Diagnosis for FL07

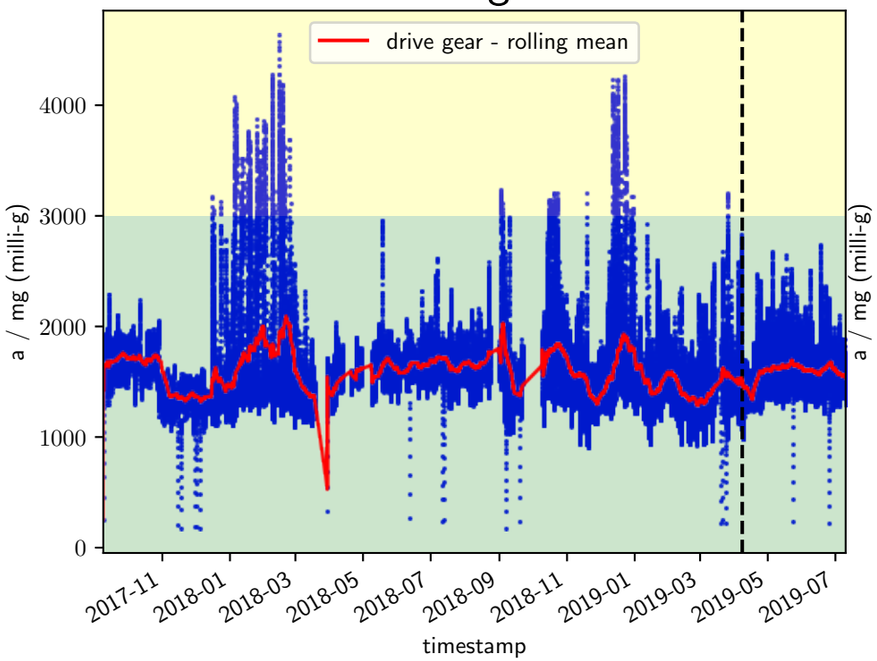
Categorization of measurements

Acceleration sensors

Time interval: all data

Acceleration sensors all data

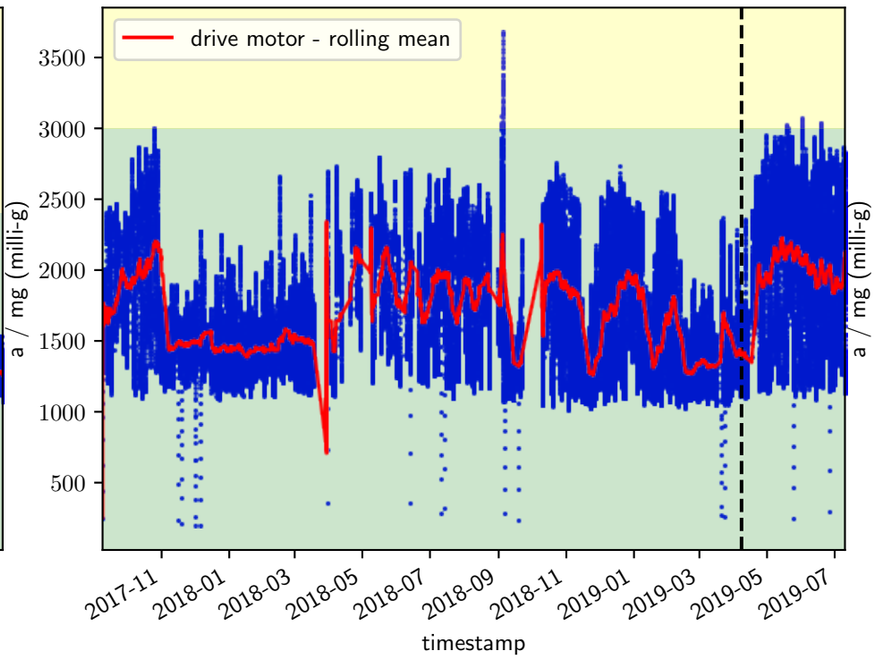
drive gear



Good: $151517/152855 = 99\%$
Satisfactory: $1338/152855 = 1\%$
Unsatisfactory: $0/152855 = 0\%$
Unacceptable: $0/152855 = 0\%$

Satisfactory

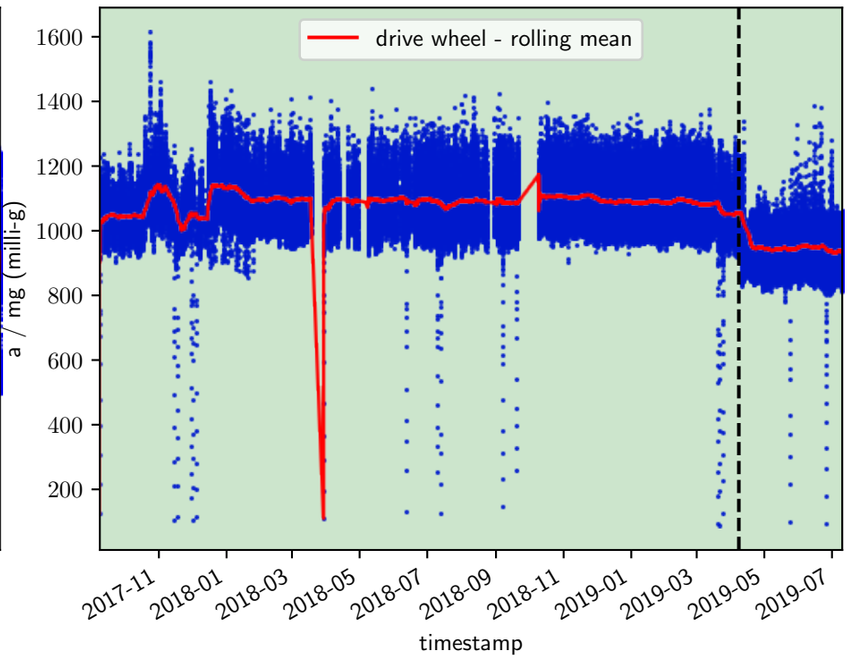
drive motor



Good: $152763/152856 = 100\%$
Satisfactory: $93/152856 = 0\%$
Unsatisfactory: $0/152856 = 0\%$
Unacceptable: $0/152856 = 0\%$

Satisfactory

drive wheel

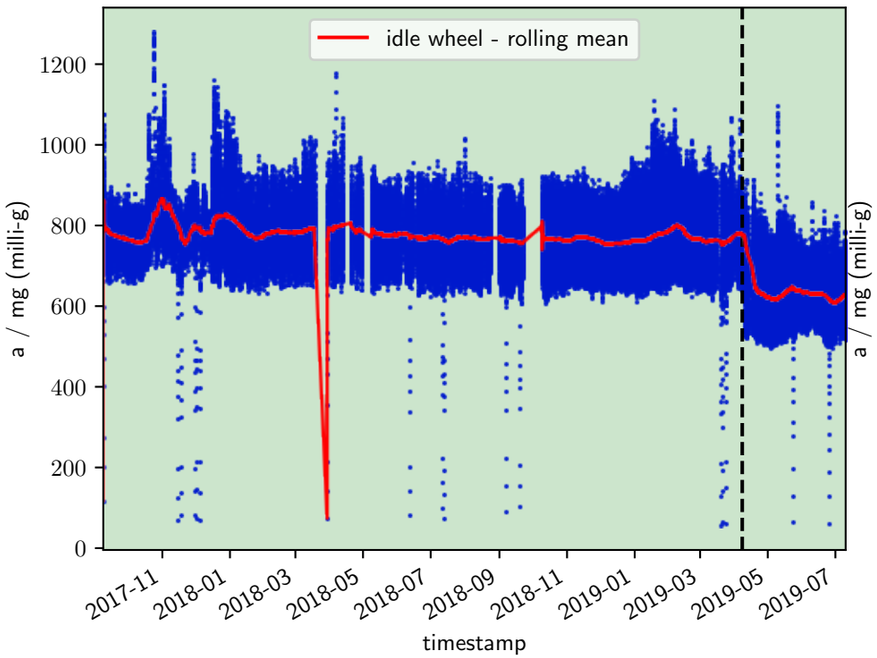


Good: $152878/152878 = 100\%$
Satisfactory: $0/152878 = 0\%$
Unsatisfactory: $0/152878 = 0\%$
Unacceptable: $0/152878 = 0\%$

Good

Acceleration sensors all data

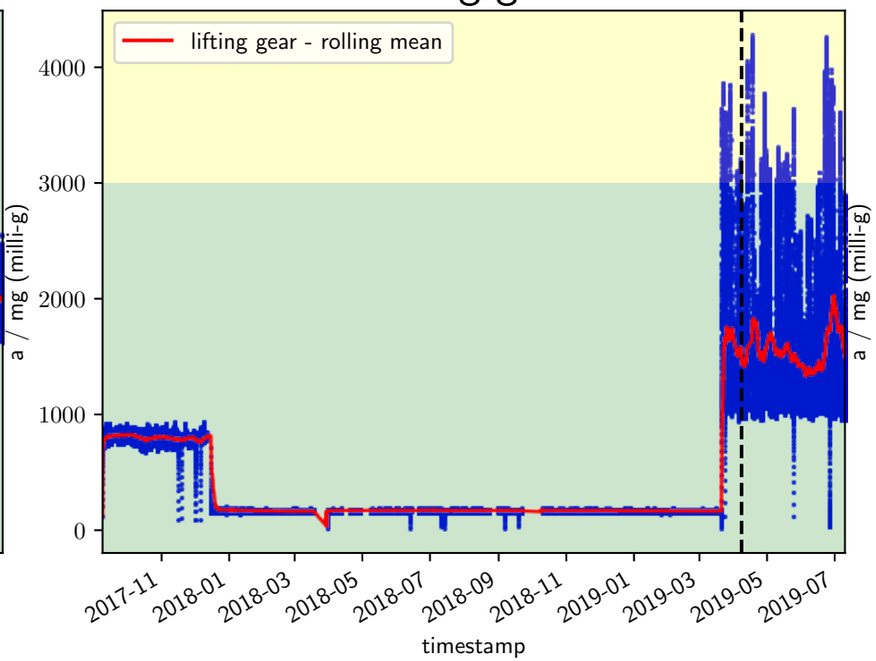
idle wheel



Good: $152878/152878 = 100\%$
Satisfactory: $0/152878 = 0\%$
Unsatisfactory: $0/152878 = 0\%$
Unacceptable: $0/152878 = 0\%$

Good

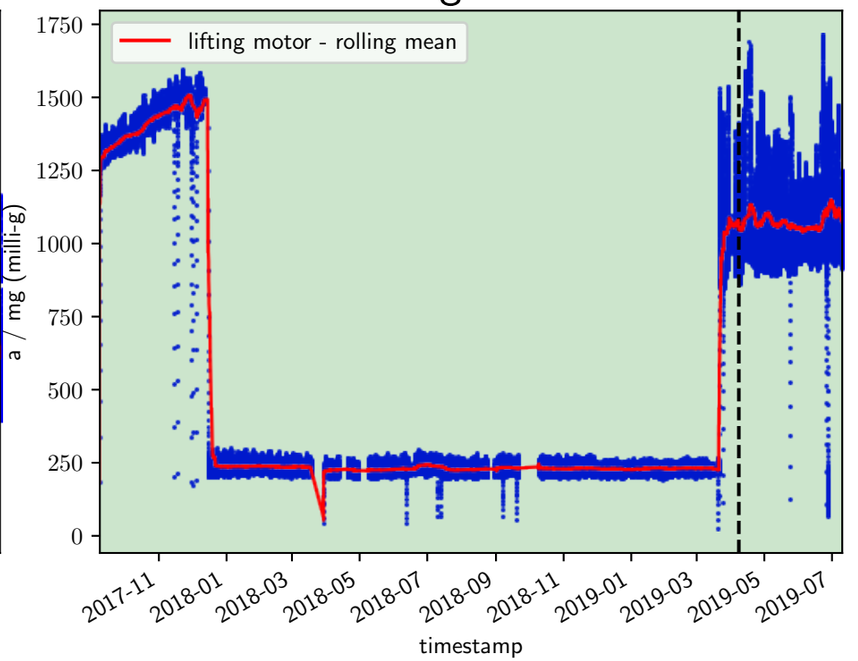
lifting gear



Good: $160405/163208 = 98\%$
Satisfactory: $2803/163208 = 2\%$
Unsatisfactory: $0/163208 = 0\%$
Unacceptable: $0/163208 = 0\%$

Satisfactory

lifting motor



Good: $163219/163219 = 100\%$
Satisfactory: $0/163219 = 0\%$
Unsatisfactory: $0/163219 = 0\%$
Unacceptable: $0/163219 = 0\%$

Good

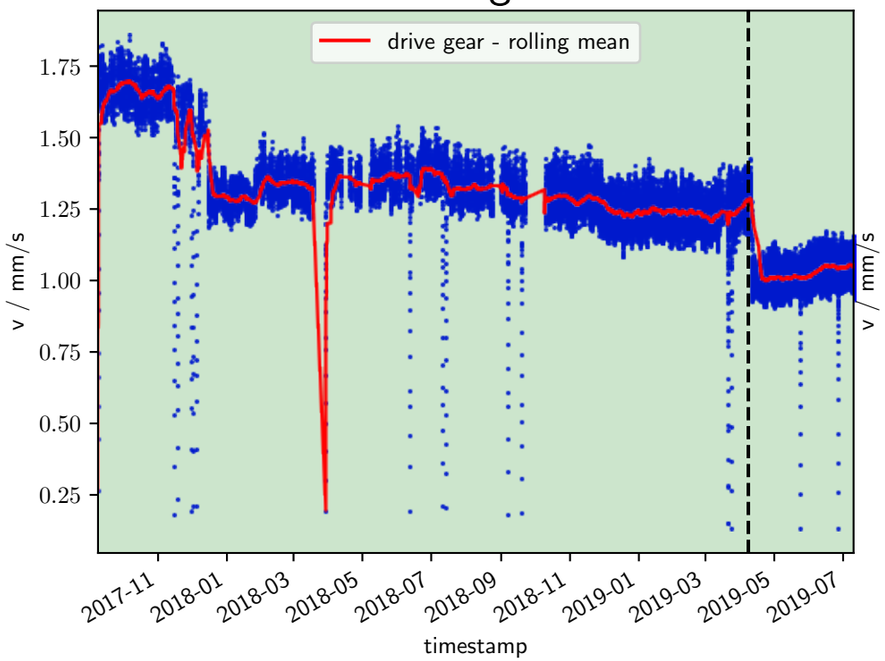
Categorization of measurements

Velocity sensors

Time interval: all data

Velocity sensors all data

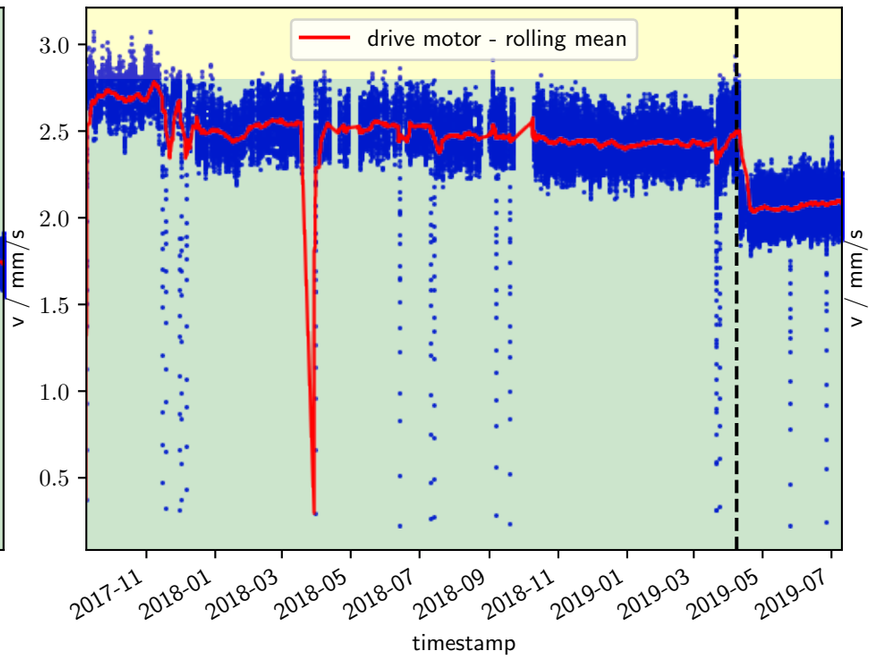
drive gear



Good: $42683/42683 = 100\%$
Satisfactory: $0/42683 = 0\%$
Unsatisfactory: $0/42683 = 0\%$
Unacceptable: $0/42683 = 0\%$

Good

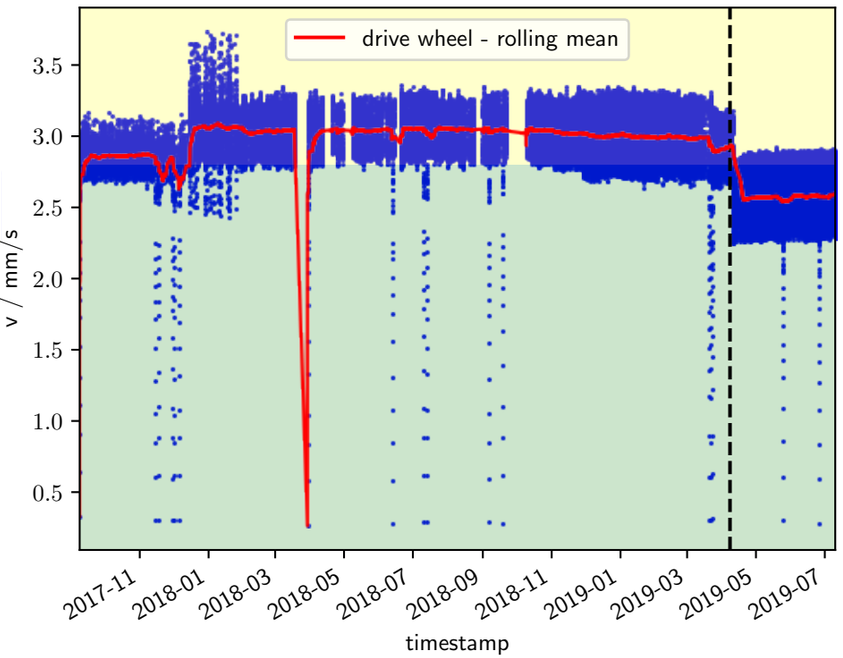
drive motor



Good: $44132/44521 = 99\%$
Satisfactory: $389/44521 = 1\%$
Unsatisfactory: $0/44521 = 0\%$
Unacceptable: $0/44521 = 0\%$

Satisfactory

drive wheel

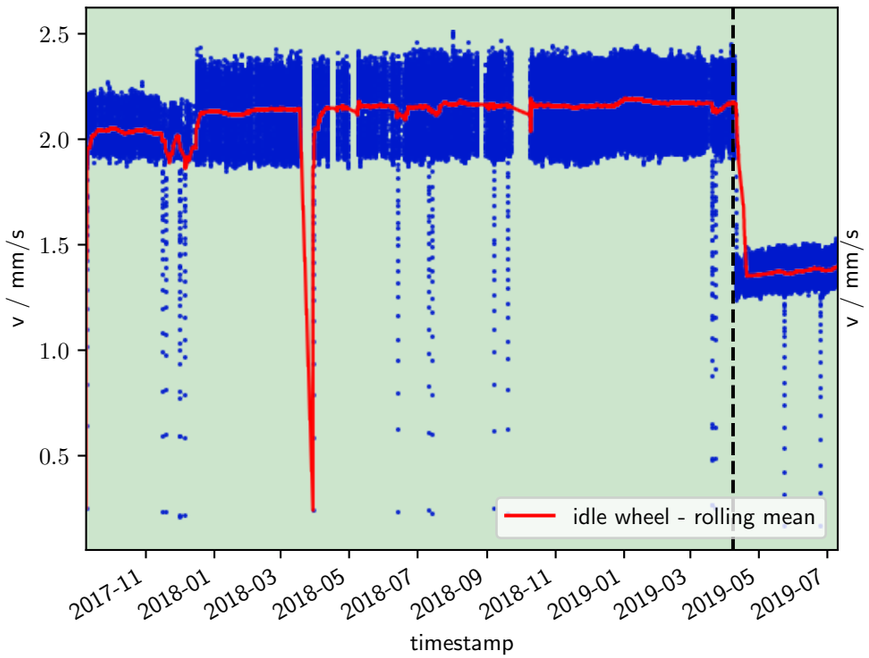


Good: $18320/71501 = 26\%$
Satisfactory: $53181/71501 = 74\%$
Unsatisfactory: $0/71501 = 0\%$
Unacceptable: $0/71501 = 0\%$

Satisfactory

Velocity sensors all data

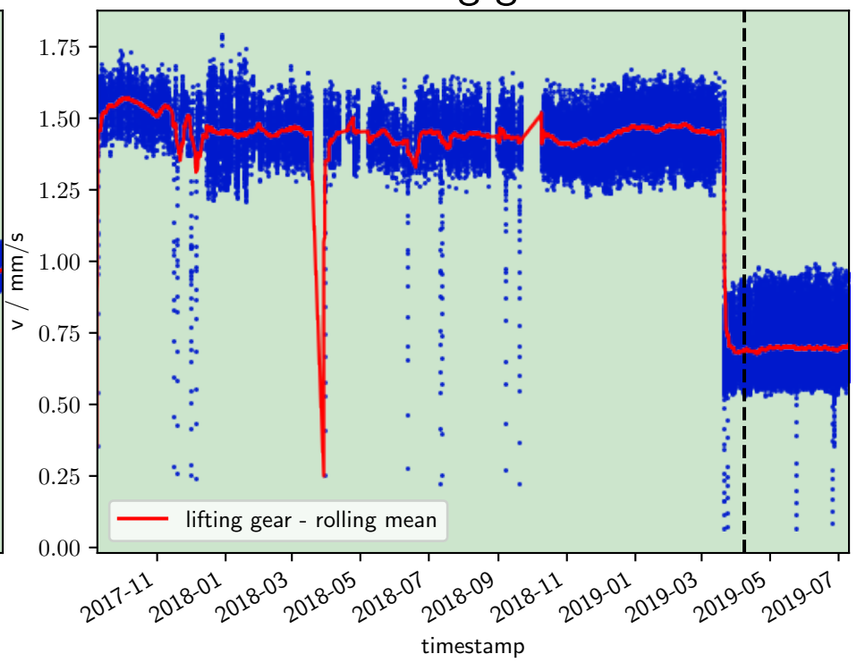
idle wheel



Good: $69650/69650 = 100\%$
Satisfactory: $0/69650 = 0\%$
Unsatisfactory: $0/69650 = 0\%$
Unacceptable: $0/69650 = 0\%$

Good

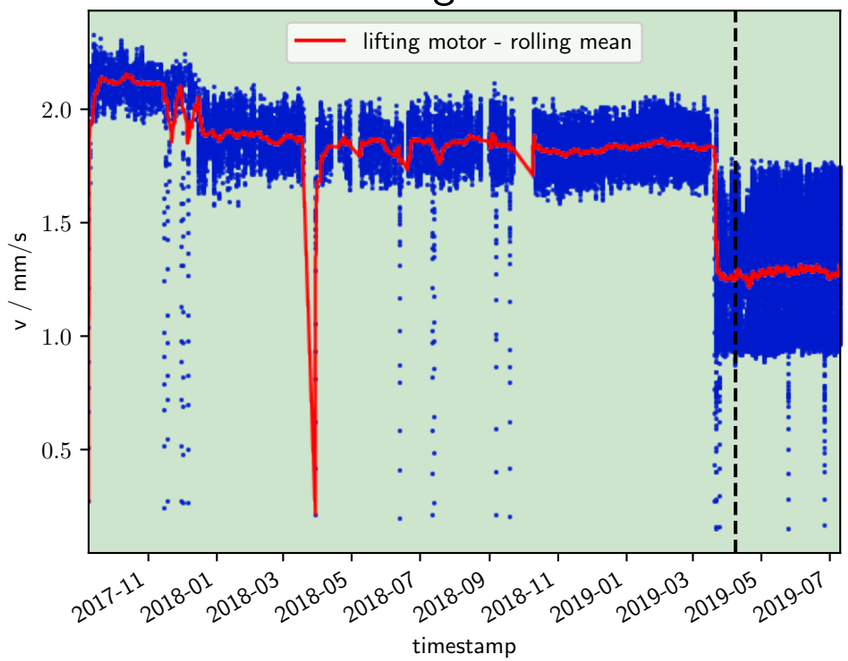
lifting gear



Good: $48794/48794 = 100\%$
Satisfactory: $0/48794 = 0\%$
Unsatisfactory: $0/48794 = 0\%$
Unacceptable: $0/48794 = 0\%$

Good

lifting motor



Good: $49530/49530 = 100\%$
Satisfactory: $0/49530 = 0\%$
Unsatisfactory: $0/49530 = 0\%$
Unacceptable: $0/49530 = 0\%$

Good

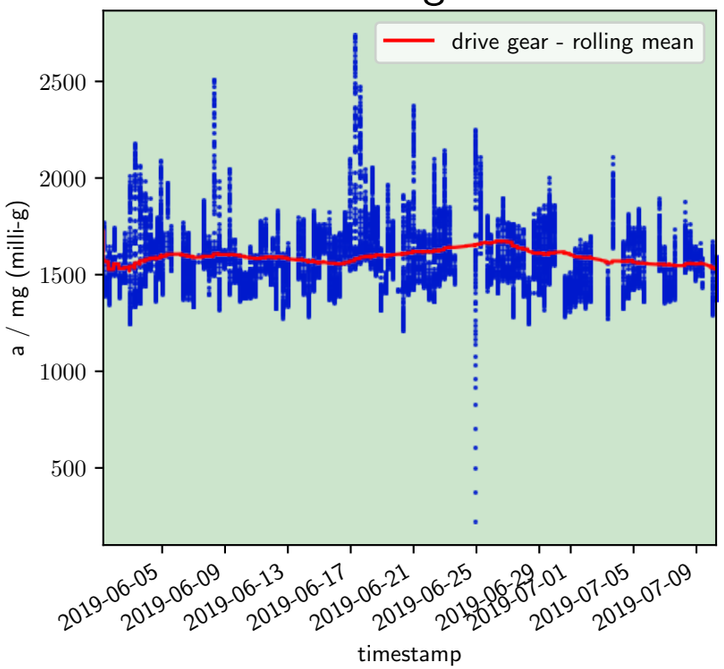
Categorization of measurements

Acceleration sensors

Time interval: from 2019-06-01 to 2019-07-11

Acceleration sensors from 2019-06-01 to 2019-07-11

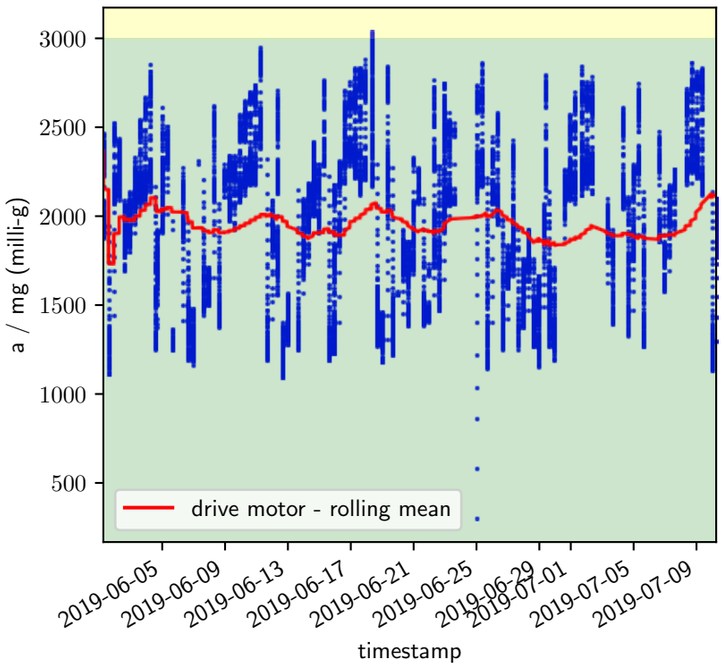
drive gear



Good: $12814/12814 = 100\%$
Satisfactory: $0/12814 = 0\%$
Unsatisfactory: $0/12814 = 0\%$
Unacceptable: $0/12814 = 0\%$

Good

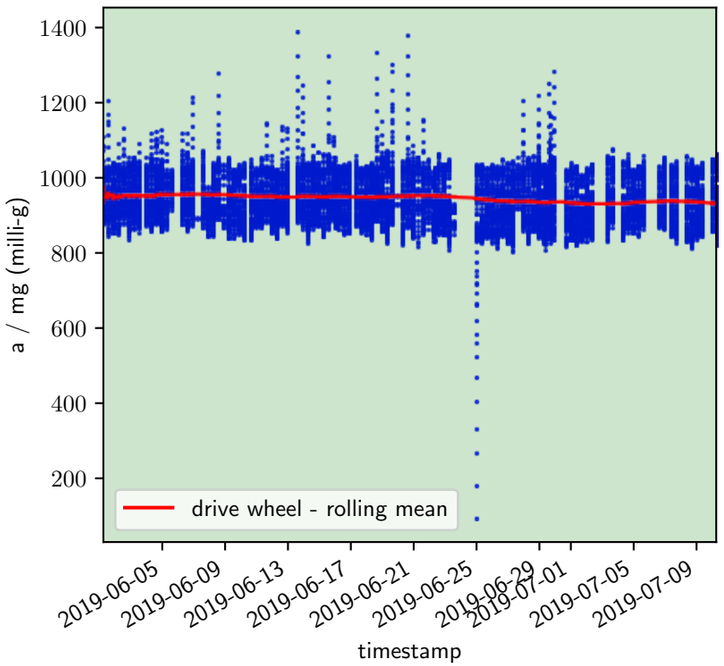
drive motor



Good: $12807/12814 = 100\%$
Satisfactory: $7/12814 = 0\%$
Unsatisfactory: $0/12814 = 0\%$
Unacceptable: $0/12814 = 0\%$

Satisfactory

drive wheel

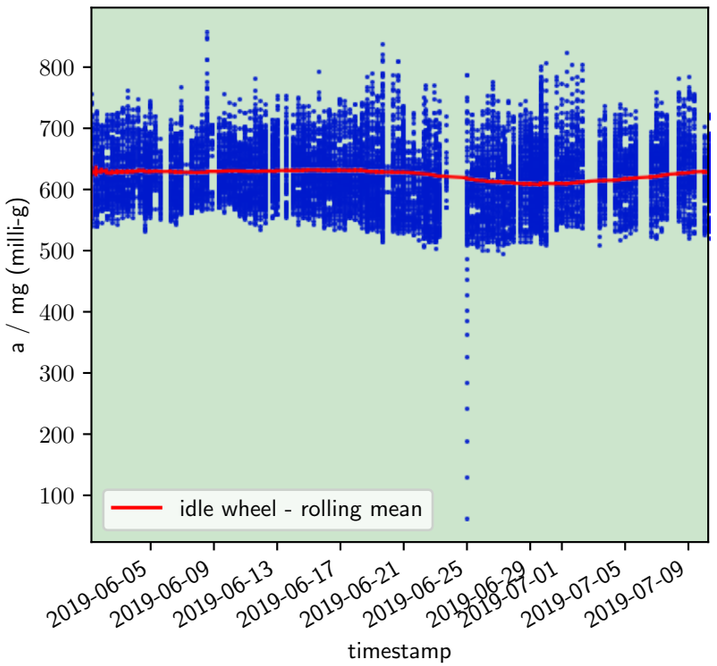


Good: $12839/12839 = 100\%$
Satisfactory: $0/12839 = 0\%$
Unsatisfactory: $0/12839 = 0\%$
Unacceptable: $0/12839 = 0\%$

Good

Acceleration sensors from 2019-06-01 to 2019-07-11

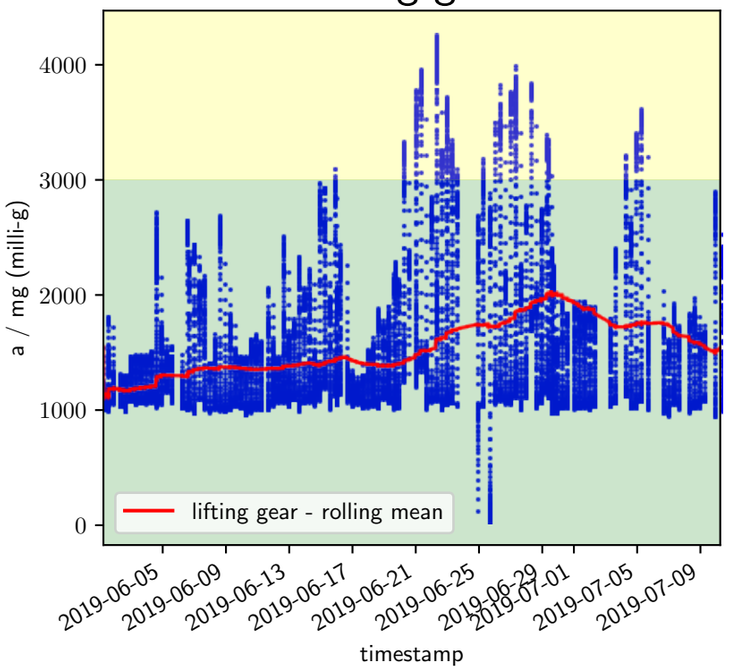
idle wheel



Good: $12840/12840 = 100\%$
Satisfactory: $0/12840 = 0\%$
Unsatisfactory: $0/12840 = 0\%$
Unacceptable: $0/12840 = 0\%$

Good

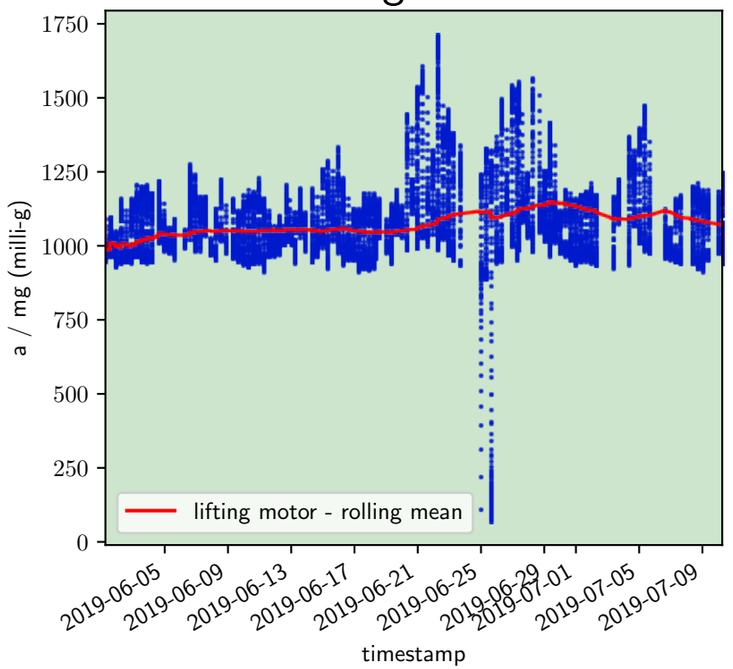
lifting gear



Good: $15534/16574 = 94\%$
Satisfactory: $1040/16574 = 6\%$
Unsatisfactory: $0/16574 = 0\%$
Unacceptable: $0/16574 = 0\%$

Satisfactory

lifting motor



Good: $16586/16586 = 100\%$
Satisfactory: $0/16586 = 0\%$
Unsatisfactory: $0/16586 = 0\%$
Unacceptable: $0/16586 = 0\%$

Good

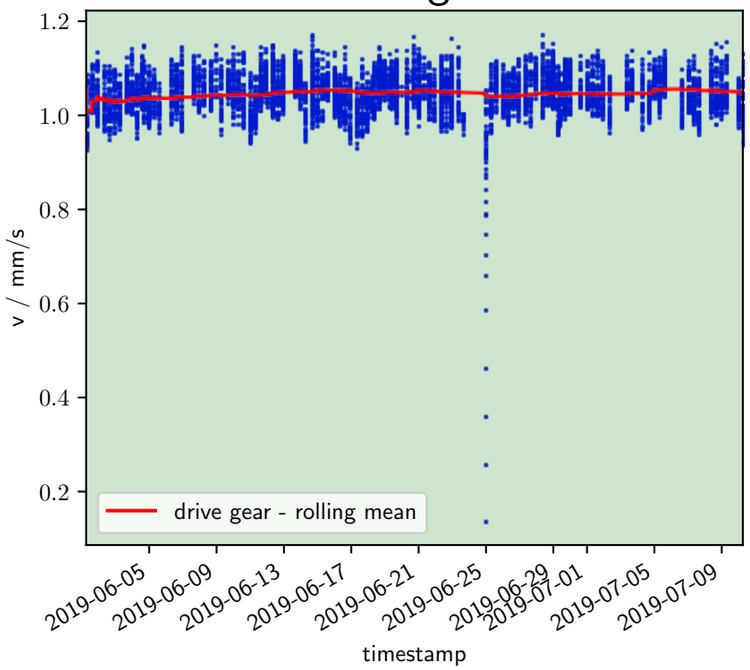
Categorization of measurements

Velocity sensors

Time interval: from 2019-06-01 to 2019-07-11

Velocity sensors from 2019-06-01 to 2019-07-11

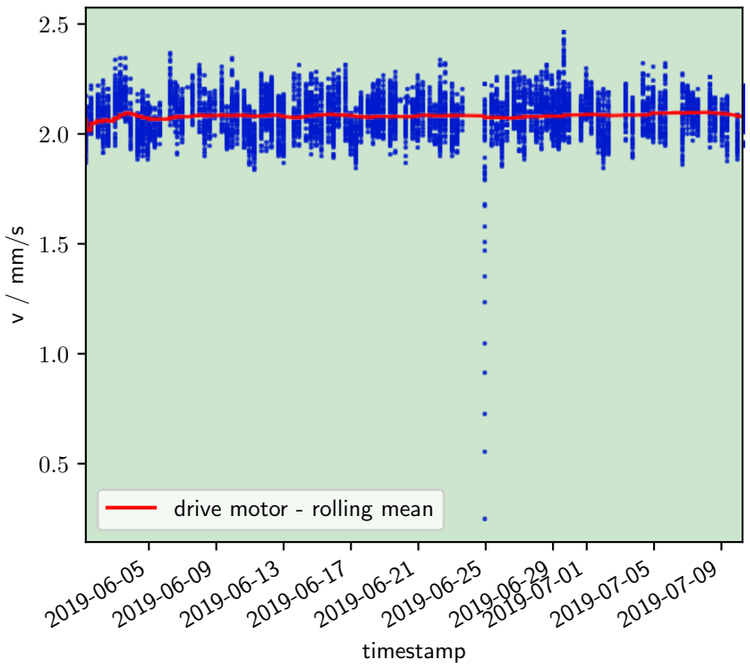
drive gear



Good: $5663/5663 = 100\%$
Satisfactory: $0/5663 = 0\%$
Unsatisfactory: $0/5663 = 0\%$
Unacceptable: $0/5663 = 0\%$

Good

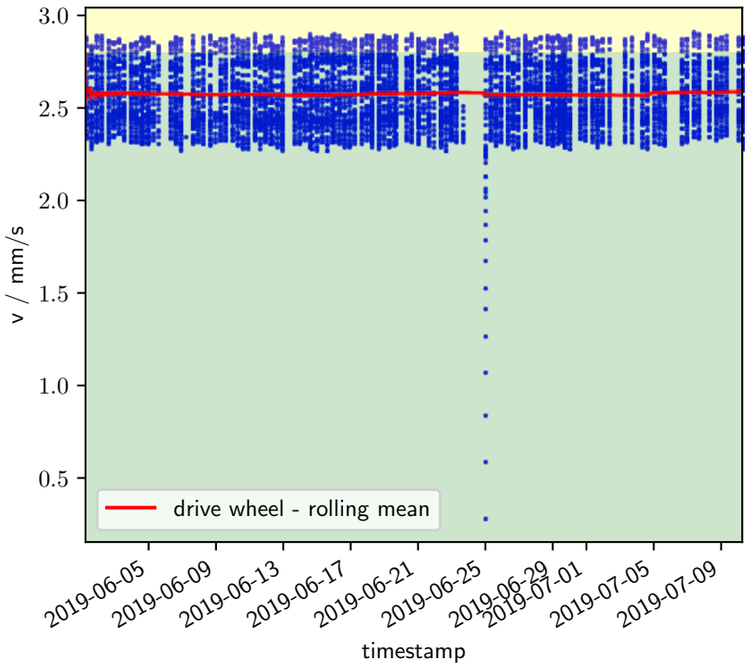
drive motor



Good: $5999/5999 = 100\%$
Satisfactory: $0/5999 = 0\%$
Unsatisfactory: $0/5999 = 0\%$
Unacceptable: $0/5999 = 0\%$

Good

drive wheel

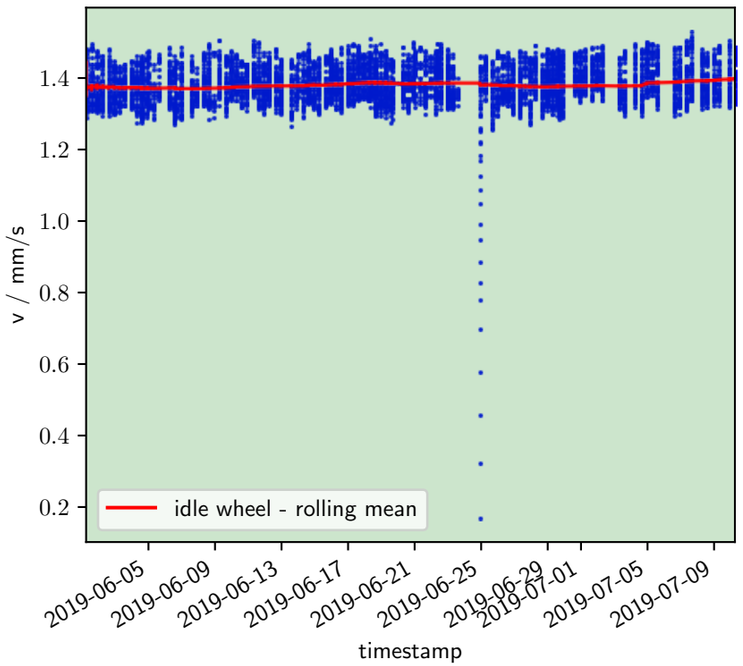


Good: $5316/6022 = 88\%$
Satisfactory: $706/6022 = 12\%$
Unsatisfactory: $0/6022 = 0\%$
Unacceptable: $0/6022 = 0\%$

Satisfactory

Velocity sensors from 2019-06-01 to 2019-07-11

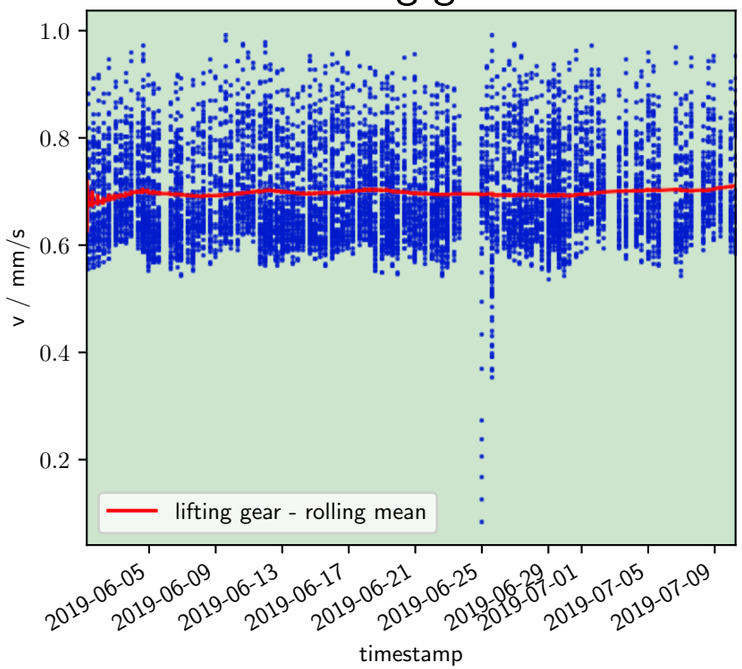
idle wheel



Good: $5683/5683 = 100\%$
Satisfactory: $0/5683 = 0\%$
Unsatisfactory: $0/5683 = 0\%$
Unacceptable: $0/5683 = 0\%$

Good

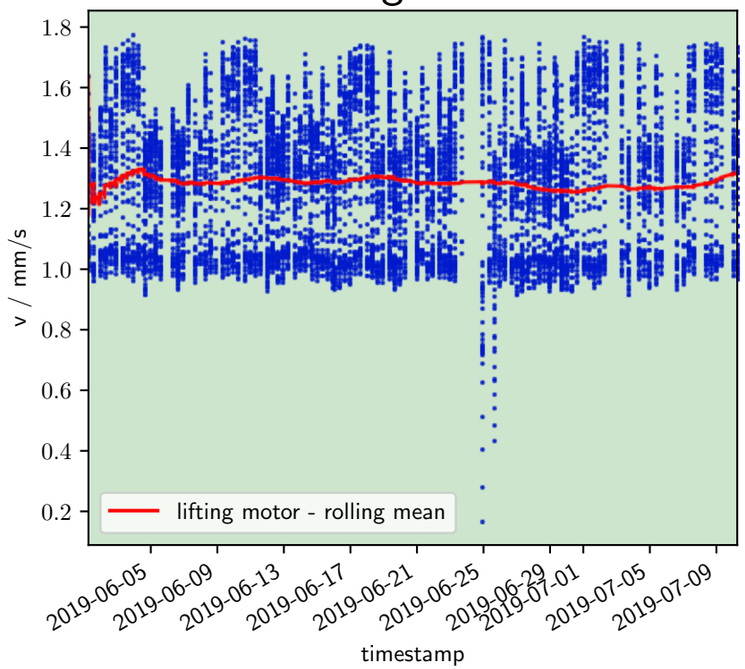
lifting gear



Good: $7460/7460 = 100\%$
Satisfactory: $0/7460 = 0\%$
Unsatisfactory: $0/7460 = 0\%$
Unacceptable: $0/7460 = 0\%$

Good

lifting motor



Good: $7690/7690 = 100\%$
Satisfactory: $0/7690 = 0\%$
Unsatisfactory: $0/7690 = 0\%$
Unacceptable: $0/7690 = 0\%$

Good

Compatibility check for velocity sensors

New data:from 2019-06-01 until 2019-07-11

Referent data: last week

Velocity sensors

drive gear

$\mu_{ref} = 1.02$
$\sigma_{ref} = 0.04$
$\sigma^2_{ref} = 0.0$

$\mu_{new} = 1.05$
$\sigma_{new} = 0.05$
$\sigma^2_{new} = 0.0$

$good_{cnt}/all_{cnt}$
5583 / 5663 = 99%

GOOD FIT

drive motor

$\mu_{ref} = 2.07$
$\sigma_{ref} = 0.07$
$\sigma^2_{ref} = 0.01$

$\mu_{new} = 2.08$
$\sigma_{new} = 0.1$
$\sigma^2_{new} = 0.01$

$good_{cnt}/all_{cnt}$
5928 / 5999 = 99%

GOOD FIT

drive wheel

$\mu_{ref} = 2.58$
$\sigma_{ref} = 0.16$
$\sigma^2_{ref} = 0.03$

$\mu_{new} = 2.58$
$\sigma_{new} = 0.17$
$\sigma^2_{new} = 0.03$

$good_{cnt}/all_{cnt}$
6008 / 6022 = 100%

GOOD FIT

idle wheel

$\mu_{ref} = 1.37$
$\sigma_{ref} = 0.05$
$\sigma^2_{ref} = 0.0$

$\mu_{new} = 1.38$
$\sigma_{new} = 0.06$
$\sigma^2_{new} = 0.0$

$good_{cnt}/all_{cnt}$
5663 / 5683 = 100%

GOOD FIT

lifting gear

$\mu_{ref} = 0.7$
$\sigma_{ref} = 0.08$
$\sigma^2_{ref} = 0.01$

$\mu_{new} = 0.7$
$\sigma_{new} = 0.09$
$\sigma^2_{new} = 0.01$

$good_{cnt}/all_{cnt}$
7415 / 7460 = 99%

GOOD FIT

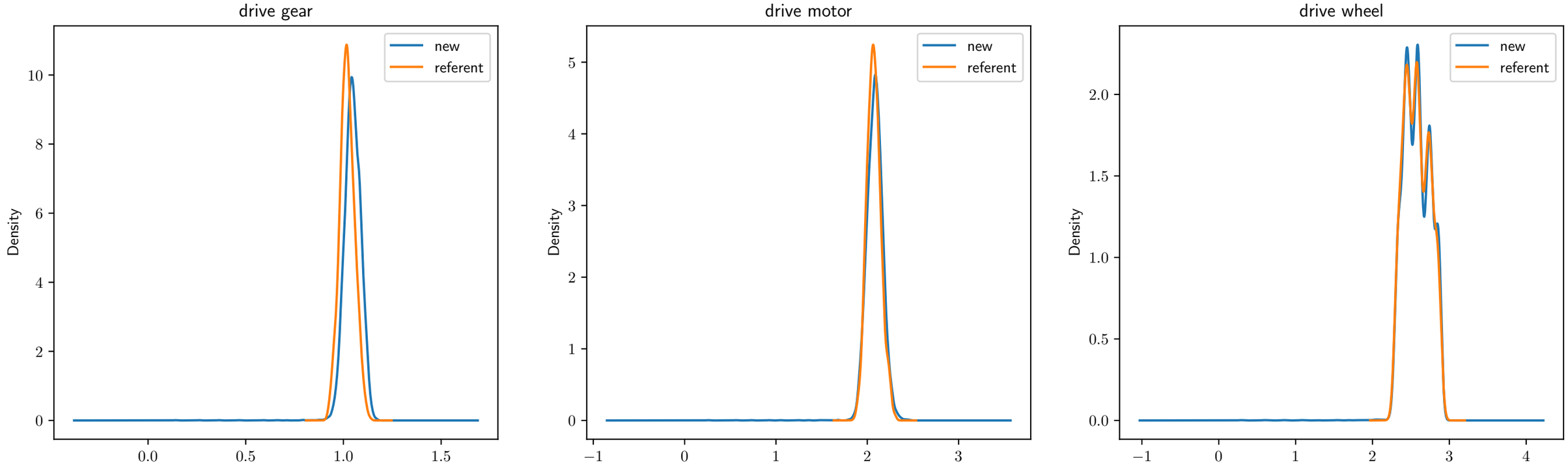
lifting motor

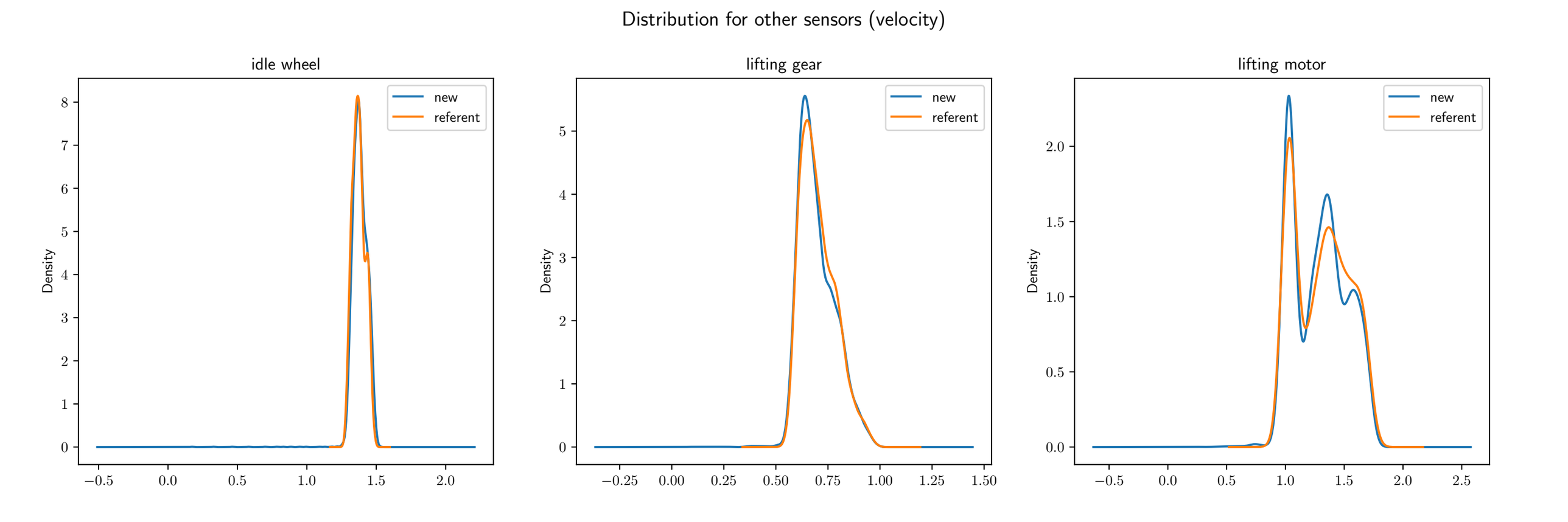
$\mu_{ref} = 1.3$
$\sigma_{ref} = 0.23$
$\sigma^2_{ref} = 0.05$

$\mu_{new} = 1.29$
$\sigma_{new} = 0.23$
$\sigma^2_{new} = 0.05$

$good_{cnt}/all_{cnt}$
7682 / 7690 = 100%

GOOD FIT


Distribution for drive sensors (velocity)
drive gear
drive motor
drive wheel
new
referent
Density
0.0
0.5
1.0
1.5
−1
0
1
2
3
4
0
2
4
6
8
10
0.0
0.5
1.0
1.5
2.0


Distribution for other sensors (velocity)
idle wheel
lifting gear
lifting motor
new
referent
Density
0
1
2
3
4
5
6
7
8
0.0
0.5
1.0
1.5
2.0
−0.5
0.0
0.5
1.0
1.5
2.0
−0.25
0.00
0.25
0.50
0.75
1.00
1.25
1.50
2.5

Compatibility check for acceleration sensors

New data:from 2019-06-01 until 2019-07-11

Referent data: last week

Acceleration sensors

drive gear

$\mu_{ref} = 1607.76$
$\sigma_{ref} = 131.67$
$\sigma^2_{ref} = 17338.02$

$\mu_{new} = 1591.45$
$\sigma_{new} = 176.35$
$\sigma^2_{new} = 31100.6$

$good_{cnt}/all_{cnt}$
12457 / 12814 = 97%

GOOD FIT

drive motor

$\mu_{ref} = 2114.53$
$\sigma_{ref} = 415.29$
$\sigma^2_{ref} = 172463.23$

$\mu_{new} = 1961.01$
$\sigma_{new} = 436.06$
$\sigma^2_{new} = 190152.33$

$good_{cnt}/all_{cnt}$
12811 / 12814 = 100%

GOOD FIT

drive wheel

$\mu_{ref} = 950.69$
$\sigma_{ref} = 53.97$
$\sigma^2_{ref} = 2912.48$

$\mu_{new} = 943.35$
$\sigma_{new} = 62.06$
$\sigma^2_{new} = 3850.9$

$good_{cnt}/all_{cnt}$
12728 / 12839 = 99%

GOOD FIT

idle wheel

$\mu_{ref} = 635.85$
$\sigma_{ref} = 43.51$
$\sigma^2_{ref} = 1893.54$

$\mu_{new} = 623.44$
$\sigma_{new} = 50.85$
$\sigma^2_{new} = 2586.01$

$good_{cnt}/all_{cnt}$
12748 / 12840 = 99%

GOOD FIT

lifting gear

$\mu_{ref} = 1382.03$
$\sigma_{ref} = 355.66$
$\sigma^2_{ref} = 126490.74$

$\mu_{new} = 1580.29$
$\sigma_{new} = 685.21$
$\sigma^2_{new} = 469519.18$

$good_{cnt}/all_{cnt}$
14510 / 16574 = 88%

PARTIAL FIT

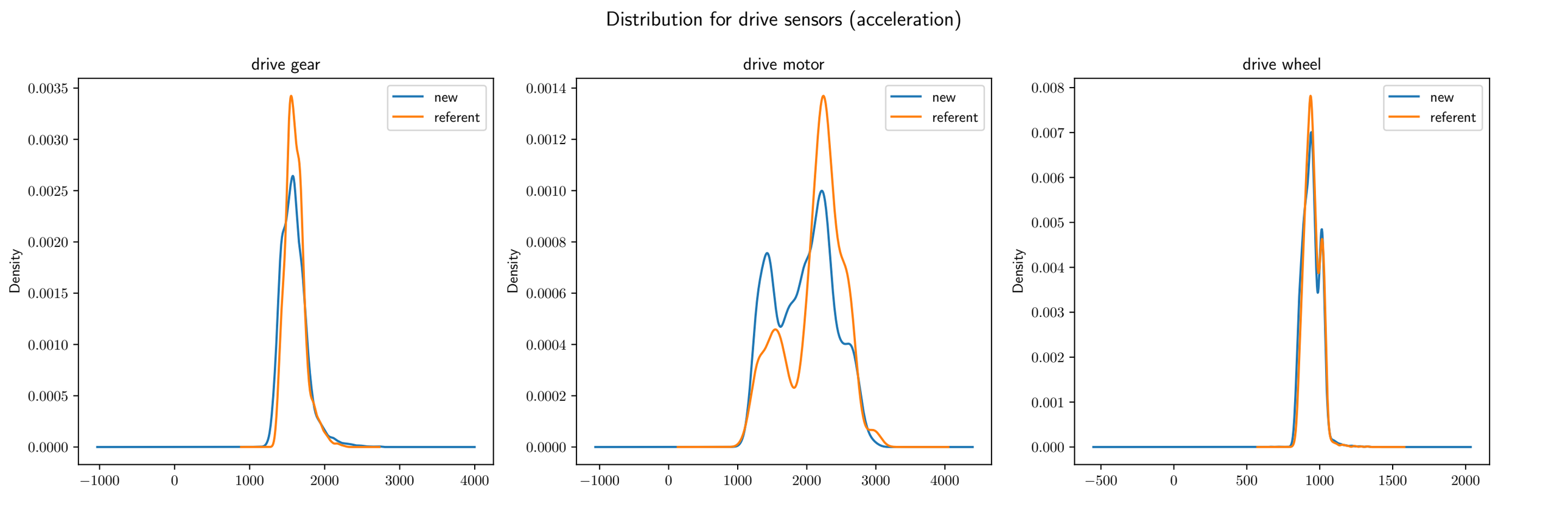
lifting motor

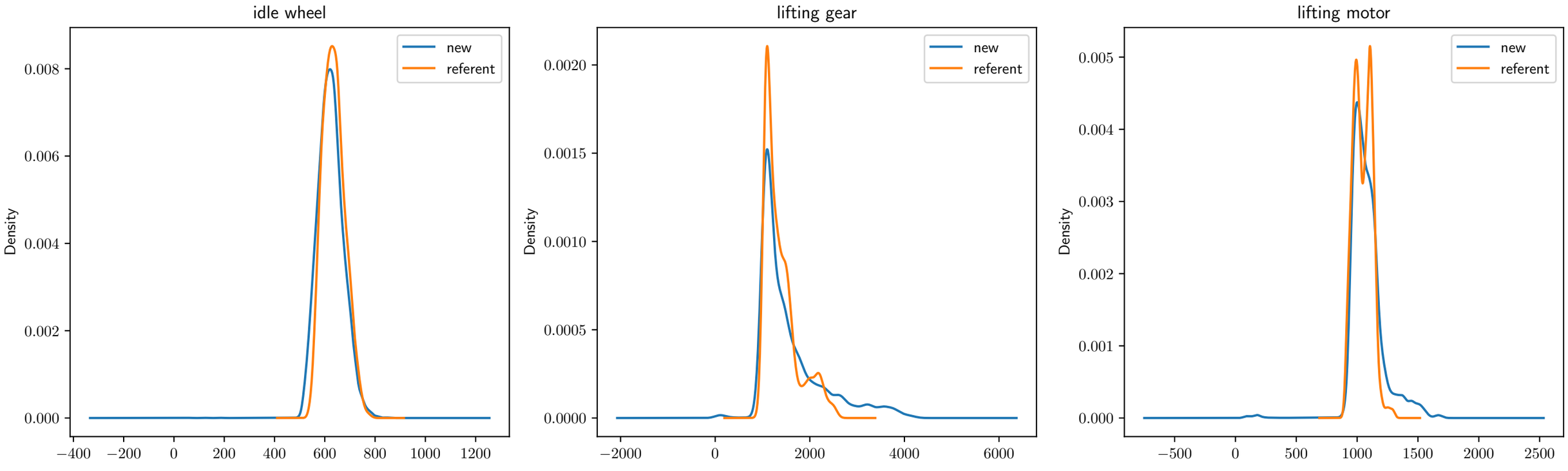
$\mu_{ref} = 1046.47$
$\sigma_{ref} = 73.93$
$\sigma^2_{ref} = 5465.12$

$\mu_{new} = 1080.89$
$\sigma_{new} = 142.05$
$\sigma^2_{new} = 20177.52$

$good_{cnt}/all_{cnt}$
15139 / 16586 = 91%

GOOD FIT


Distribution for drive sensors (acceleration)
drive gear
drive motor
drive wheel
new
referent
Density
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0.0014
0.0012
0.0008
0.0006
0.0004
0.0002
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
−1000
0
1000
2000
3000
4000
−500
500
1500


Distribution for other sensors (acceleration)
idle wheel
lifting gear
lifting motor
new
referent
Density
0.008
0.006
0.004
0.002
0.000
−400
−200
0
200
400
600
800
1000
1200
0.0020
0.0015
0.0010
0.0005
0.0000
−2000
0
2000
4000
6000
0.005
0.004
0.003
0.002
0.001
0.000
−500
0
500
1000
1500
2000
2500

Compatibility check for velocity sensors

New data:from 2019-06-01 until 2019-07-11

Referent data: last 30 days

Velocity sensors

drive gear

$\mu_{ref} = 1.01$
$\sigma_{ref} = 0.04$
$\sigma^2_{ref} = 0.0$

$\mu_{new} = 1.05$
$\sigma_{new} = 0.05$
$\sigma^2_{new} = 0.0$

$good_{cnt}/all_{cnt}$
5616 / 5663 = 99%

GOOD FIT

drive motor

$\mu_{ref} = 2.05$
$\sigma_{ref} = 0.09$
$\sigma^2_{ref} = 0.01$

$\mu_{new} = 2.08$
$\sigma_{new} = 0.1$
$\sigma^2_{new} = 0.01$

$good_{cnt}/all_{cnt}$
5962 / 5999 = 99%

GOOD FIT

drive wheel

$\mu_{ref} = 2.56$
$\sigma_{ref} = 0.18$
$\sigma^2_{ref} = 0.03$

$\mu_{new} = 2.58$
$\sigma_{new} = 0.17$
$\sigma^2_{new} = 0.03$

$good_{cnt}/all_{cnt}$
6010 / 6022 = 100%

GOOD FIT

idle wheel

$\mu_{ref} = 1.37$
$\sigma_{ref} = 0.06$
$\sigma^2_{ref} = 0.0$

$\mu_{new} = 1.38$
$\sigma_{new} = 0.06$
$\sigma^2_{new} = 0.0$

$good_{cnt}/all_{cnt}$
5668 / 5683 = 100%

GOOD FIT

lifting gear

$\mu_{ref} = 0.7$
$\sigma_{ref} = 0.09$
$\sigma^2_{ref} = 0.01$

$\mu_{new} = 0.7$
$\sigma_{new} = 0.09$
$\sigma^2_{new} = 0.01$

$good_{cnt}/all_{cnt}$
7426 / 7460 = 100%

GOOD FIT

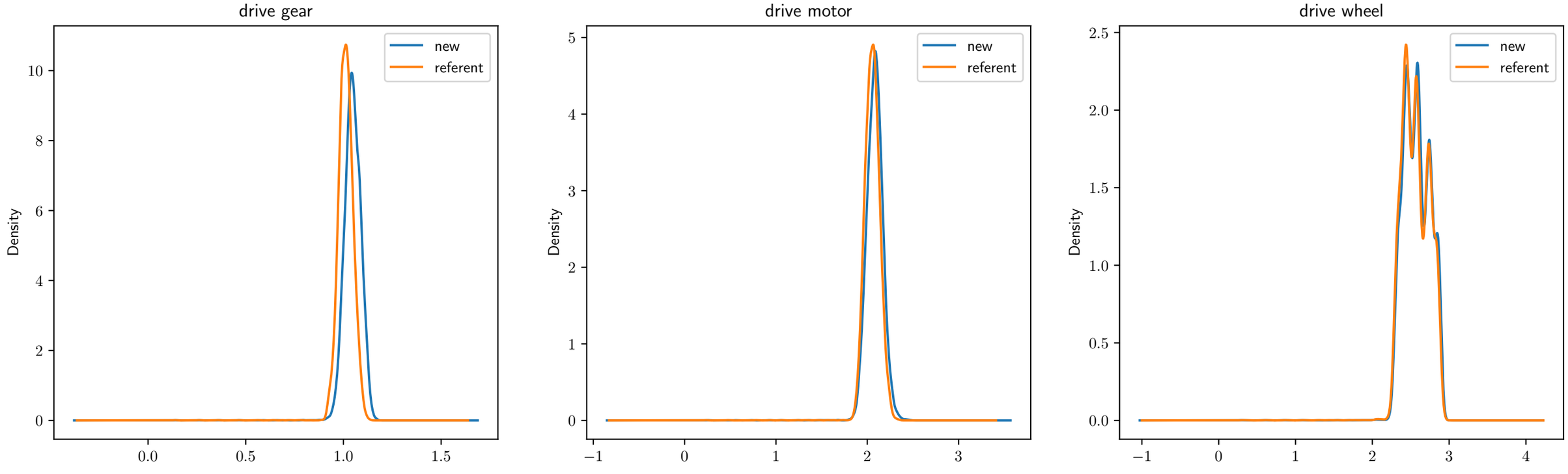
lifting motor

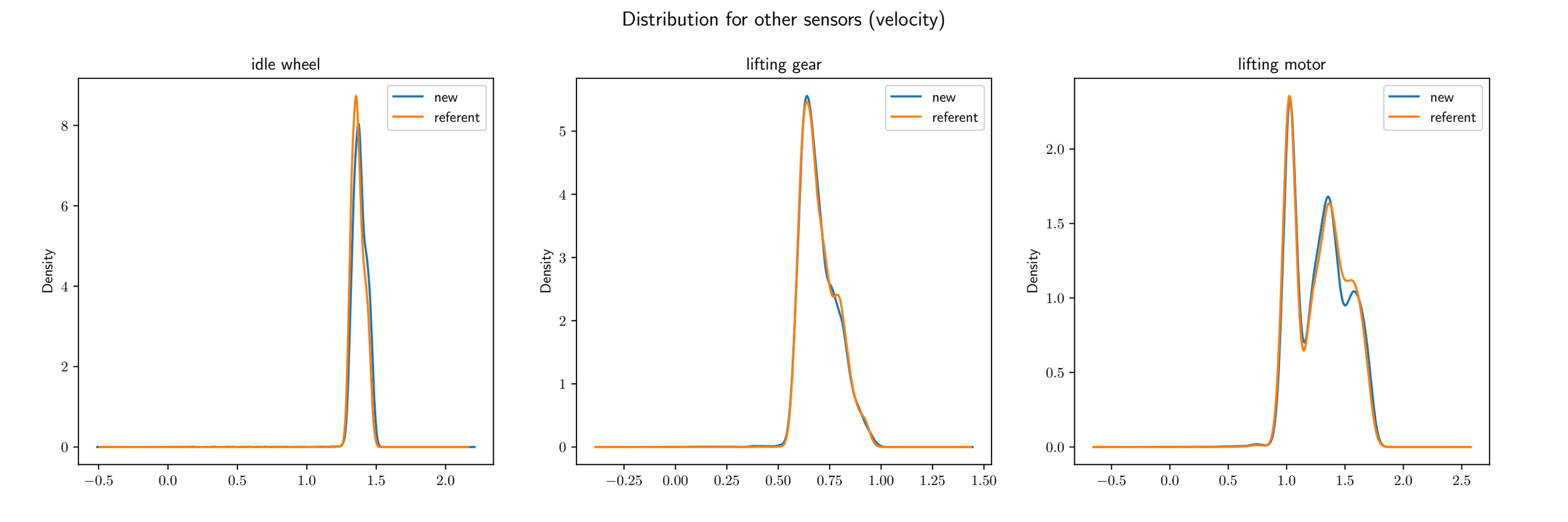
$\mu_{ref} = 1.29$
$\sigma_{ref} = 0.23$
$\sigma^2_{ref} = 0.05$

$\mu_{new} = 1.29$
$\sigma_{new} = 0.23$
$\sigma^2_{new} = 0.05$

$good_{cnt}/all_{cnt}$
7682 / 7690 = 100%

GOOD FIT


Distribution for drive sensors (velocity)
drive gear
drive motor
drive wheel
new
referent
Density
0.0
0.5
1.0
1.5
−1
0
1
2
3
4

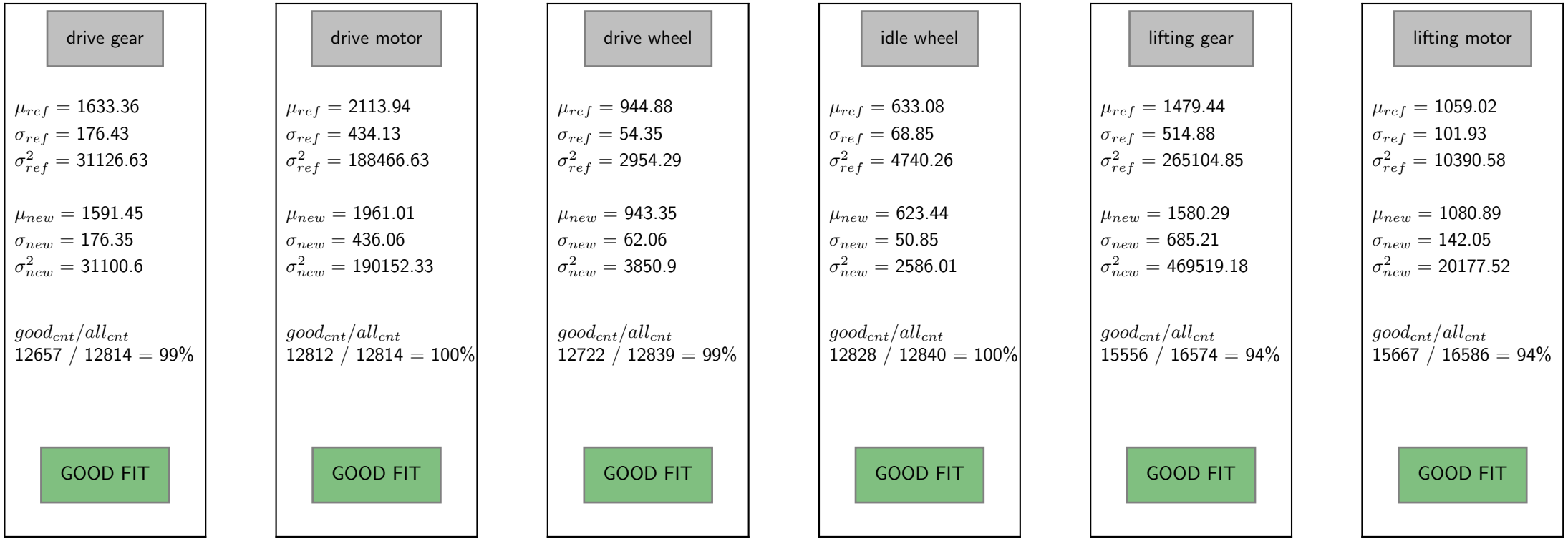

Distribution for other sensors (velocity)
idle wheel
lifting gear
lifting motor
new
referent
Density
−0.5
0.0
0.5
1.0
1.5
2.0
−0.25
0.00
0.25
0.50
0.75
1.00
1.25
1.50
2.5

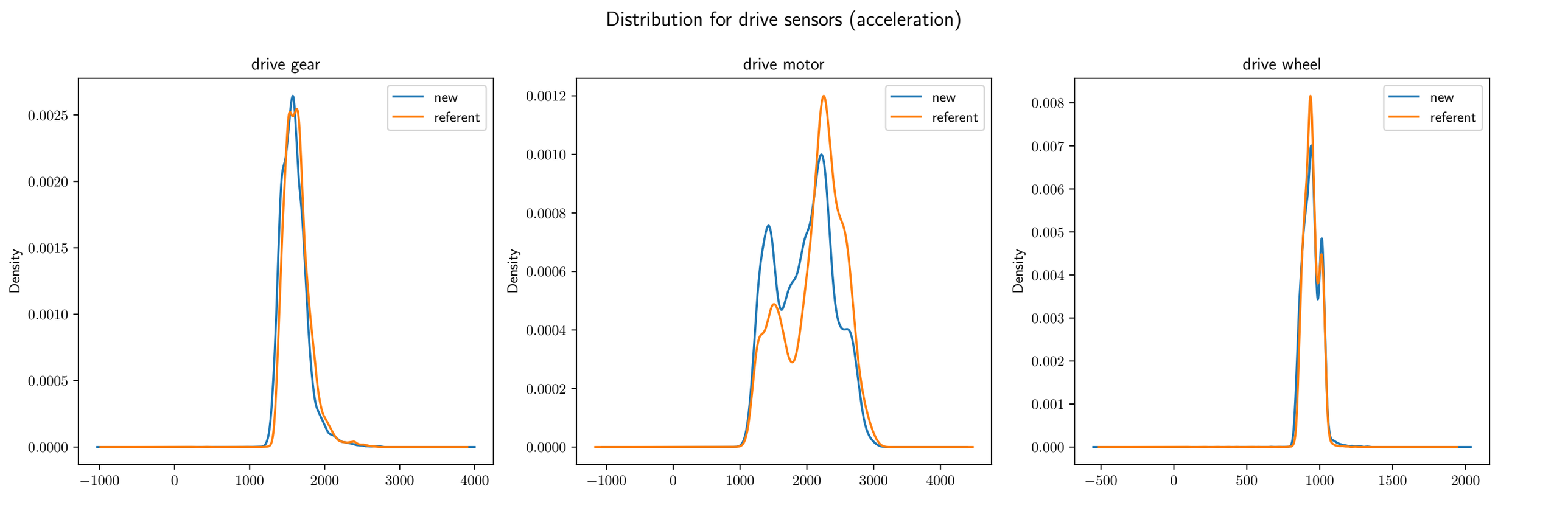
Compatibility check for acceleration sensors

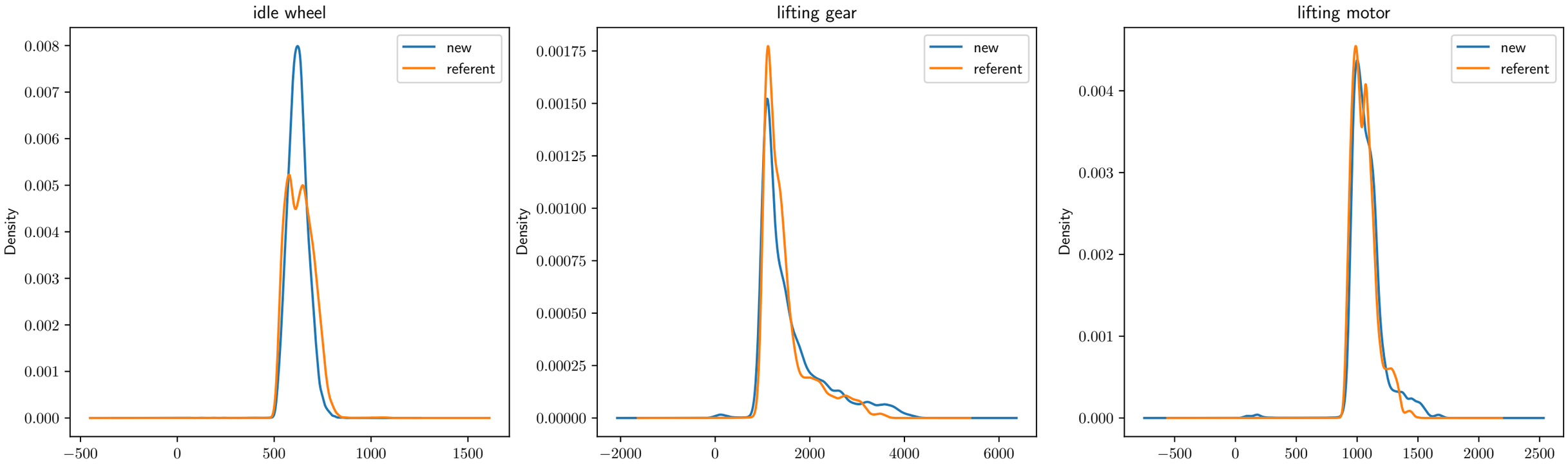
New data:from 2019-06-01 until 2019-07-11

Referent data: last 30 days

Acceleration sensors




Distribution for drive sensors (acceleration)
drive gear
drive motor
drive wheel
new
referent
Density
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0.0012
0.0008
0.0006
0.0004
0.0002
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
−1000
0
1000
2000
3000
4000
−500
500
1500


Distribution for other sensors (acceleration)
idle wheel
lifting gear
lifting motor
new
referent
Density
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
−500
0
500
1000
1500
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
0.00000
−2000
2000
4000
6000
2500

Compatibility check for velocity sensors

New data:from 2019-06-01 until 2019-07-11

Referent data: recommended distribution (from .config)

Velocity sensors

drive gear

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 1.05
σ_{new} = 0.05
σ^2_{new} = 0.0

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

drive motor

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 2.08
σ_{new} = 0.1
σ^2_{new} = 0.01

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

drive wheel

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 2.58
σ_{new} = 0.17
σ^2_{new} = 0.03

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

idle wheel

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 1.38
σ_{new} = 0.06
σ^2_{new} = 0.0

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

lifting gear

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 0.7
σ_{new} = 0.09
σ^2_{new} = 0.01

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

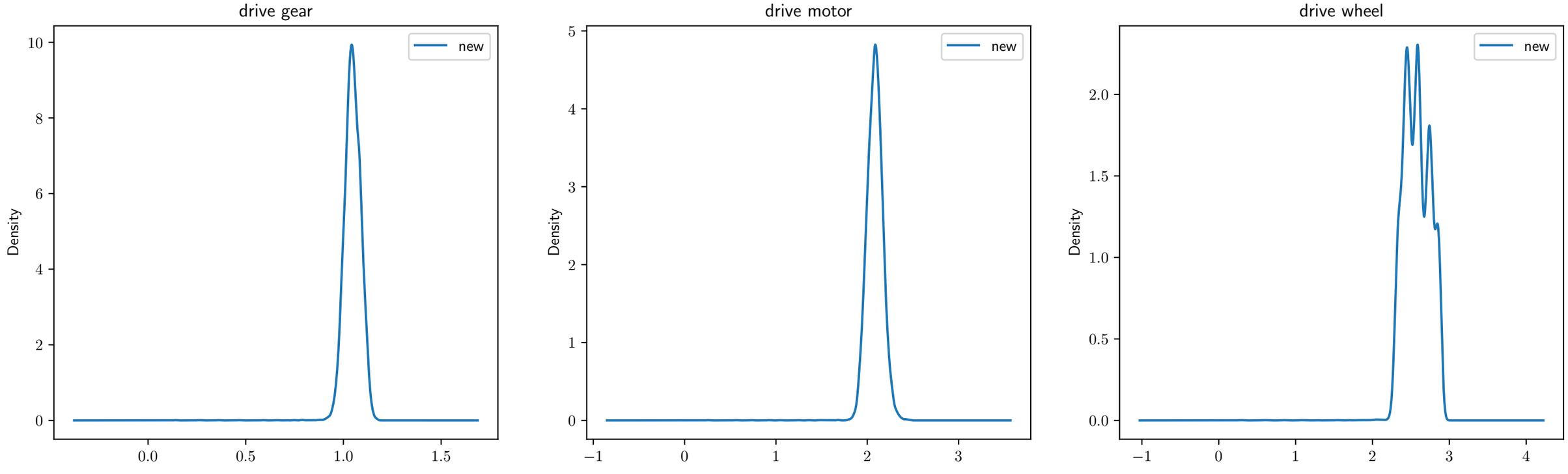
lifting motor

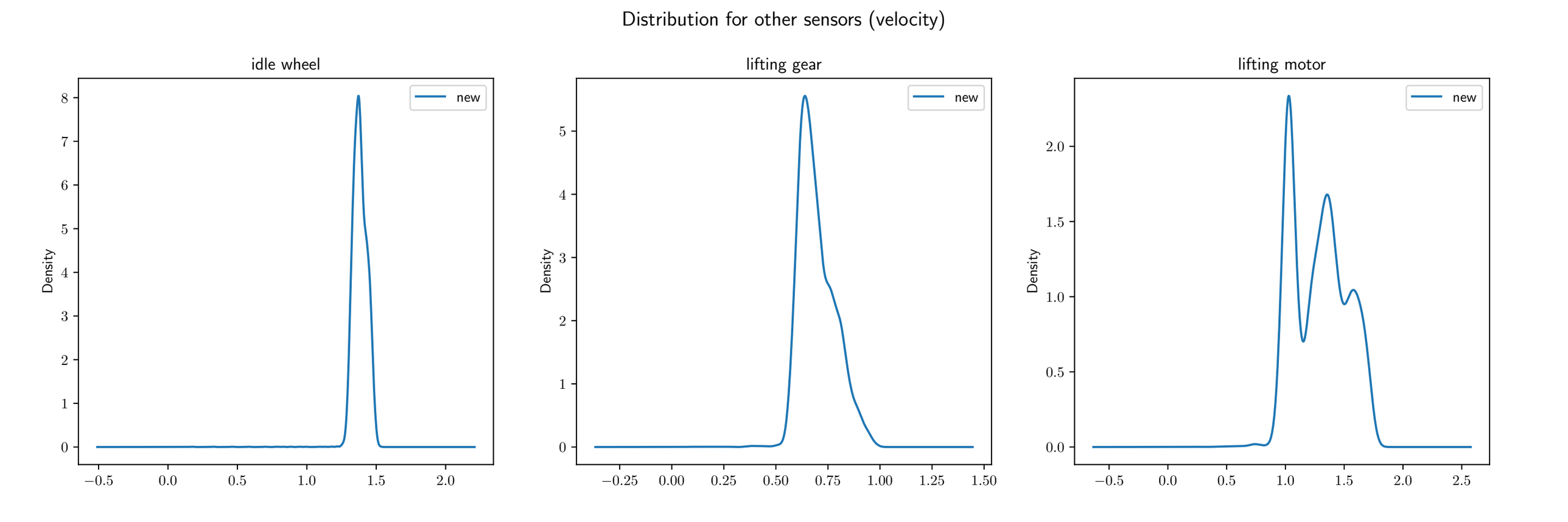
μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 1.29
σ_{new} = 0.23
σ^2_{new} = 0.05

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA


Distribution for drive sensors (velocity)
drive gear
drive motor
drive wheel
new
Density
0
2
4
6
8
10
0.0
0.5
1.0
1.5
1
3
5
−1
2
0.5
2.0
4


Distribution for other sensors (velocity)
idle wheel
lifting gear
lifting motor
new
Density
0
1
2
3
4
5
6
7
8
−0.5
0.0
0.5
1.0
1.5
2.0
−0.25
0.00
0.25
0.50
0.75
1.00
1.25
1.50
2.5

Compatibility check for acceleration sensors

New data:from 2019-06-01 until 2019-07-11

Referent data: recommended distribution (from .config)

Acceleration sensors

drive gear

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 1591.45
σ_{new} = 176.35
σ^2_{new} = 31100.6

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

drive motor

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 1961.01
σ_{new} = 436.06
σ^2_{new} = 190152.33

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

drive wheel

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 943.35
σ_{new} = 62.06
σ^2_{new} = 3850.9

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

idle wheel

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 623.44
σ_{new} = 50.85
σ^2_{new} = 2586.01

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

lifting gear

μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 1580.29
σ_{new} = 685.21
σ^2_{new} = 469519.18

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA

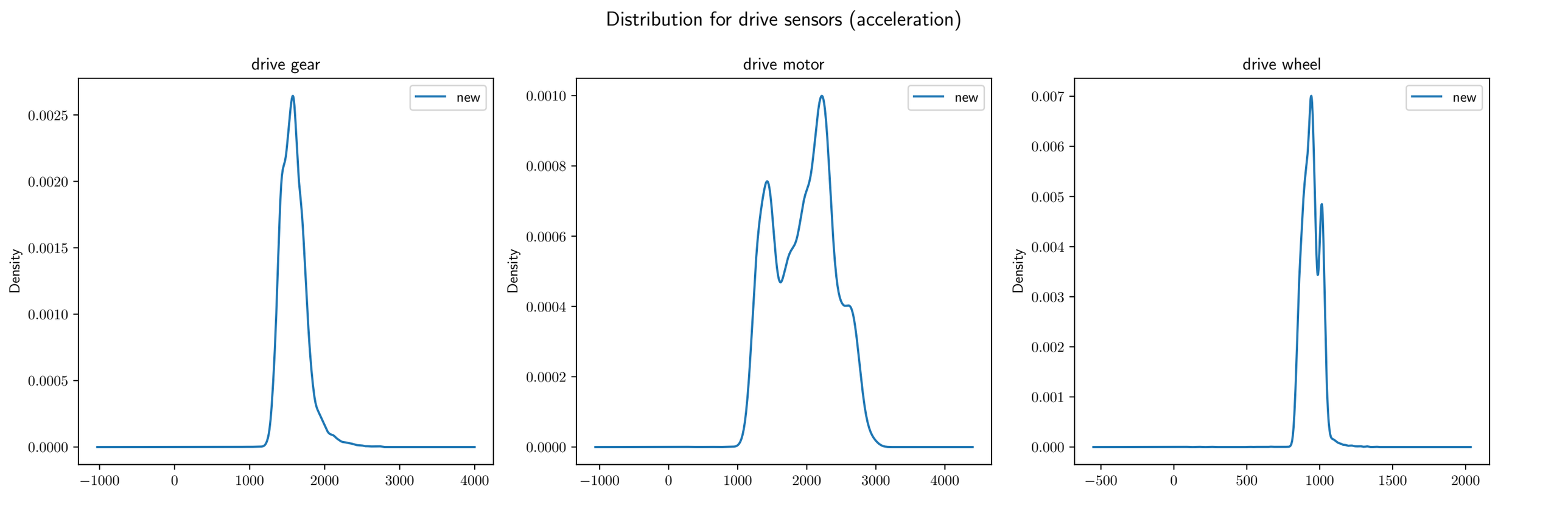
lifting motor

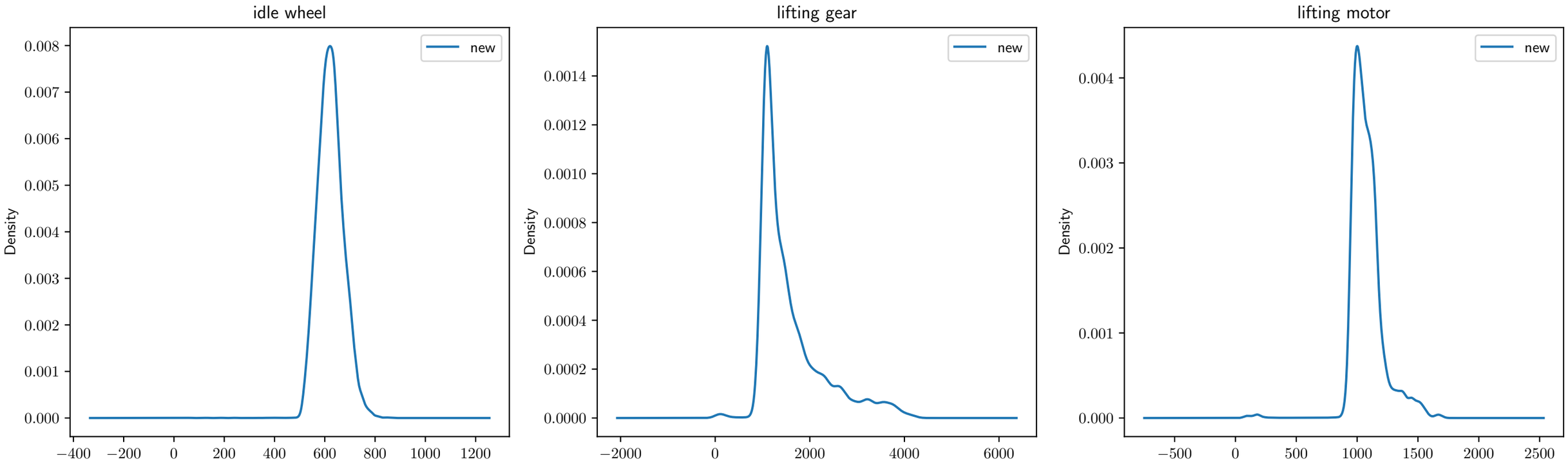
μ_{ref} = NA
σ_{ref} = NA
σ^2_{ref} = NA

μ_{new} = 1080.89
σ_{new} = 142.05
σ^2_{new} = 20177.52

$good_{cnt}/all_{cnt}$
NA / NA = NA

NO DATA


Distribution for drive sensors (acceleration)
drive gear
drive motor
drive wheel
new
Density
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
−1000
0
1000
2000
3000
4000
−500
500
1500


Distribution for other sensors (acceleration)
idle wheel
lifting gear
lifting motor
new
Density
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
−400
−200
0
200
400
600
800
1000
1200
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
−2000
0
2000
4000
6000
0.004
0.003
0.002
0.001
0.000
−500
0
500
1000
1500
2000
2500