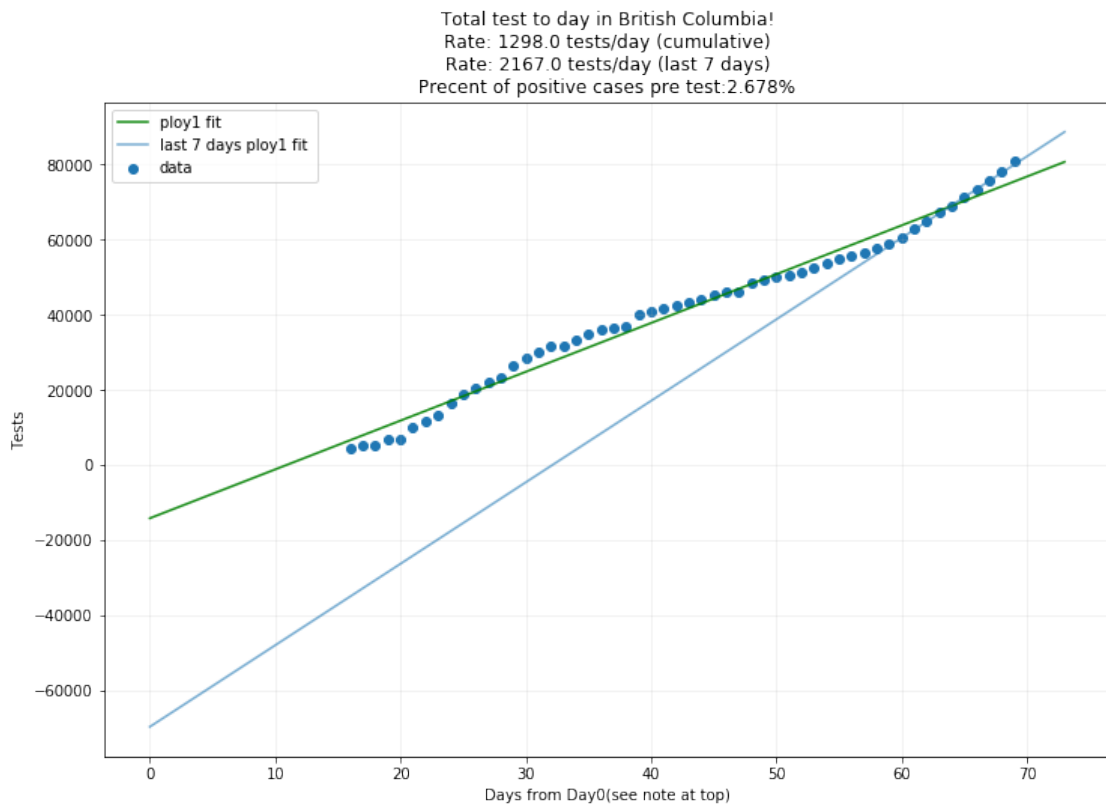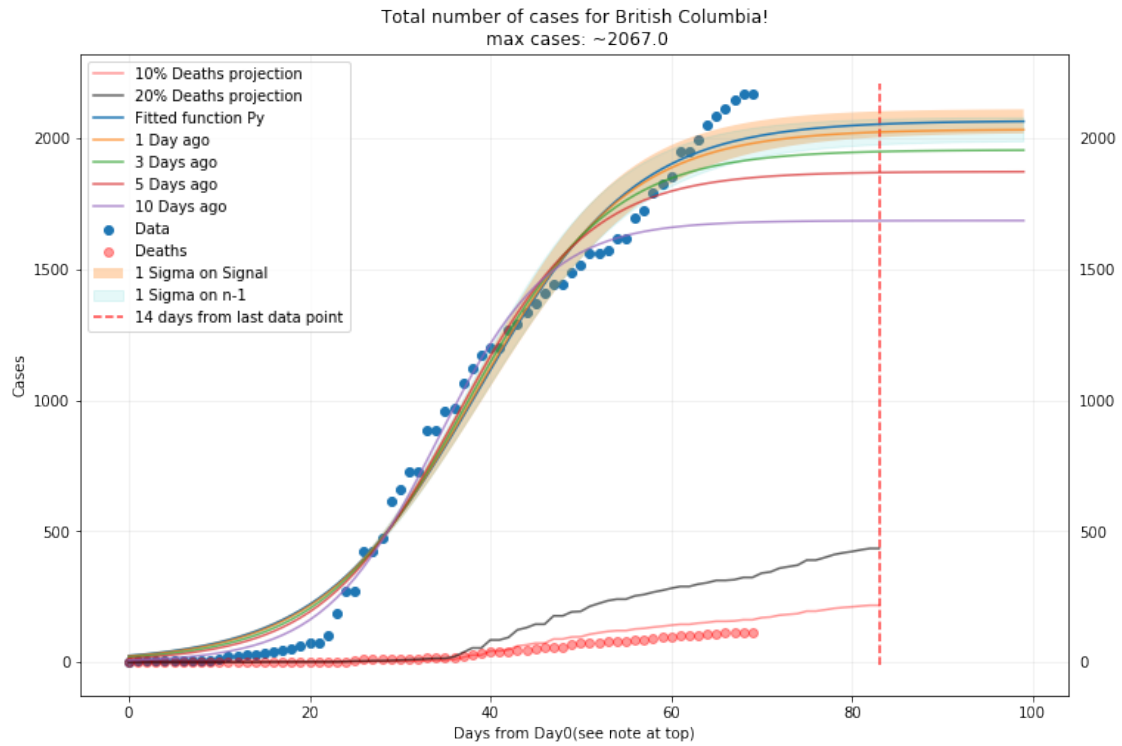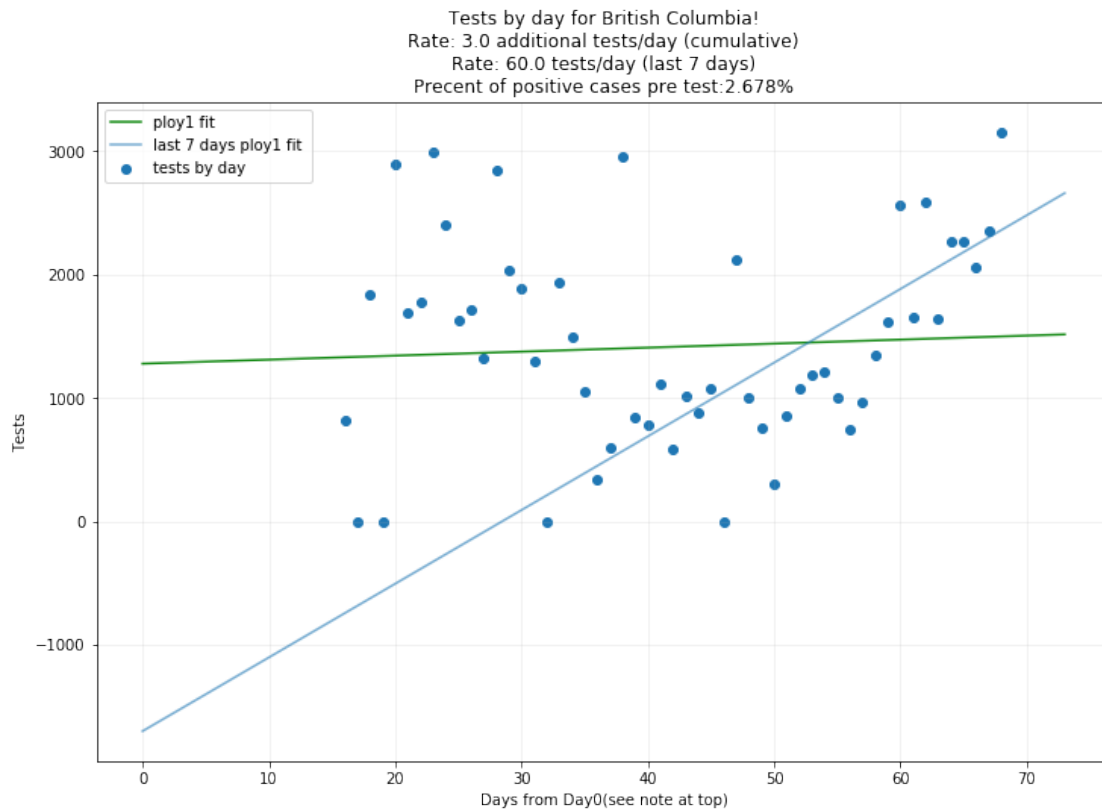

------------- British Columbia-------------
cases: [1.000e+00 4.000e+00 5.000e+00 6.000e+00 6.000e+00 7.000e+00 7.000e+00
 7.000e+00 7.000e+00 8.000e+00 1.200e+01 2.100e+01 2.100e+01 2.700e+01
 2.700e+01 3.200e+01 3.900e+01 4.600e+01 5.300e+01 6.400e+01 7.300e+01
 7.300e+01 1.030e+02 1.860e+02 2.710e+02 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]

new number of cases by day for British Columbia!
Estimated daily cases in 14 days: ~[12.0, 0.0] (1σ)

```
sigma+: 2069.0
n+1: 2012.0
Sigma-: 1952.0
----

params PY:  [2.06735632e+03 1.14288352e-01 3.86102786e+01]
PY sigma:   [4.53512374e+01 6.15880972e-03 6.51741907e-01]
max cases:  2067.0
infection point:  39.0
infection point date:  2020-03-10
```
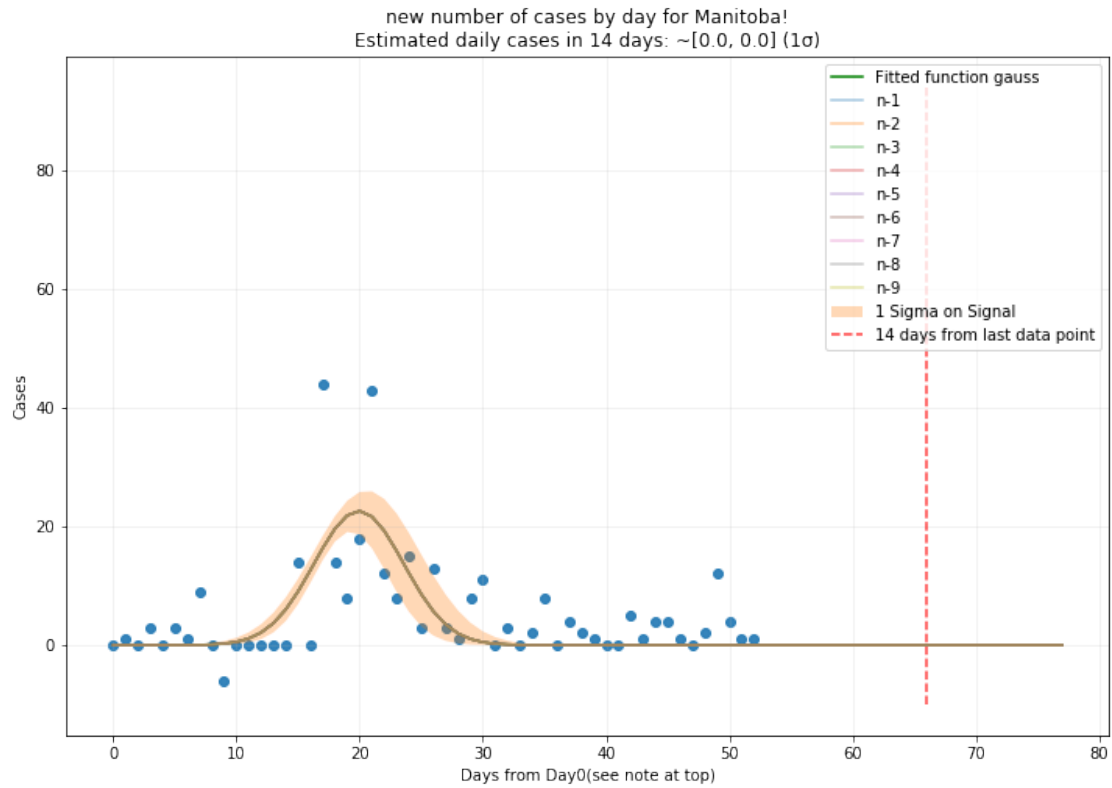
Total number of cases for British Columbia!
max cases: ~2067.0

Total test to day in British Columbia!
Rate: 1298.0 tests/day (cumulative)
Rate: 2167.0 tests/day (last 7 days)
Precent of positive cases pre test:2.678%

Tests by day for British Columbia!
Rate: 3.0 additional tests/day (cumulative)
Rate: 60.0 tests/day (last 7 days)
Precent of positive cases pre test:2.678%

Precent of positive cases pre test: 2.678 %

------------- 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.]

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

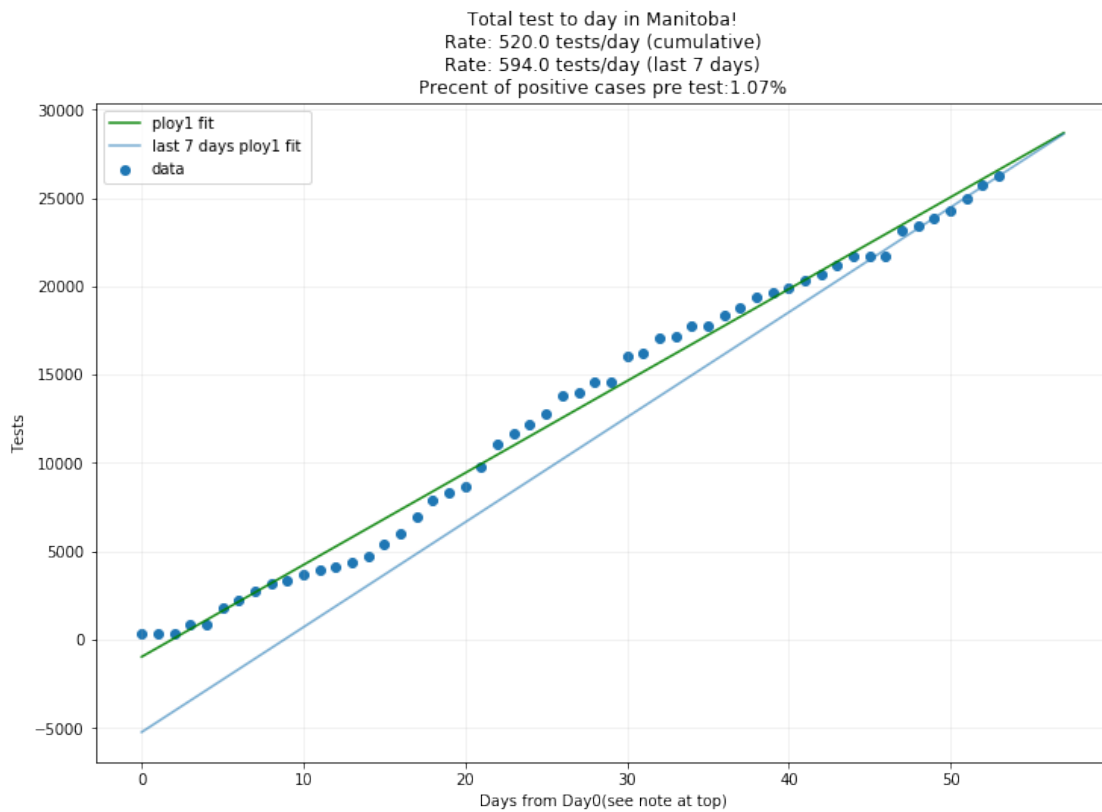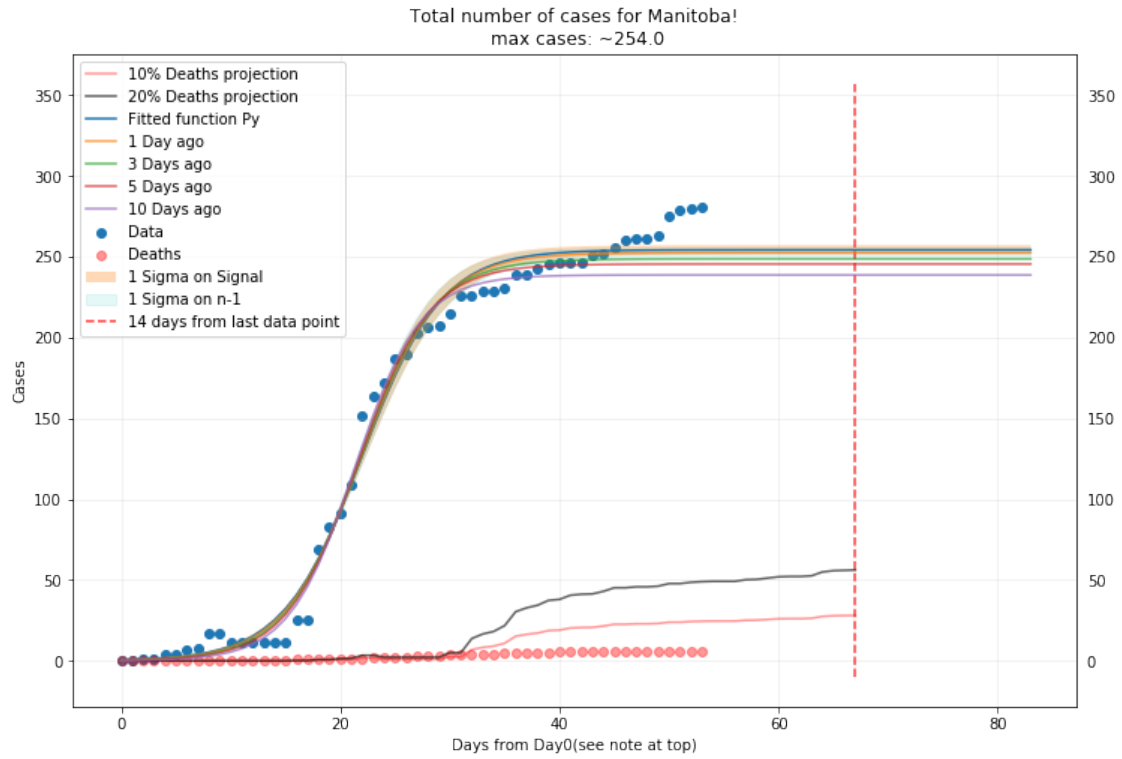sigma+: 257.0
n+1: 254.0
Sigma-: 251.0
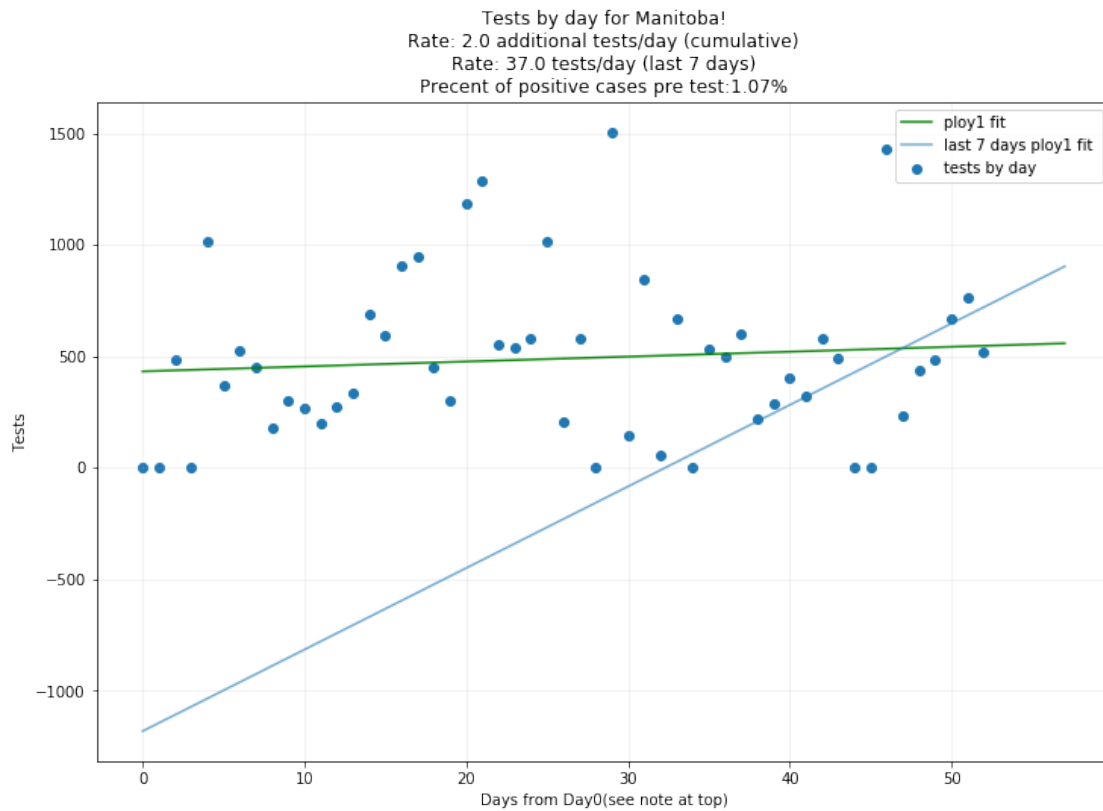----

params PY: [254.30657362   0.27514827   22.01565457]
PY sigma: [2.90522235 0.01683488 0.25944218]
max cases: 254.0
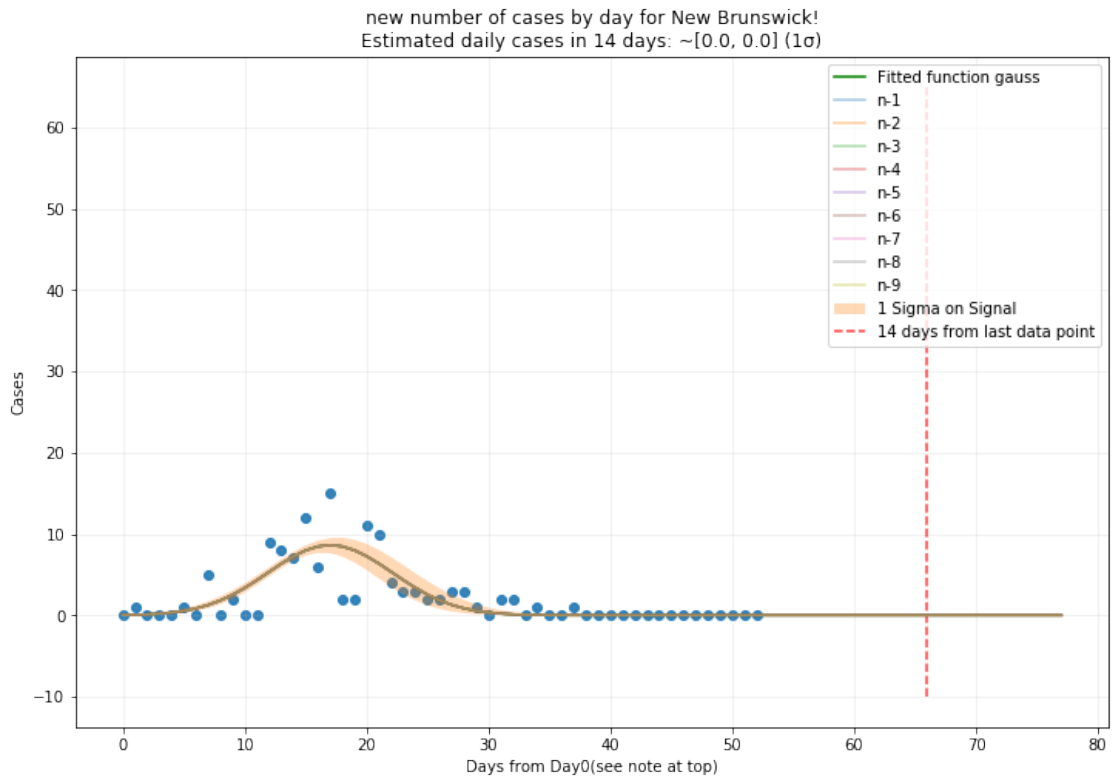infection point: 22.0
infection point date: 2020-02-22

Total number of cases for Manitoba!
max cases: ~254.0

Total test to day in Manitoba!
Rate: 520.0 tests/day (cumulative)
Rate: 594.0 tests/day (last 7 days)
Precent of positive cases pre test:1.07%

Tests by day for Manitoba!
Rate: 2.0 additional tests/day (cumulative)
Rate: 37.0 tests/day (last 7 days)
Precent of positive cases pre test:1.07%

Precent of positive cases pre test: 1.07 %

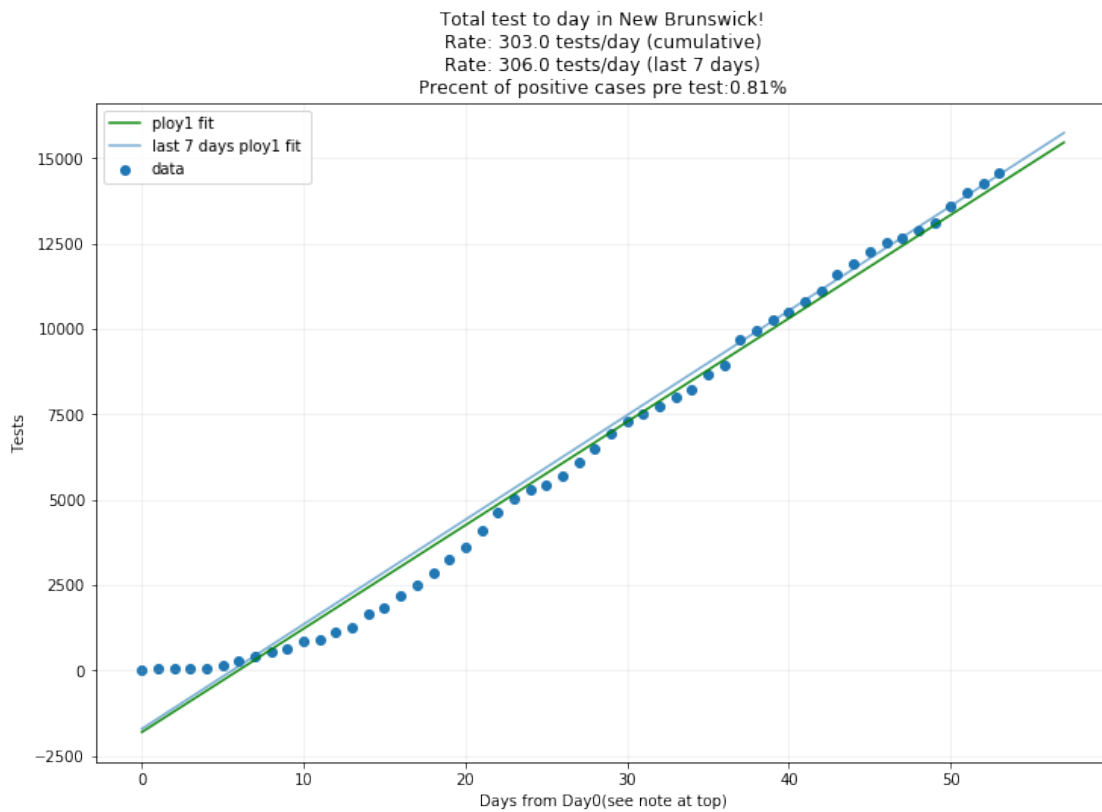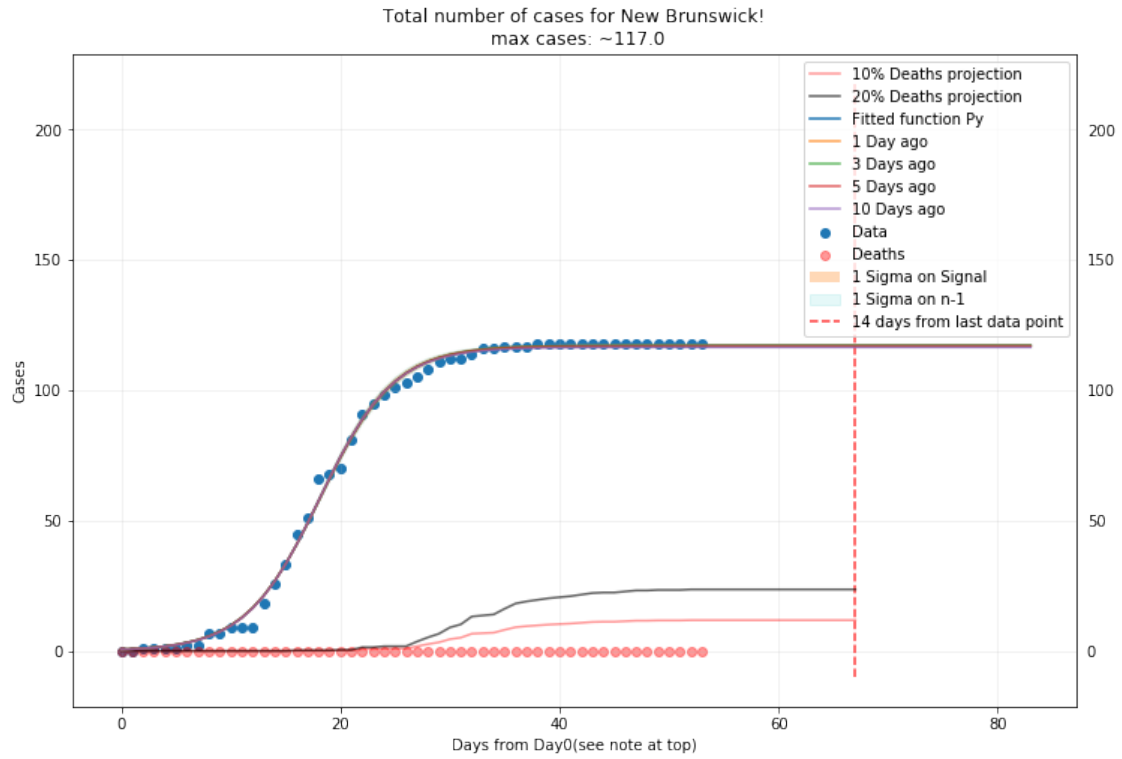------------- New Brunswick-------------
cases: [0.   0.   1.   1.   1.   1.   2.   2.   7.   7.   9.   9.   9.   18.
  26.   33.   45.   51.   66.   68.   70.   81.   91.   95.   98. 101. 103. 105.
 108. 111. 112. 112. 114. 116. 116. 117. 117. 117. 118. 118. 118. 118.
 118. 118. 118. 118. 118. 118.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

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: [117.16925606   0.29406236   18.1378001]
PY sigma: [0.50247528 0.00764938 0.10251698]
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: 303.0 tests/day (cumulative)
Rate: 306.0 tests/day (last 7 days)
Precent of positive cases pre test:0.81%

Tests by day for New Brunswick!
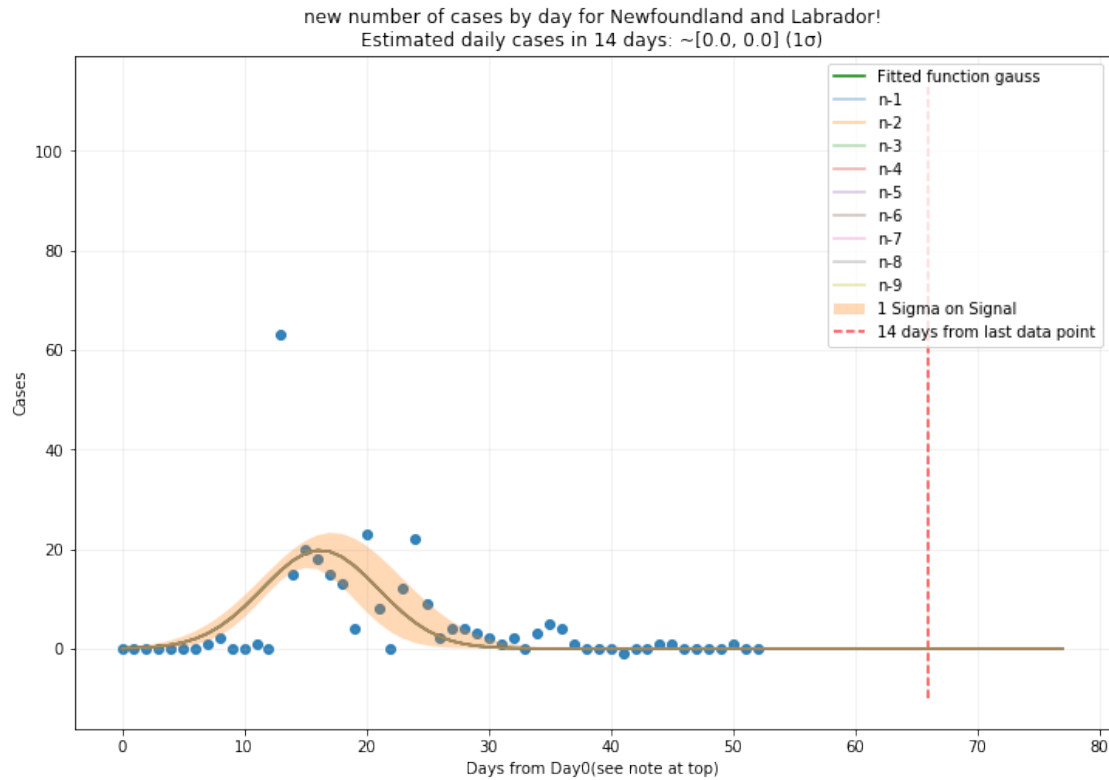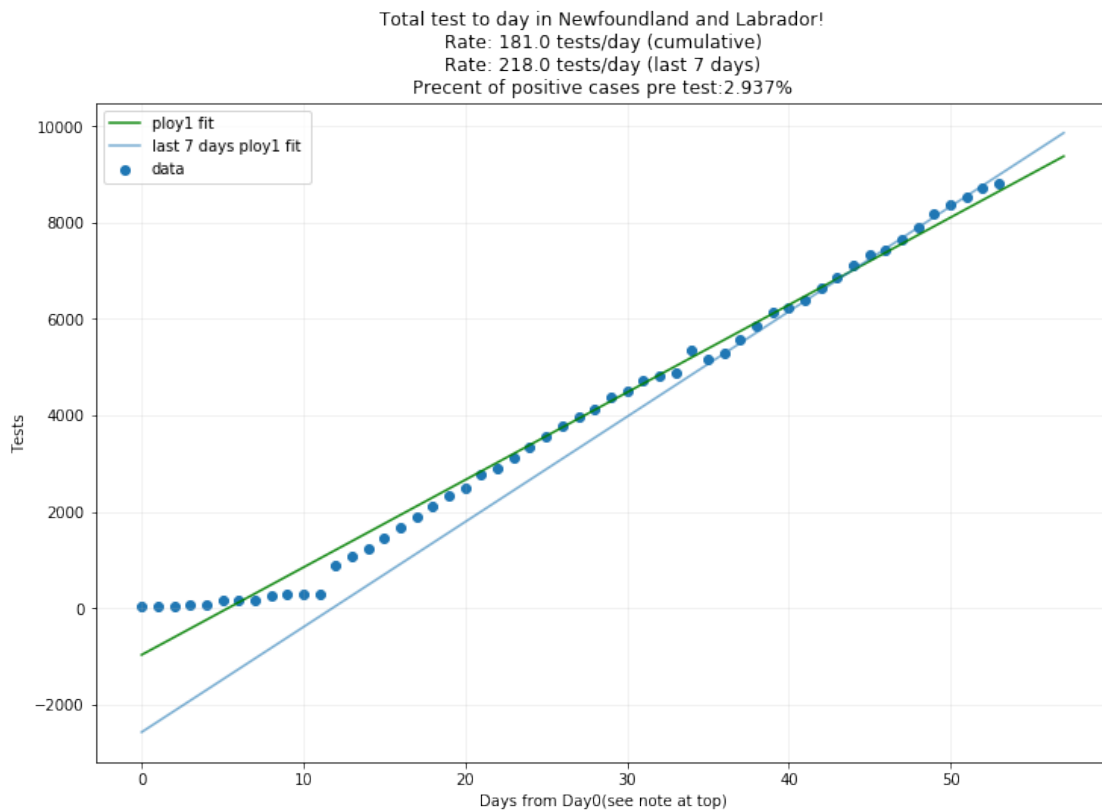Rate: 5.0 additional tests/day (cumulative)
Rate: 28.0 tests/day (last 7 days)
Precent of positive cases pre test:0.81%
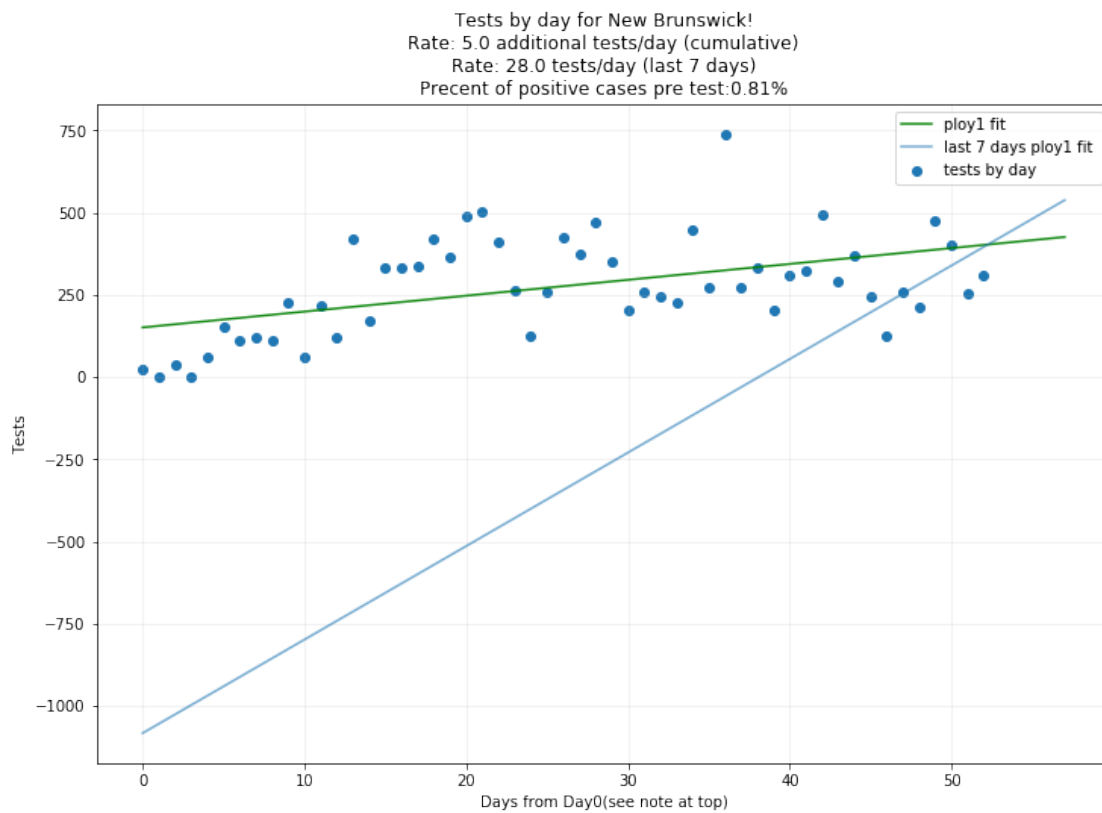
Precent of positive cases pre test: 0.81 %

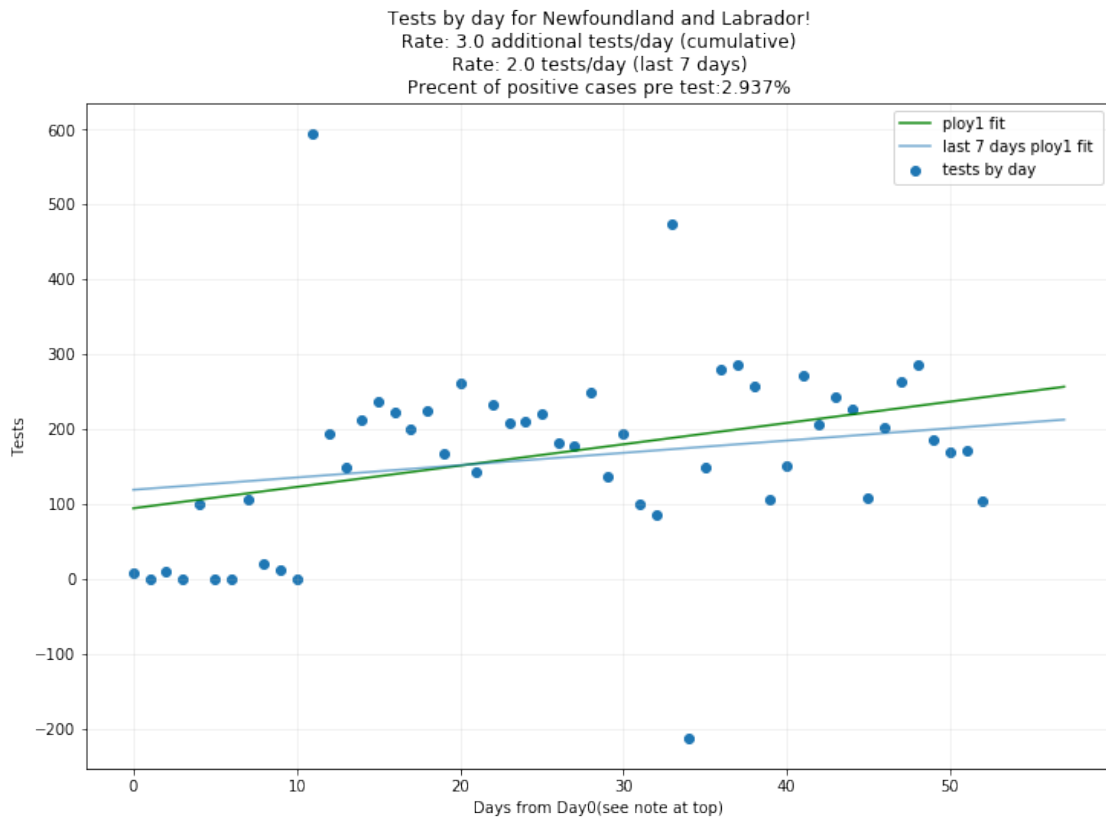------------- Newfoundland and Labrador-------------
cases: [0.   0.   0.   0.   0.   0.   0.   0.   1.   3.   3.   3.   4.   4.
  67.   82. 102. 120. 135. 148. 152. 175. 183. 183. 195. 217. 226. 228.
 232. 236. 239. 241. 242. 244. 244. 247. 252. 256. 257. 257. 257. 257.
 256. 256. 256. 257. 258. 258.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

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: 253.0
Sigma-: 251.0

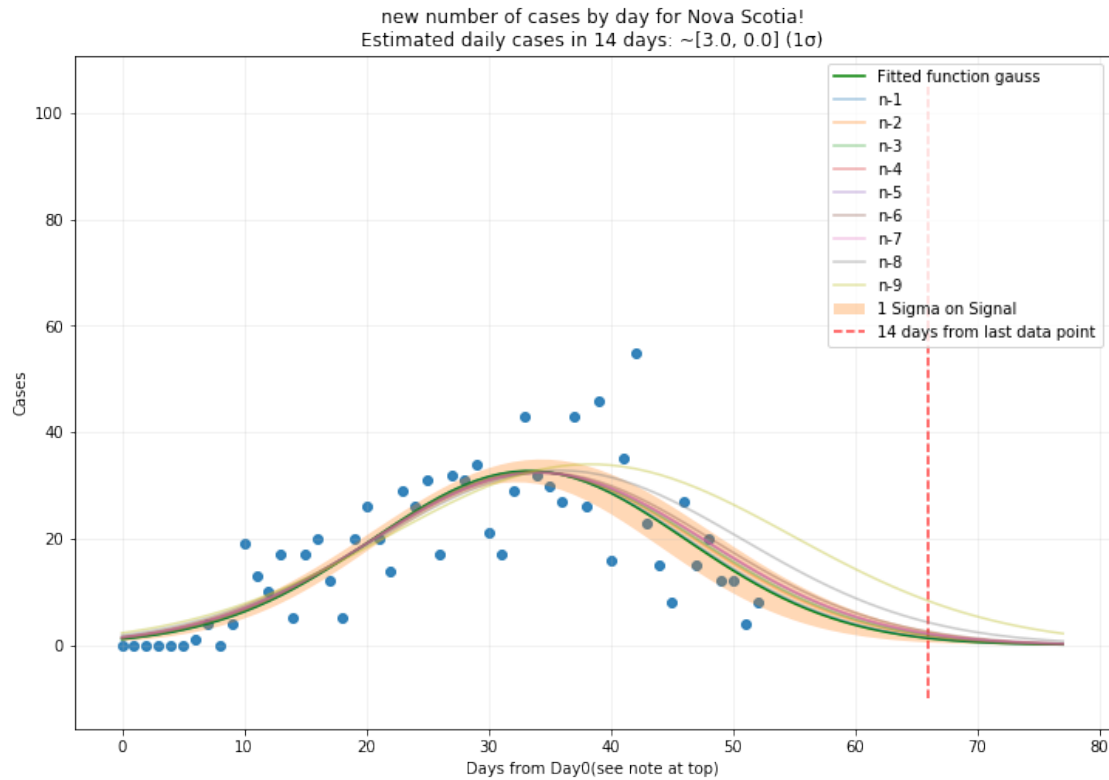params PY: [253.35834902   0.29656575 18.47212509]
PY sigma: [2.35022365 0.01667326 0.2197435]
max cases: 253.0
infection point: 18.0
infection point date: 2020-02-18

Total number of cases for Newfoundland and Labrador!
max cases: ~253.0

Total test to day in Newfoundland and Labrador!
Rate: 181.0 tests/day (cumulative)
Rate: 218.0 tests/day (last 7 days)
Precent of positive cases pre test:2.937%

Tests by day for Newfoundland and Labrador!
Rate: 3.0 additional tests/day (cumulative)
Rate: 2.0 tests/day (last 7 days)
Precent of positive cases pre test:2.937%
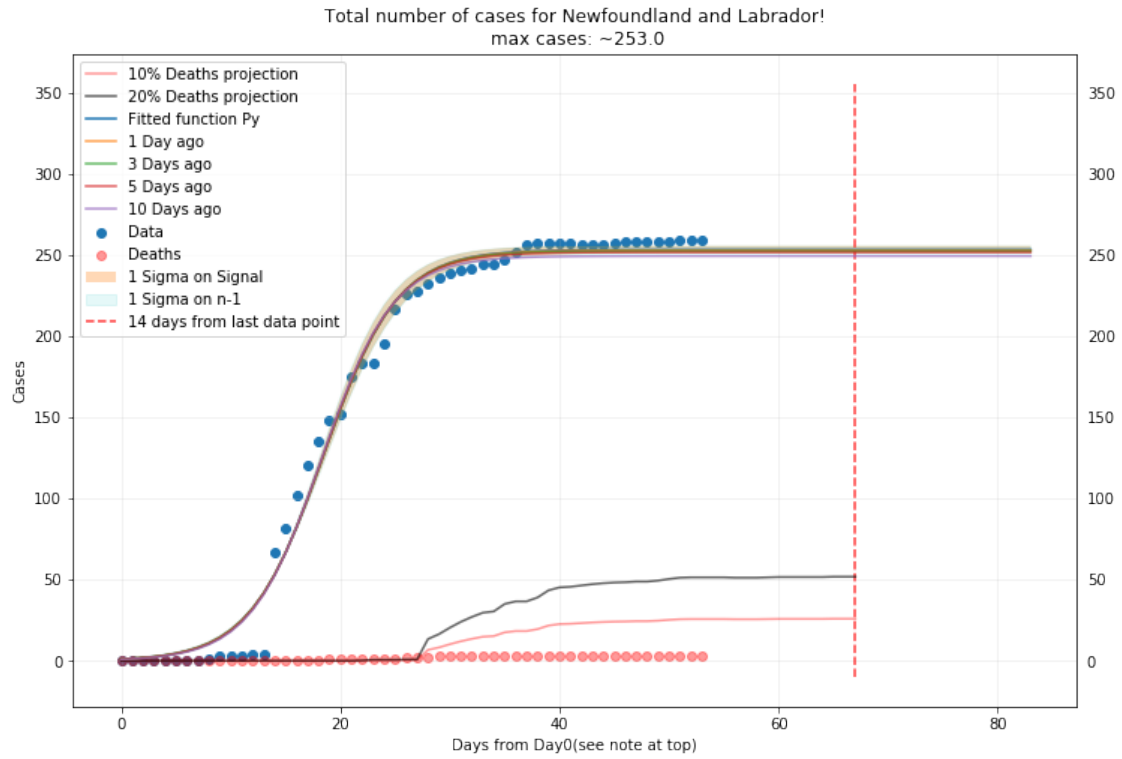
Precent of positive cases pre test: 2.937 %

------------- 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.]

new number of cases by day for Nova Scotia!
Estimated daily cases in 14 days: ~[3.0, 0.0] (1σ)

```
sigma+: 1006.0
n+1: 988.0
Sigma-: 969.0
----

params PY:  [1.06145224e+03 1.30911439e-01 3.41843776e+01]
PY sigma:  [1.32876779e+01 2.82213437e-03 2.75655903e-01]
max cases:  1061.0
infection point:  34.0
infection point date:  2020-03-05
```
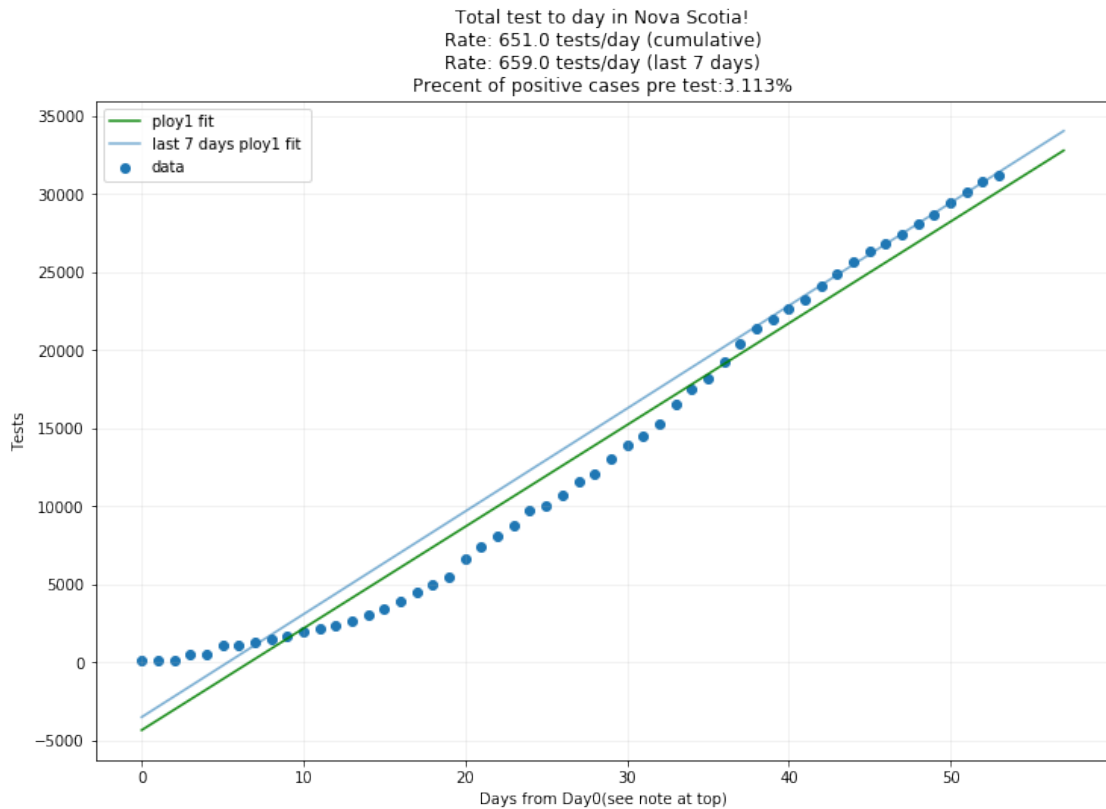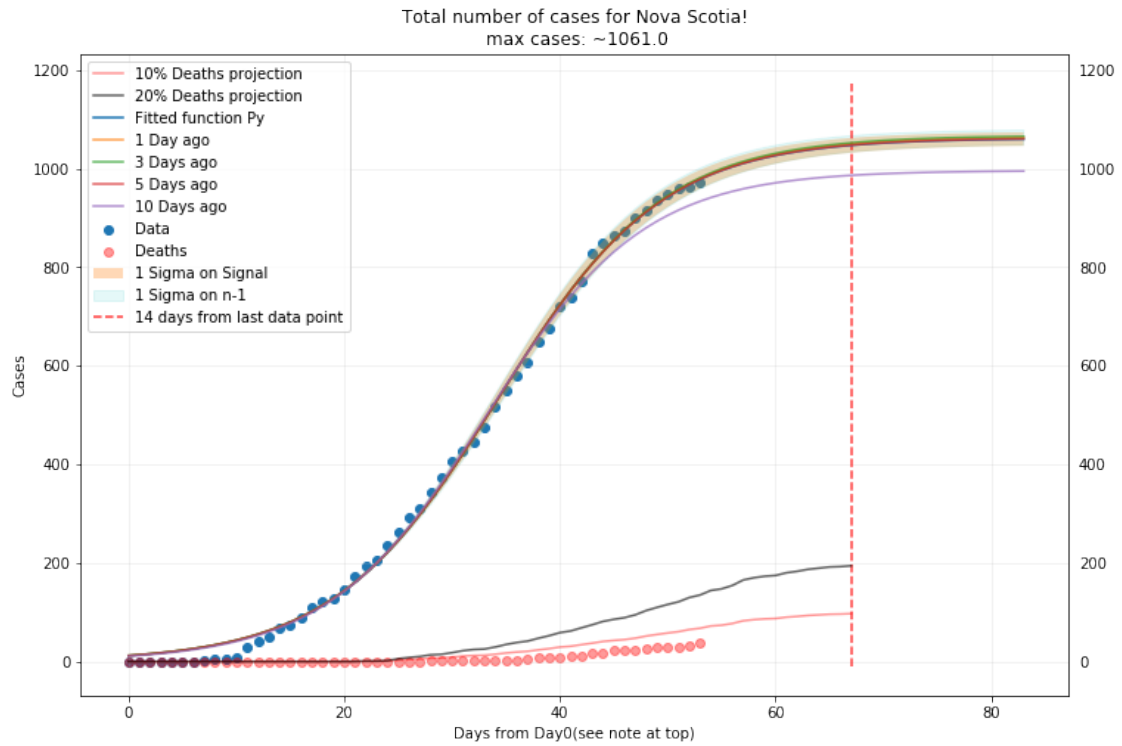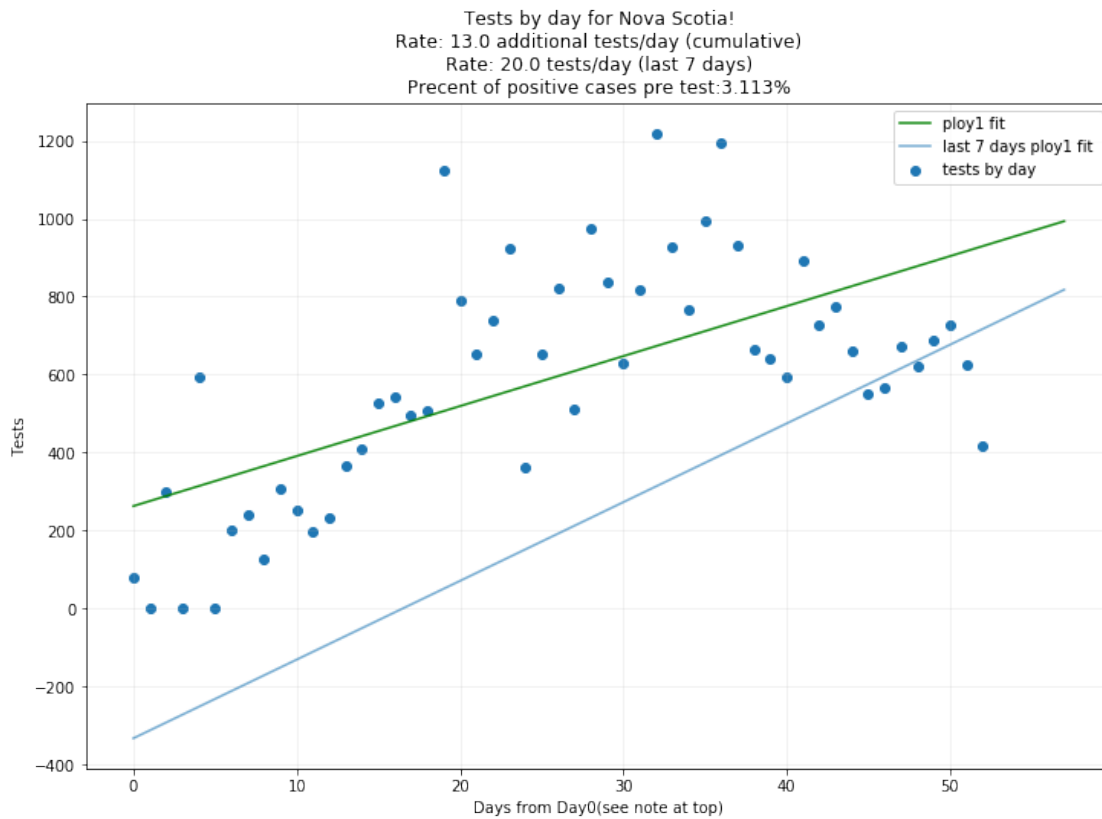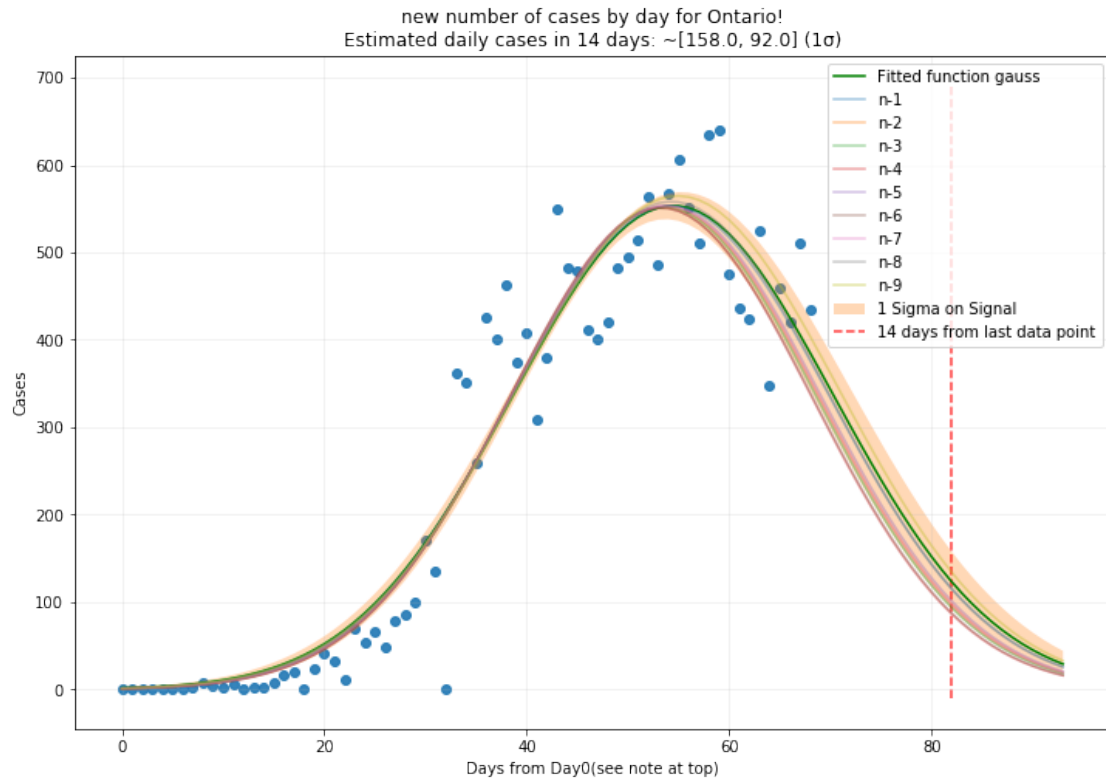
Total number of cases for Nova Scotia!
max cases: ~1061.0

Total test to day in Nova Scotia!
Rate: 651.0 tests/day (cumulative)
Rate: 659.0 tests/day (last 7 days)
Precent of positive cases pre test:3.113%

Tests by day for Nova Scotia!
Rate: 13.0 additional tests/day (cumulative)
Rate: 20.0 tests/day (last 7 days)
Precent of positive cases pre test:3.113%

Precent of positive cases pre test: 3.113 %

------------- Ontario-------------
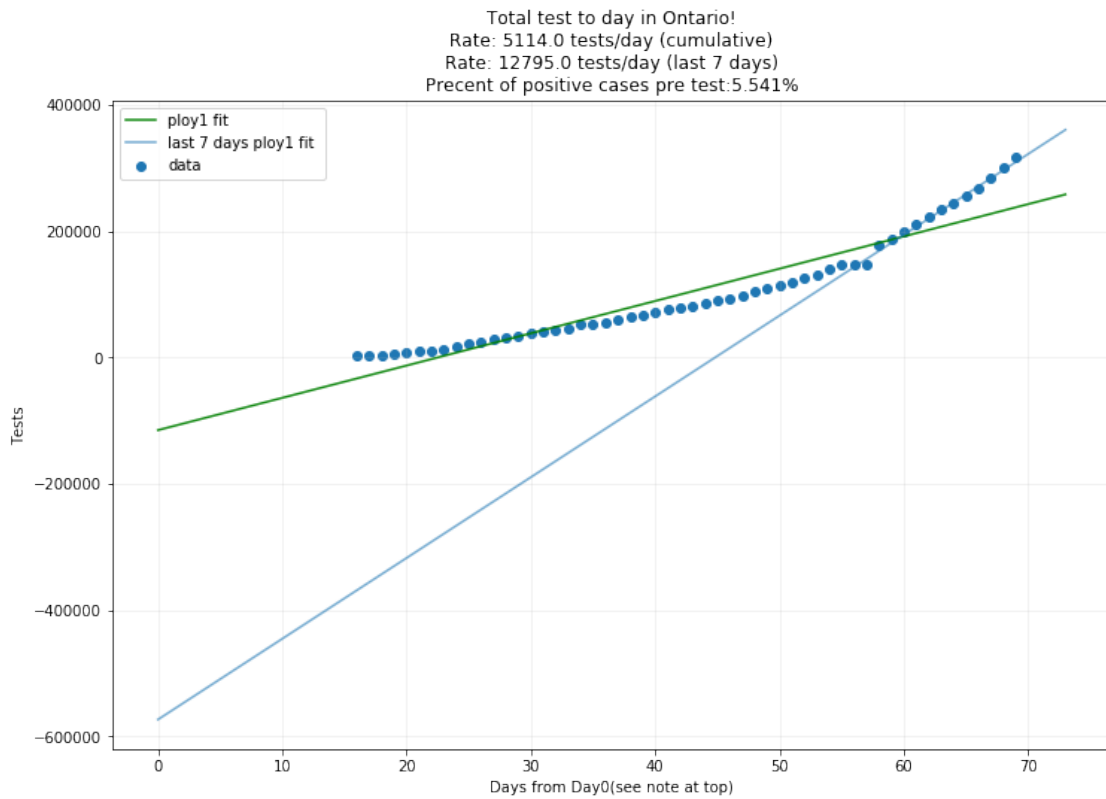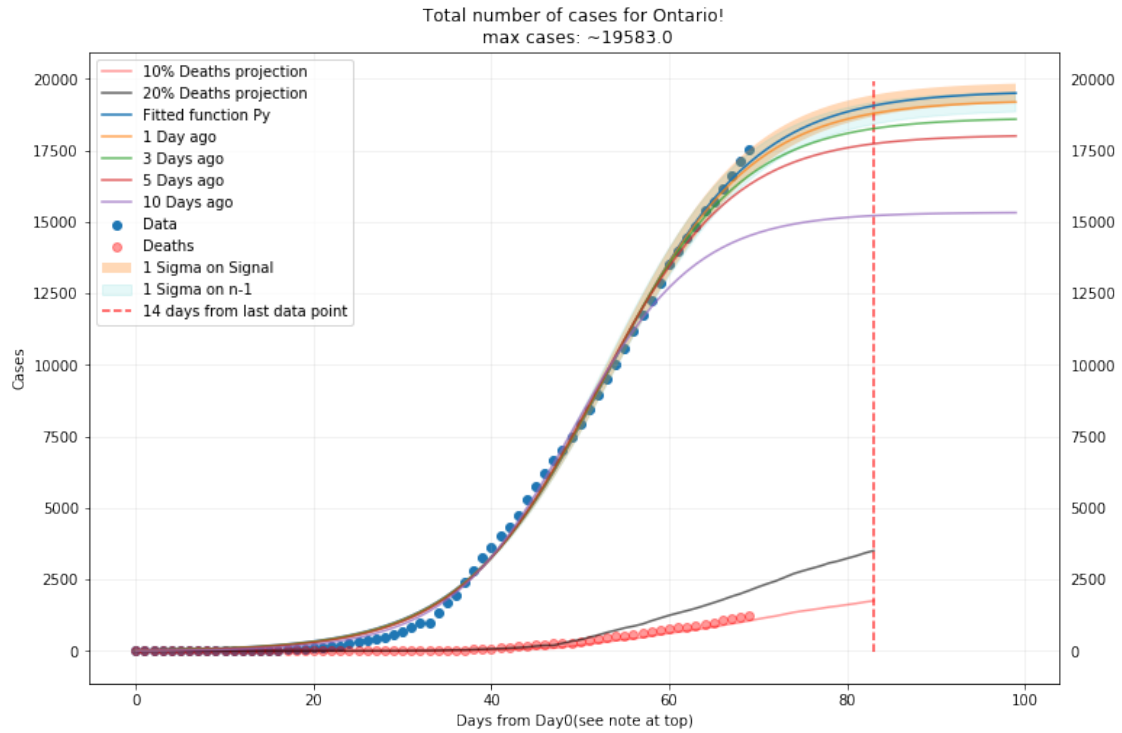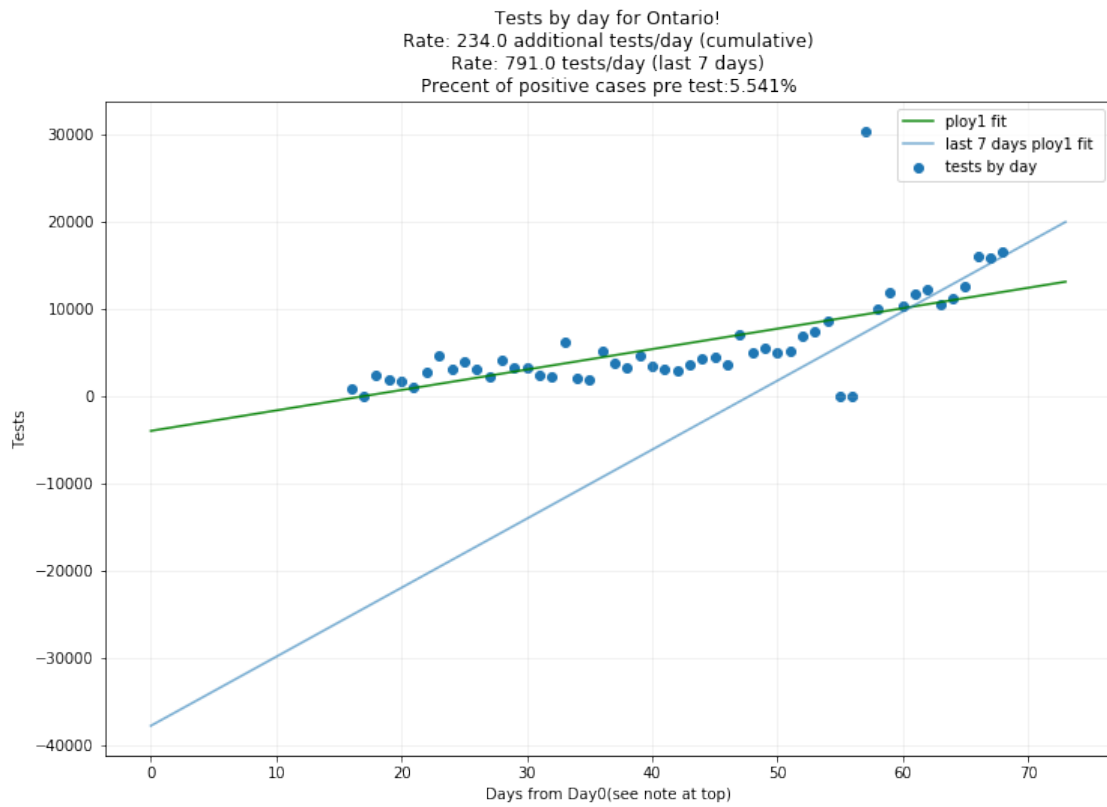cases: [3.0000e+00 3.0000e+00 3.0000e+00 3.0000e+00 4.0000e+00 4.0000e+00
 5.0000e+00 6.0000e+00 8.0000e+00 1.5000e+01 2.0000e+01 2.2000e+01
 2.8000e+01 2.8000e+01 3.1000e+01 3.4000e+01 4.2000e+01 5.9000e+01
 7.9000e+01 7.9000e+01 1.0300e+02 1.4500e+02 1.7700e+02 1.8900e+02
 2.5800e+02 3.1100e+02 3.7700e+02 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]

24

new number of cases by day for Ontario!
Estimated daily cases in 14 days: ~[158.0, 92.0] (1σ)

sigma+: 17782.0
n+1: 17323.0
Sigma-: 16862.0
----

params PY: [1.95832291e+04 1.21336940e-01 5.32142983e+01]
PY sigma: [3.21447150e+02 2.65333181e-03 3.56405354e-01]
max cases: 19583.0
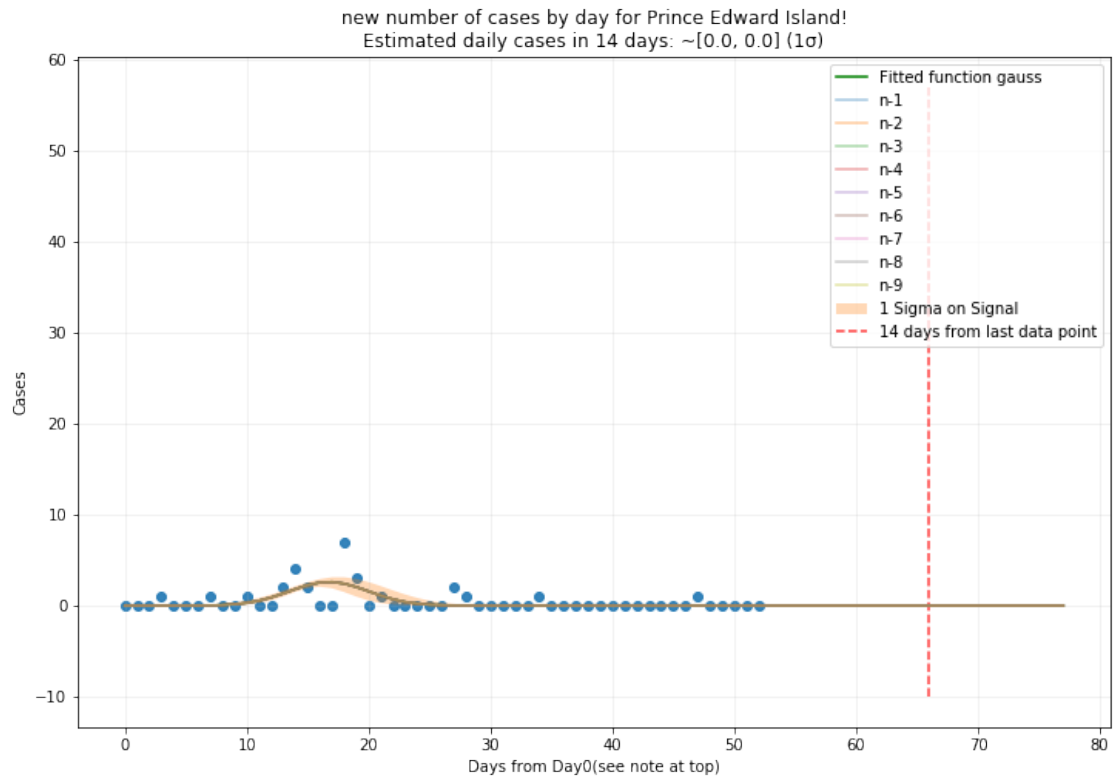infection point: 53.0
infection point date: 2020-03-24

Total number of cases for Ontario!
max cases: ~19583.0

Legend:
- 10% Deaths projection
- 20% Deaths projection
- Fitted function Py
- 1 Day ago
- 3 Days ago
- 5 Days ago
- 10 Days ago
- Data
- Deaths
- 1 Sigma on Signal
- 1 Sigma on n-1
- 14 days from last data point

Y-axis: Cases

X-axis: Days from Day0(see note at top)

Total test to day in Ontario!
Rate: 5114.0 tests/day (cumulative)
Rate: 12795.0 tests/day (last 7 days)
Precent of positive cases pre test:5.541%

Legend:
- ploy1 fit
- last 7 days ploy1 fit
- data

Y-axis: Tests

X-axis: Days from Day0(see note at top)

Tests by day for Ontario!
Rate: 234.0 additional tests/day (cumulative)
Rate: 791.0 tests/day (last 7 days)
Precent of positive cases pre test:5.541%

Precent of positive cases pre test: 5.541 %

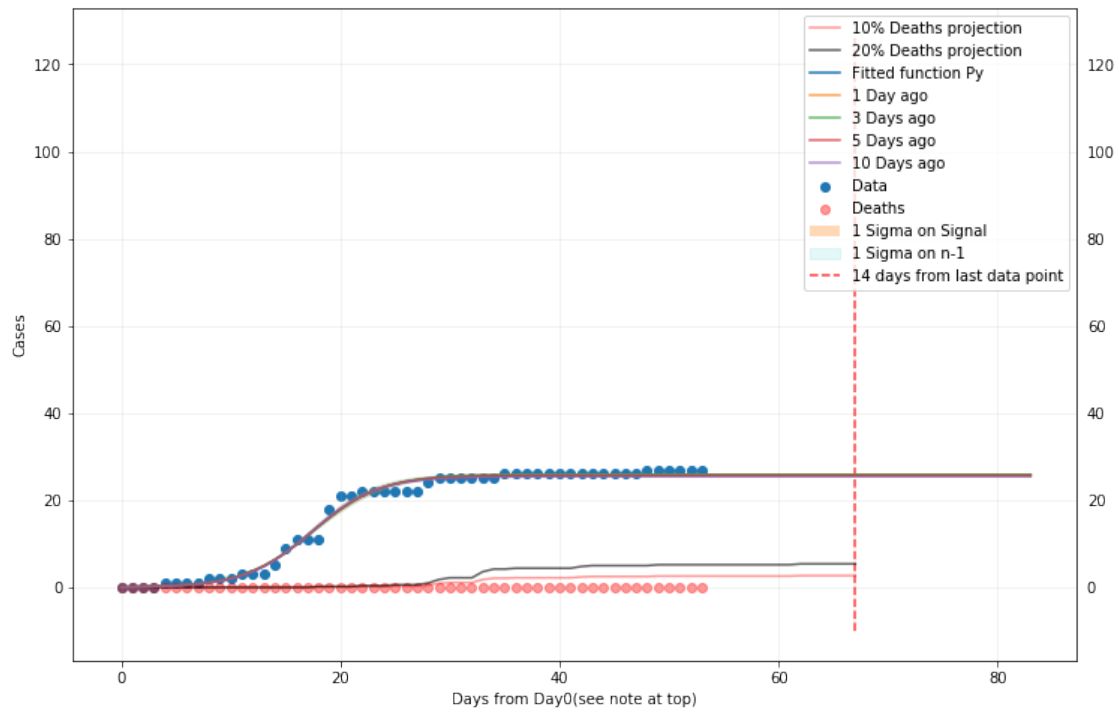------------- Prince Edward Island-------------
cases: [0. 0. 0. 0. 1. 1. 1. 1. 2. 2. 2. 3. 3. 3. 5. 9. 11. 11.
 11. 18. 21. 21. 22. 22. 22. 22. 22. 22. 24. 25. 25. 25. 25. 25. 25. 26.
 26. 26. 26. 26. 26. 26. 26. 26. 26. 26. 26. 26. 27. 27. 27. 27. 27. 27.]

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:  [25.89755547  0.32076624 17.51250384]
PY sigma:  [0.22712229 0.01825316 0.20511627]
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: 66.0 tests/day (cumulative)
Rate: 71.0 tests/day (last 7 days)
Precent of positive cases pre test:0.86%

Tests by day for Prince Edward Island!
Rate: 1.0 additional tests/day (cumulative)
Rate: 2.0 tests/day (last 7 days)
Precent of positive cases pre test:0.86%
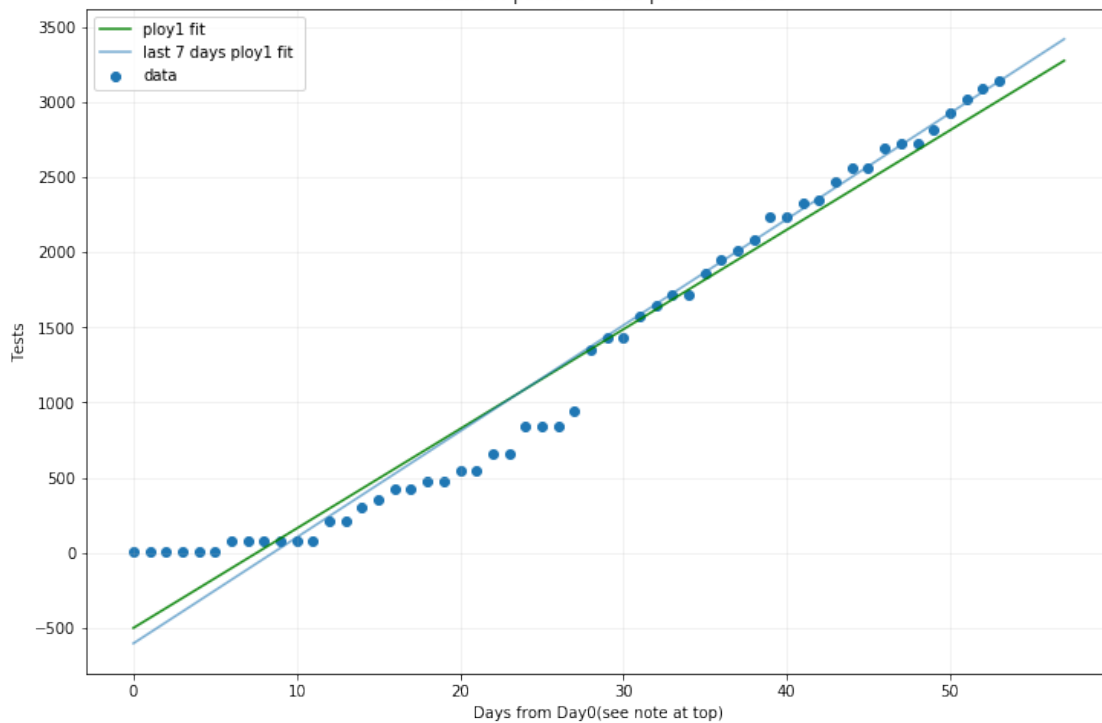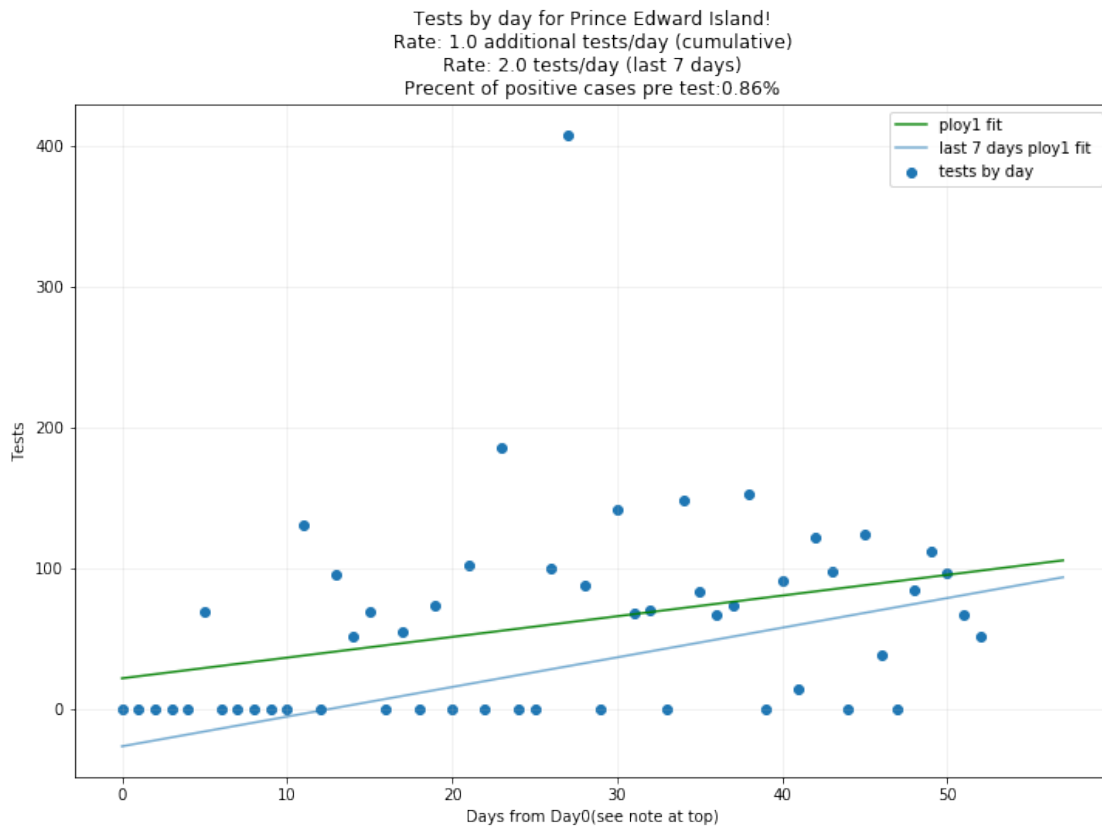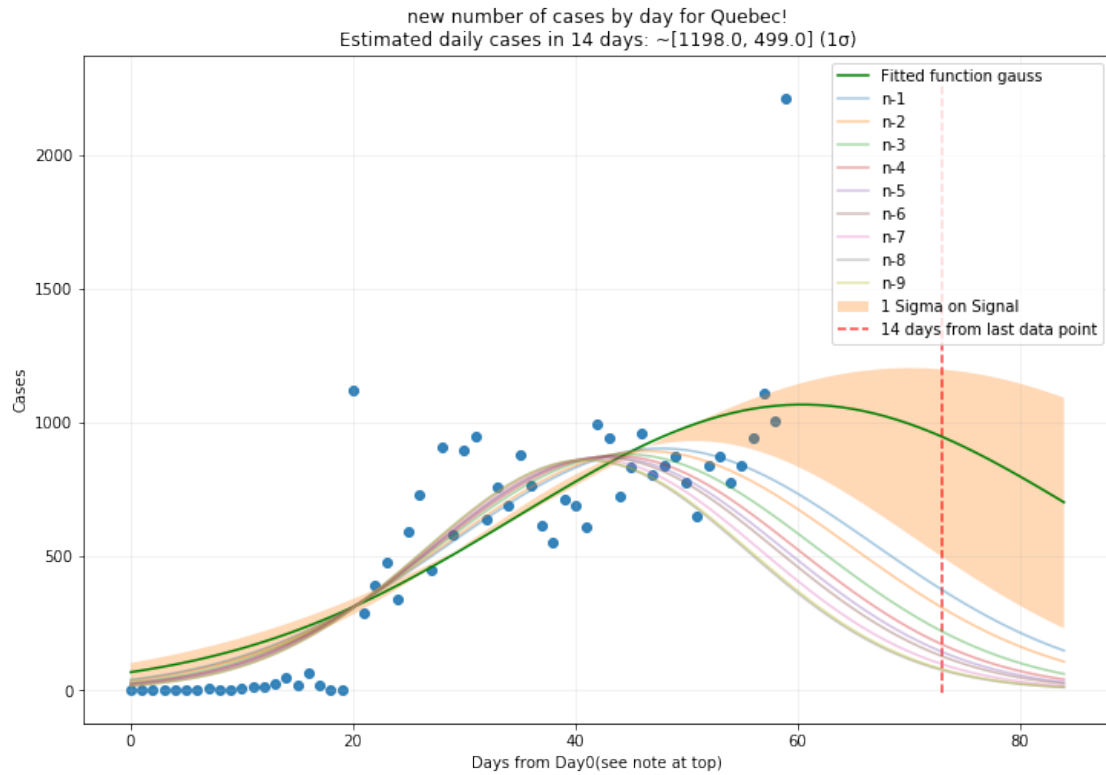
Precent of positive cases pre test: 0.86 %

------------- Quebec--------------
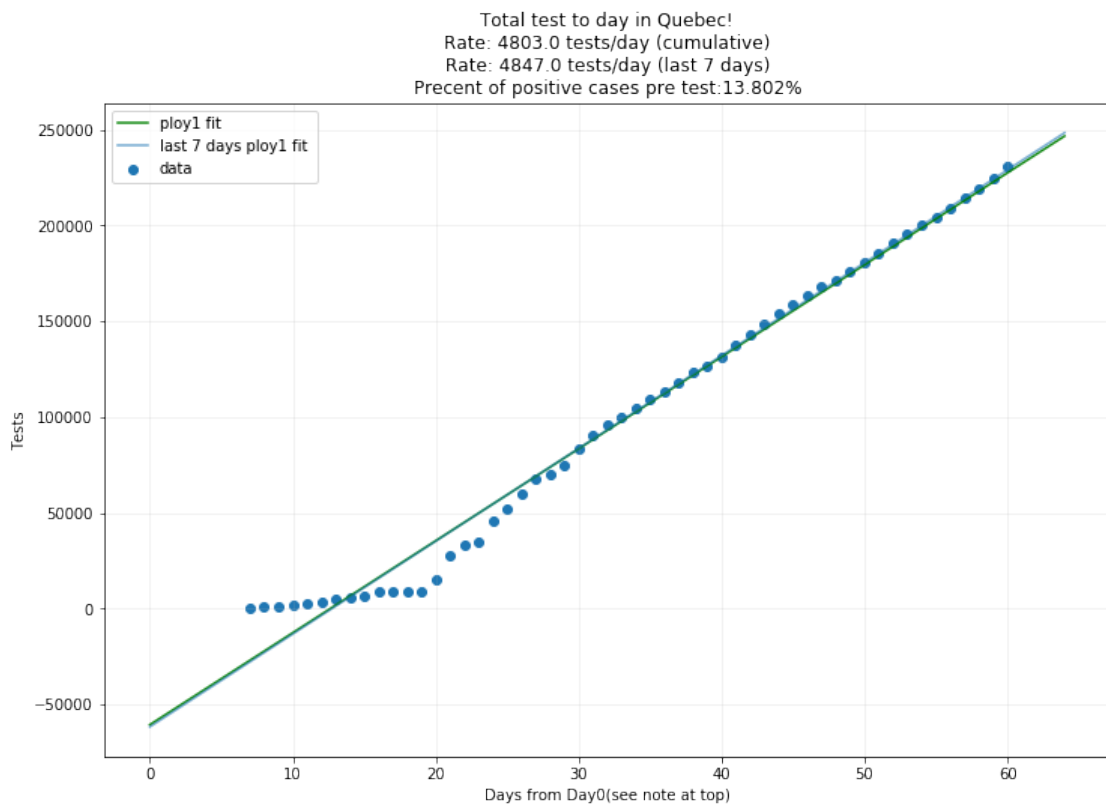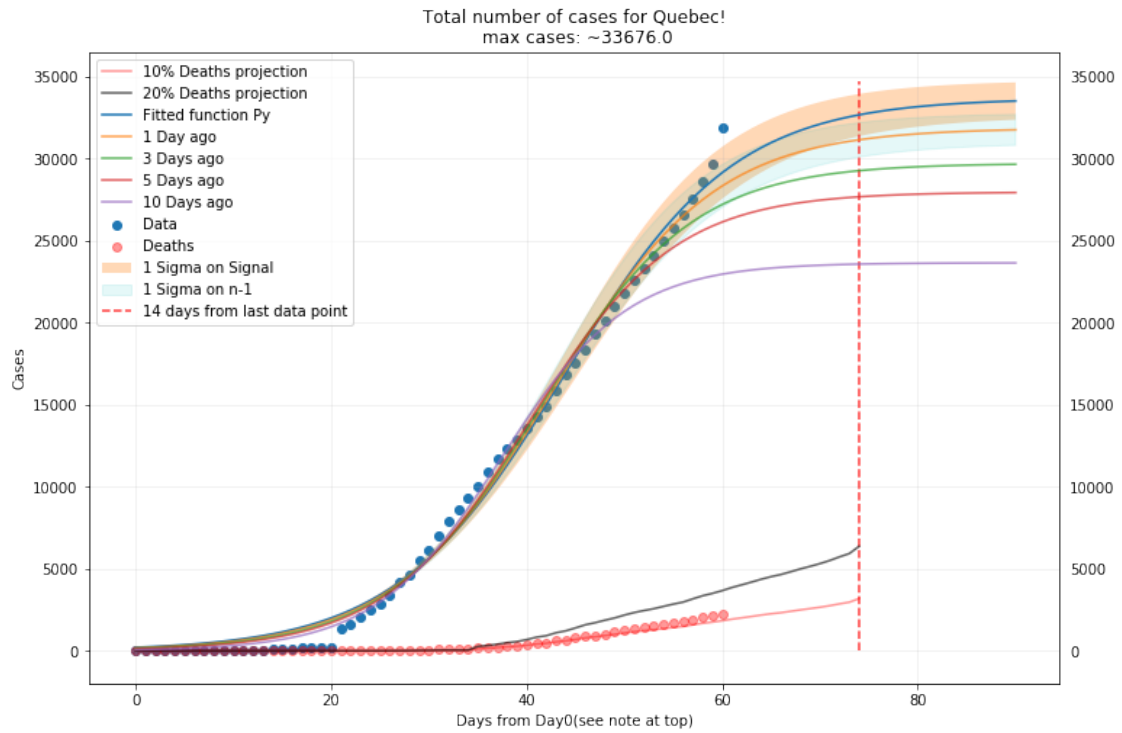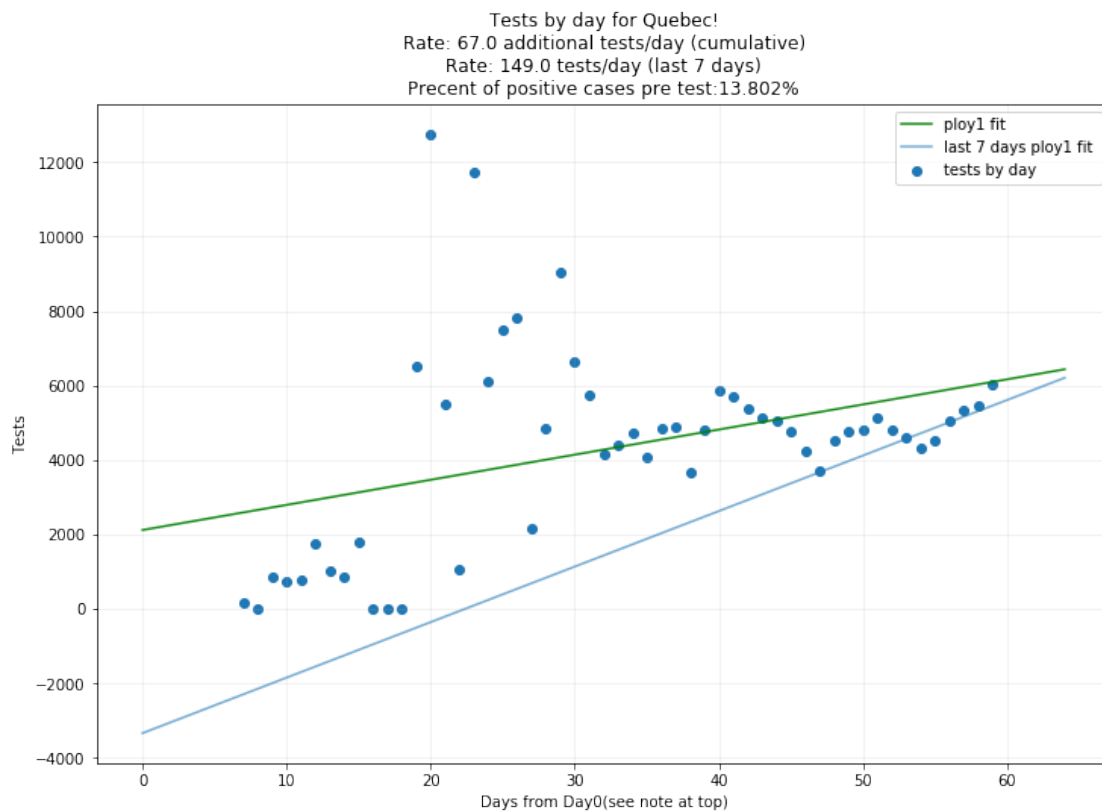cases: [1.0000e+00 1.0000e+00 2.0000e+00 2.0000e+00 2.0000e+00 3.0000e+00
 4.0000e+00 7.0000e+00 1.3000e+01 1.7000e+01 1.7000e+01 2.4000e+01
 3.9000e+01 5.0000e+01 7.4000e+01 1.2100e+02 1.3900e+02 2.0200e+02
 2.2100e+02 2.2100e+02 2.2100e+02 1.3390e+03 1.6290e+03 2.0210e+03
 2.4980e+03 2.8400e+03 3.4300e+03 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]

new number of cases by day for Quebec!
Estimated daily cases in 14 days: ~[1198.0, 499.0] (1σ)

sigma+: 31136.0
n+1: 29580.0
Sigma-: 28013.0
----

params PY: [3.36757772e+04 1.15521302e-01 4.38841686e+01]
PY sigma: [1.09228348e+03 4.85896160e-03 7.32603657e-01]
max cases: 33676.0
infection point: 44.0
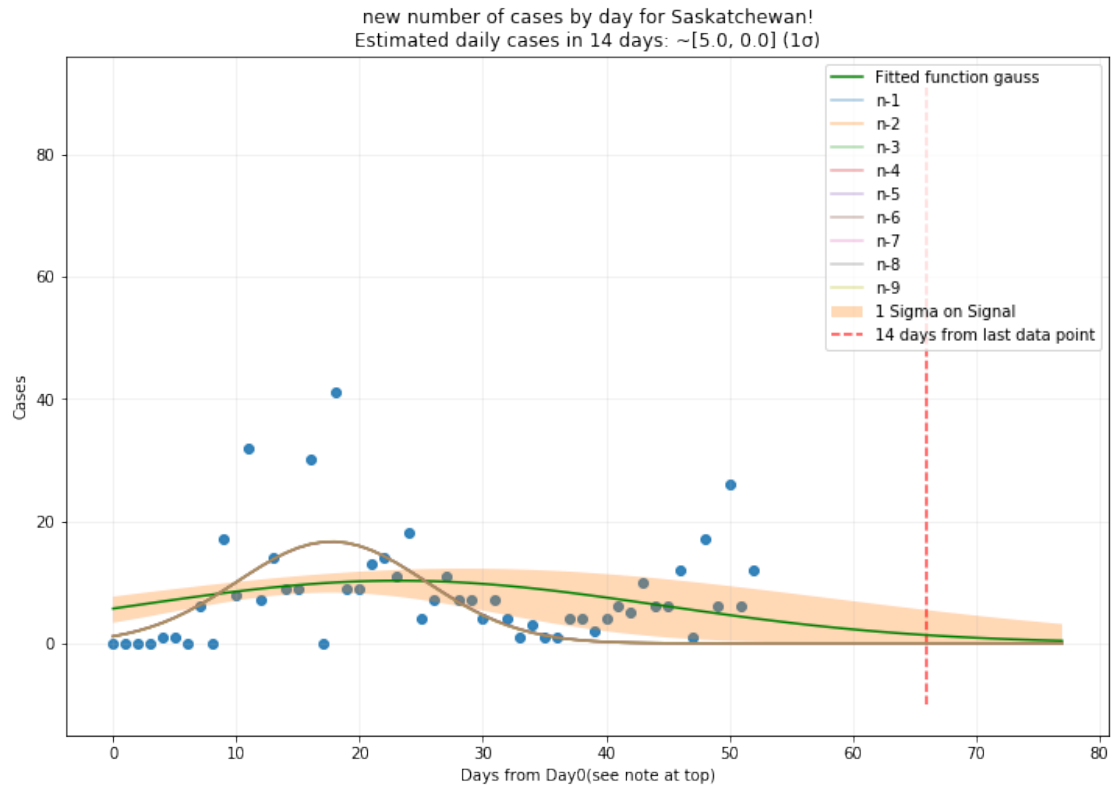infection point date: 2020-03-15

Total number of cases for Quebec!
max cases: ~33676.0

Total test to day in Quebec!
Rate: 4803.0 tests/day (cumulative)
Rate: 4847.0 tests/day (last 7 days)
Precent of positive cases pre test:13.802%

Tests by day for Quebec!
Rate: 67.0 additional tests/day (cumulative)
Rate: 149.0 tests/day (last 7 days)
Precent of positive cases pre test:13.802%

Precent of positive cases pre test: 13.802 %

------------- 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.]

new number of cases by day for Saskatchewan!
Estimated daily cases in 14 days: ~[5.0, 0.0] (1σ)

sigma+: 370.0
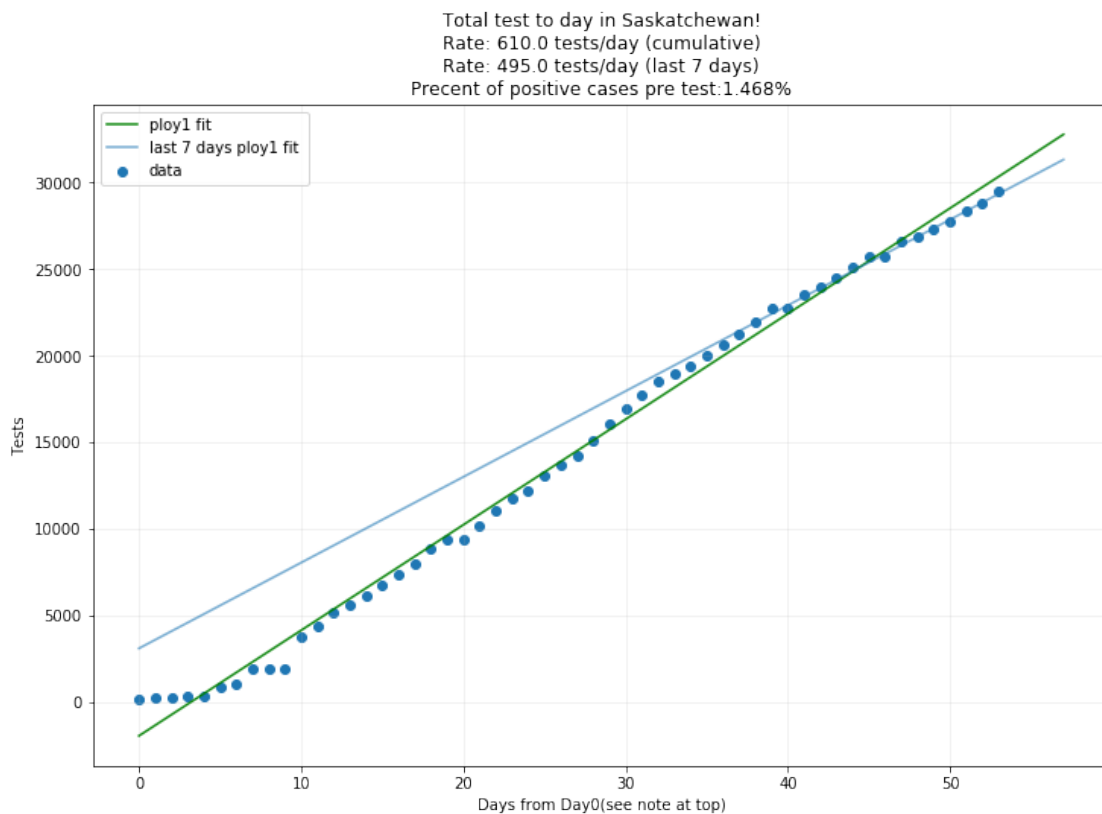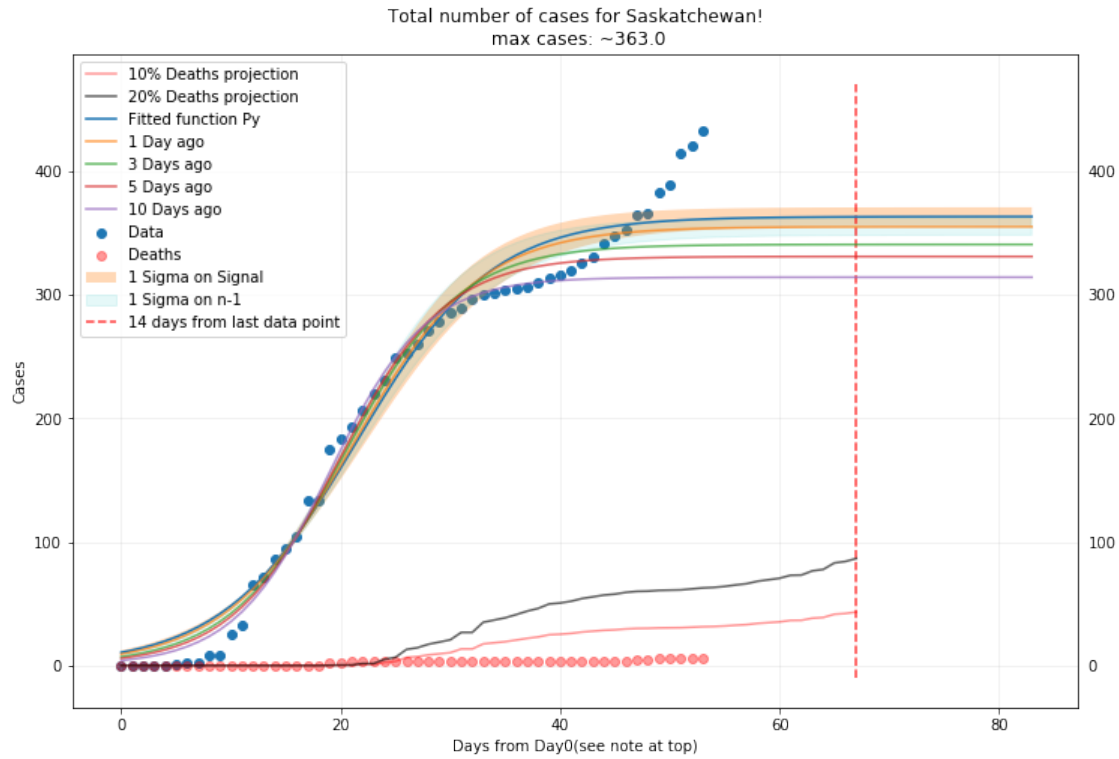n+1: 361.0
Sigma-: 353.0

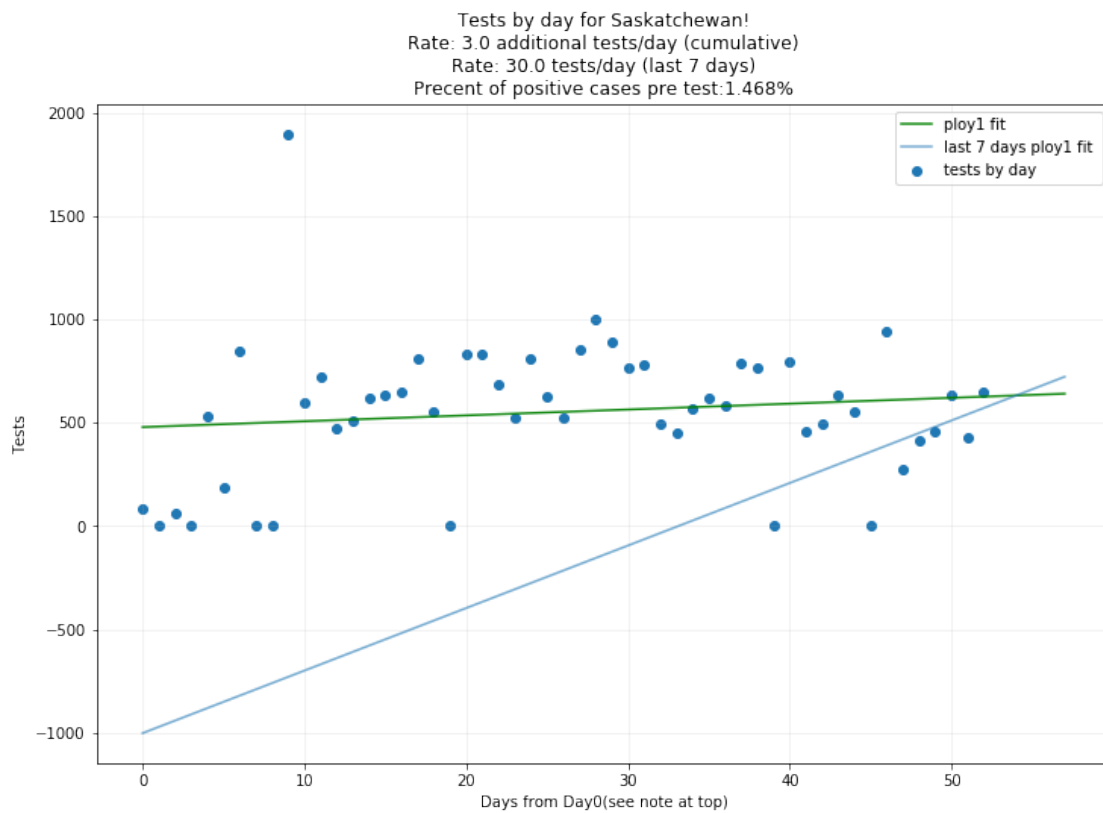
params PY: [3.63292608e+02 1.63025462e-01 2.14994775e+01]
PY sigma: [7.52985777 0.01229163 0.55565607]
max cases: 363.0
infection point: 21.0
infection point date: 2020-02-21

Total number of cases for Saskatchewan!
max cases: ~363.0

Total test to day in Saskatchewan!
Rate: 610.0 tests/day (cumulative)
Rate: 495.0 tests/day (last 7 days)
Precent of positive cases pre test:1.468%

Tests by day for Saskatchewan!
Rate: 3.0 additional tests/day (cumulative)
Rate: 30.0 tests/day (last 7 days)
Precent of positive cases pre test:1.468%

Precent of positive cases pre test: 1.468 %