These plotted curves to show, from various perspectives, the battery range of a
2018 Tesla Model 3 Long Range RWD.

The data for these is obtained by driving the car back and forth on a fairly flat road
multiple times, at different speeds, and recording the energy usage as shown by the car,
in watt–hours per unit distance travelled. This data is shown on one of the plots.

If some plots indicate a battery degradation, this is obtained from known or tested car
battery degradation.

If you have questions or concerns about any of the plots, you can contact me on various
online groups or at ted@tedtoal.net

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Energy Used per Km on Flat Road, 2018 Tesla Model 3 Long Range RWD

this shows raw measured data, and includes linear and quadratic approximations

Legend:
- Going one way
- Average
- Going back same way
- Linear approx: E = 24+1.4S
- Quadratic approx: E = 104+(2.4S−140)S/200

Y-axis: Energy Used per Km (watt−hours per Km)

X-axis: Speed on Flat Road (km/h)
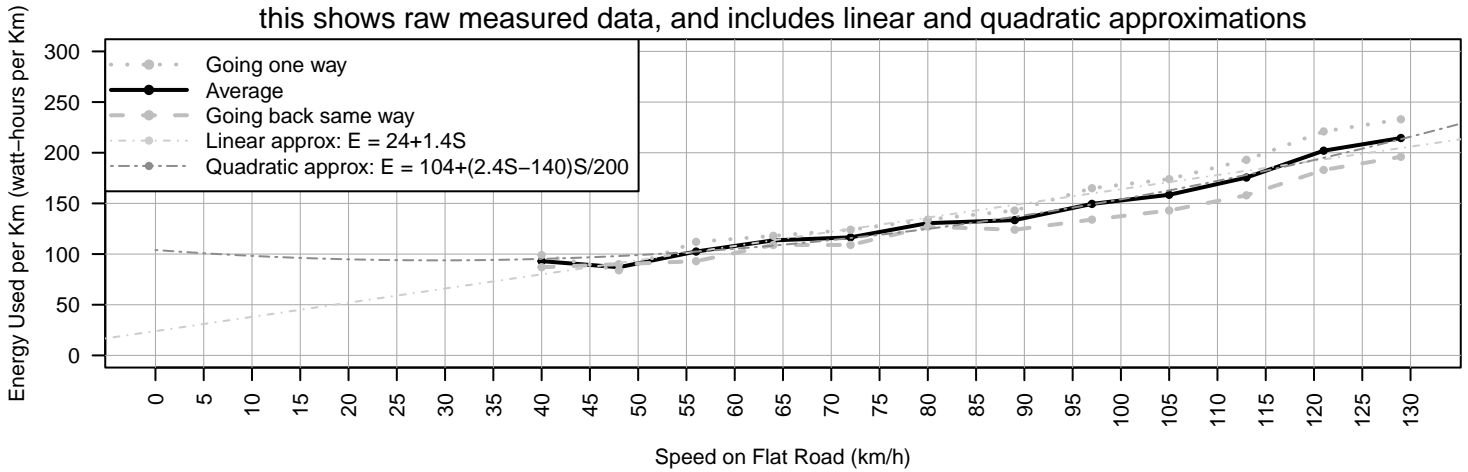
Power Consumption on Flat Road, 2018 Tesla Model 3 Long Range RWD
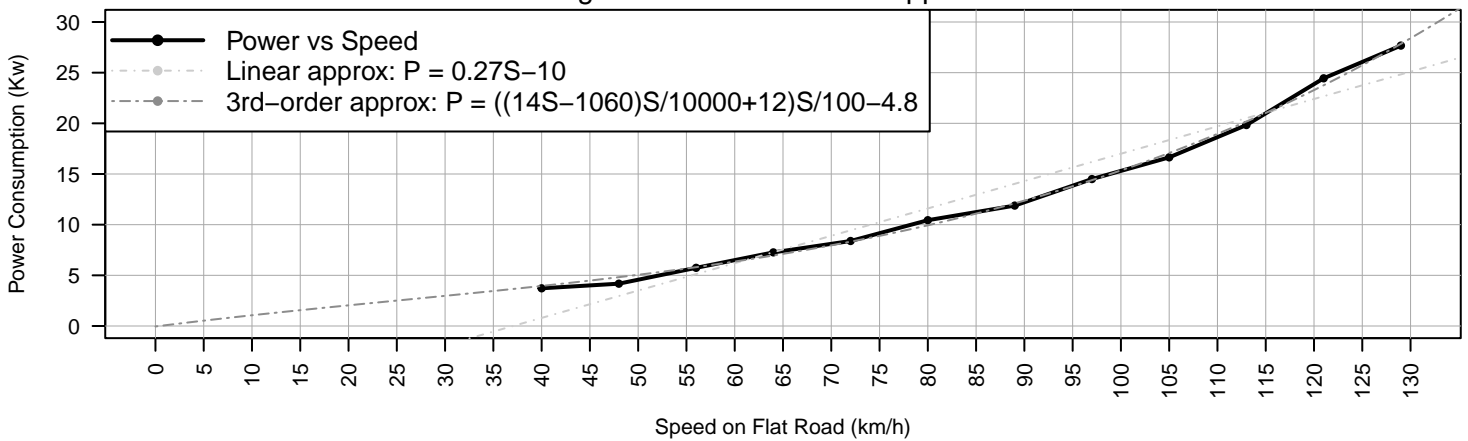
including linear and third−order approximations

Legend:
- Power vs Speed
- Linear approx: P = 0.27S−10
- 3rd−order approx: P = ((14S−1060)S/10000+12)S/100−4.8

Y-axis: Power Consumption (Kw)

X-axis: Speed on Flat Road (km/h)

Estimated Range At Various Speeds, 2018 Tesla Model 3 Long Range RWD

including linear approximation (assume battery degradation of 12% for capacity of 66 KWh)

Legend:
- Range vs Speed
- Linear approx: R = 900−4.6S

Y-axis: Range of Full Battery (km)

X-axis: Speed on Flat Road (km/h)
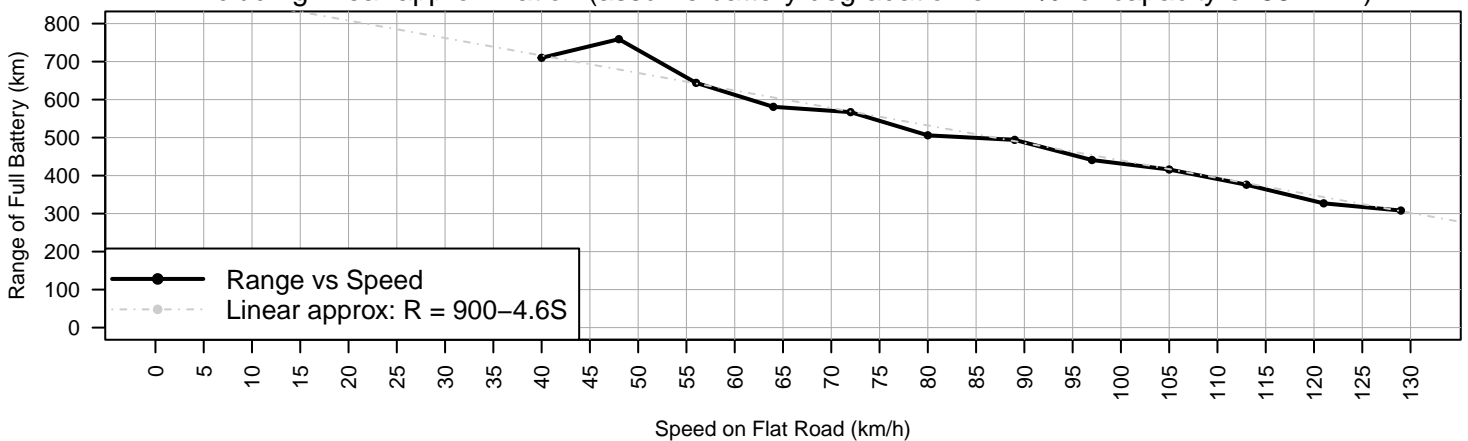
Energy Used over Hours Elapsed at Speeds on Flat Road
2018 Tesla Model 3 Long Range RWD

Battery Fraction Used at Speeds/Distances, 2018 Tesla Model 3 Long Range RWD
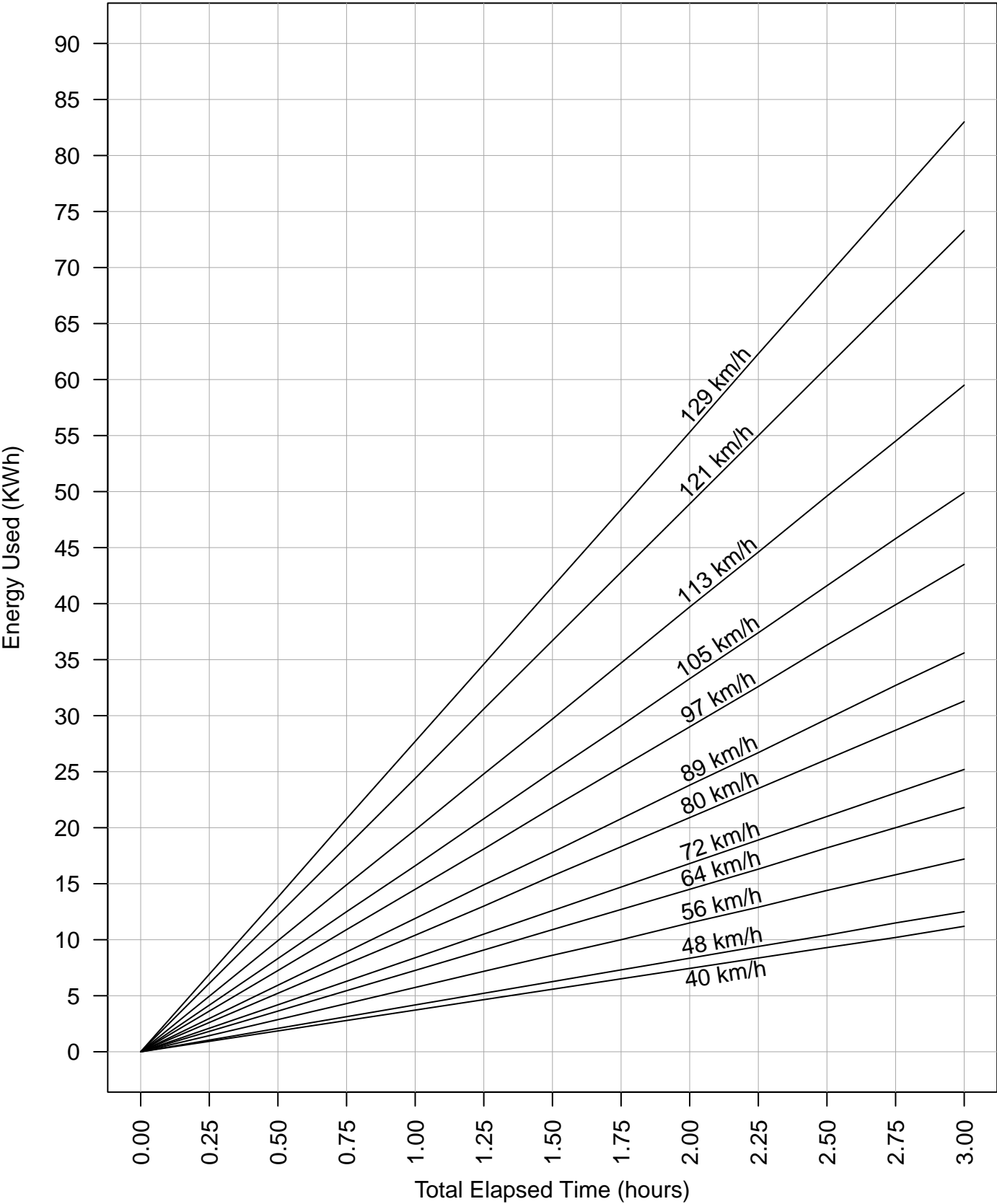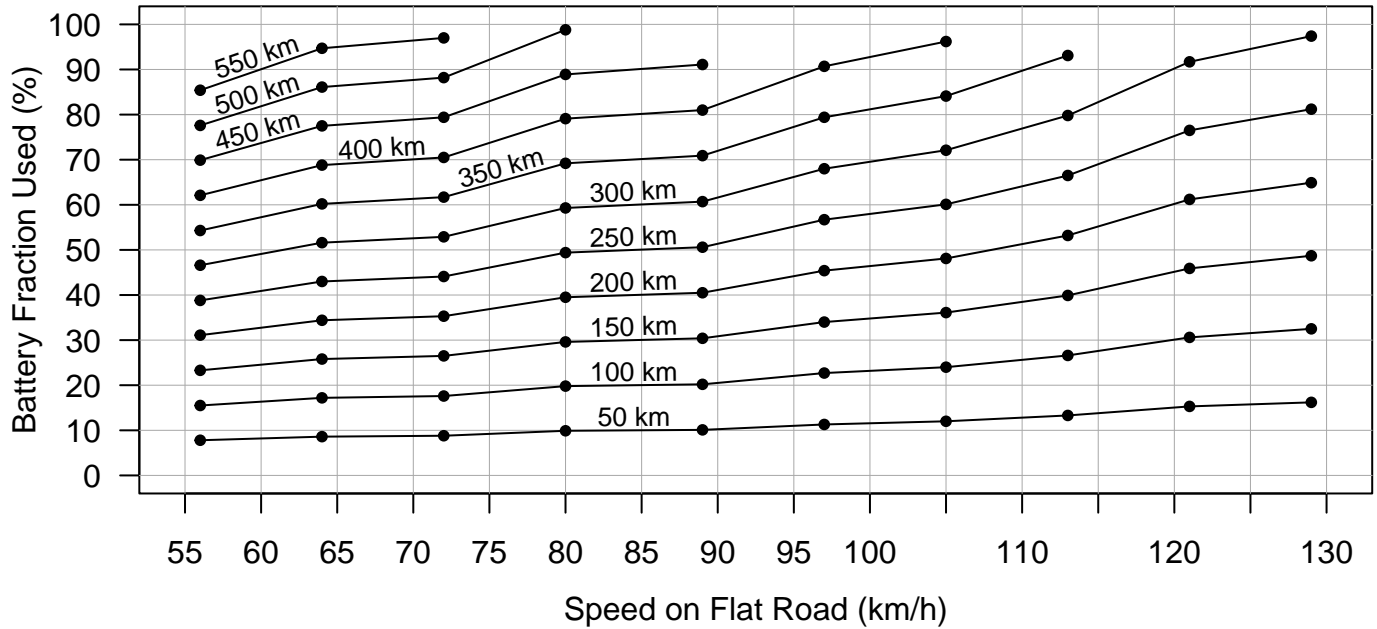
(assume battery degradation of 12% for capacity of 66 KWh)

Battery Fraction Used (%) vs Speed on Flat Road (km/h)

Lines labeled: 550 km, 500 km, 450 km, 400 km, 350 km, 300 km, 250 km, 200 km, 150 km, 100 km, 50 km

Battery Fraction Used at Speeds/Times, 2018 Tesla Model 3 Long Range RWD

(assume battery degradation of 12% for capacity of 66 KWh)

Battery Fraction Used (%) vs Speed on Flat Road (km/h)

Lines labeled: 9 hrs, 8 hrs, 7 hrs, 6 hrs, 5 hrs, 4.5 hrs, 4 hrs, 3.5 hrs, 3 hrs, 2.75 hrs, 2.5 hrs, 2.25 hrs, 2 hrs, 1.75 hrs, 1.5 hrs, 1.25 hrs, 1 hrs, 0.75 hrs, 0.5 hrs, 0.25 hrs
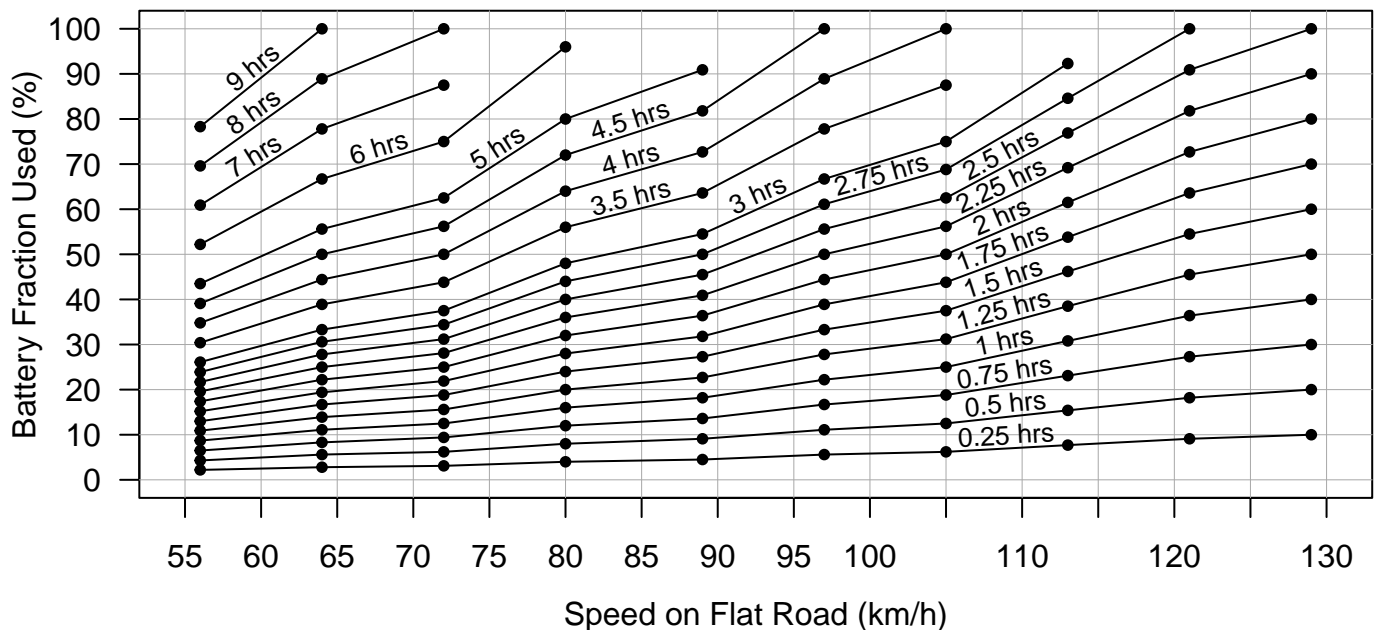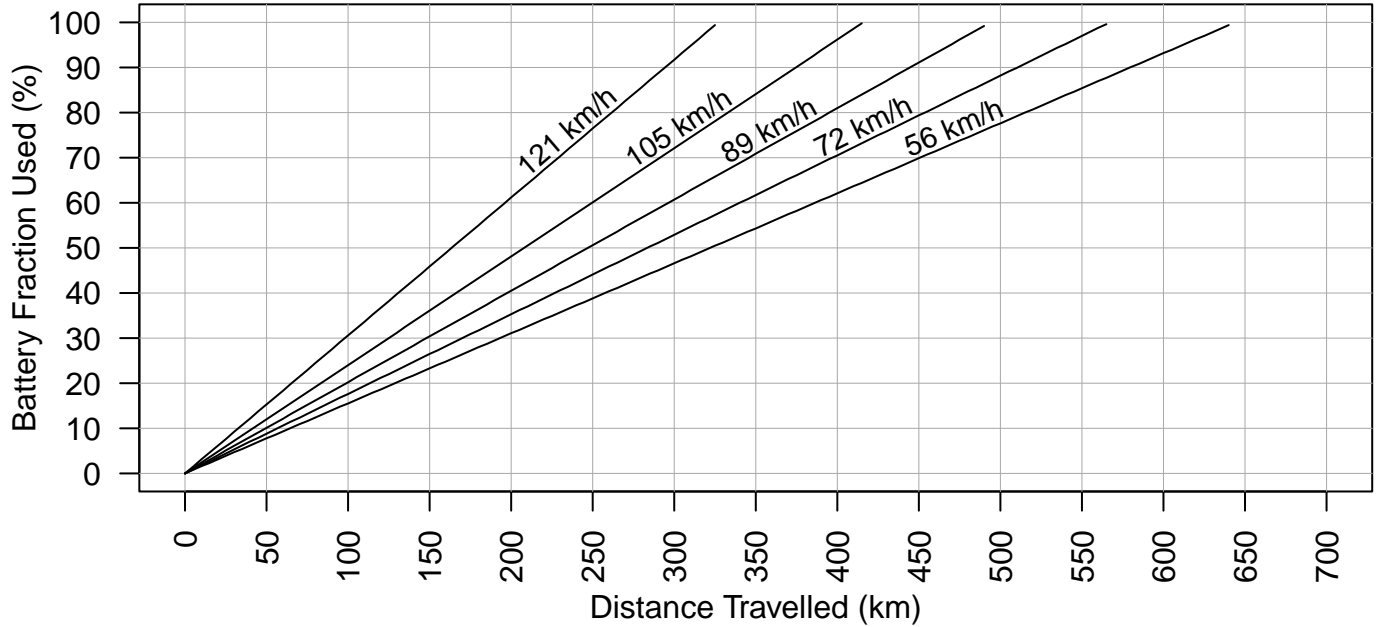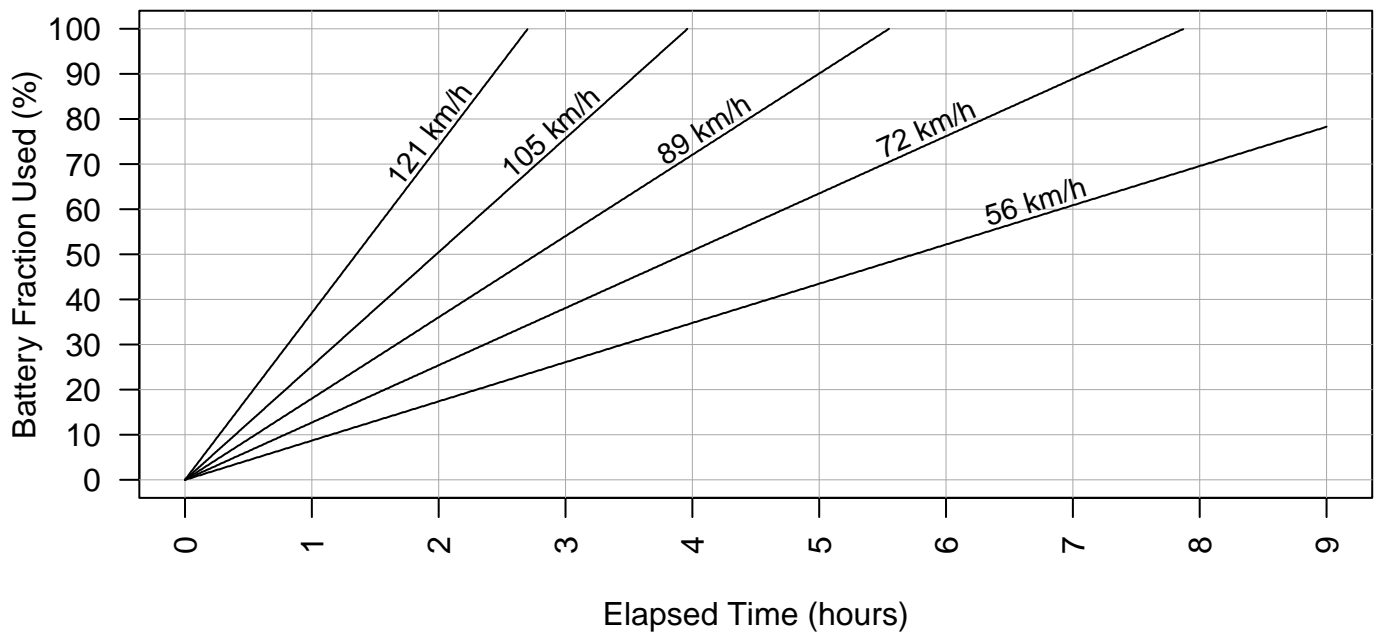
Battery Fraction Used at Distances/Speeds, 2018 Tesla Model 3 Long Range RWD

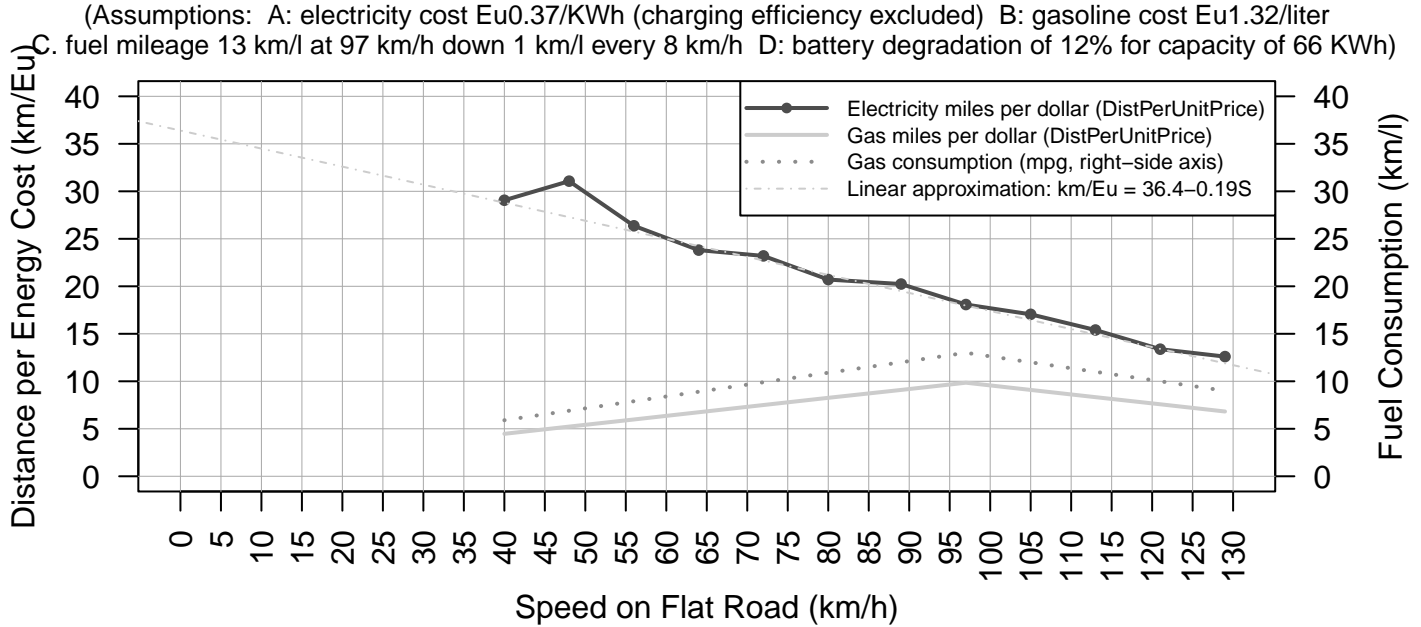(assume battery degradation of 12% for capacity of 66 KWh)

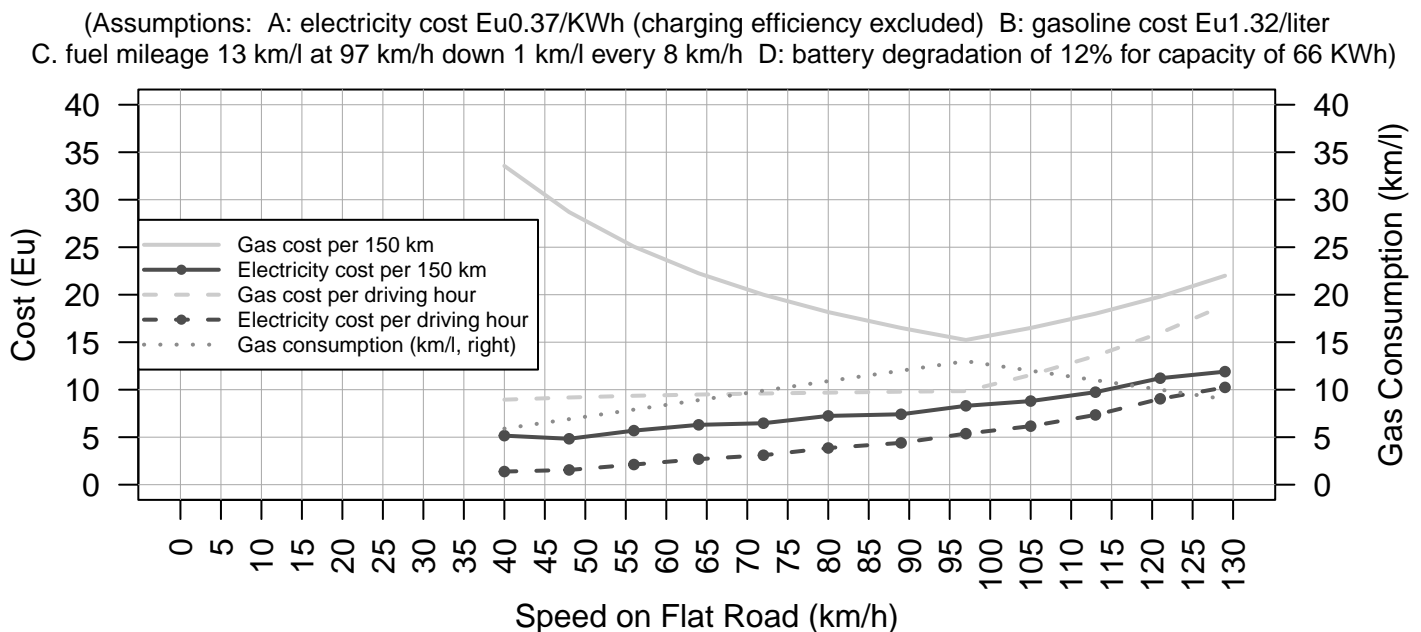# Battery Fraction Used at Times/Speeds, 2018 Tesla Model 3 Long Range RWD

(assume battery degradation of 12% for capacity of 66 KWh)

Distance as a Function of Energy Cost, 2018 Tesla Model 3 Long Range RWD

(Assumptions: A: electricity cost Eu0.37/KWh (charging efficiency excluded) B: gasoline cost Eu1.32/liter
C. fuel mileage 13 km/l at 97 km/h down 1 km/l every 8 km/h D: battery degradation of 12% for capacity of 66 KWh)

Legend:
- Electricity miles per dollar (DistPerUnitPrice)
- Gas miles per dollar (DistPerUnitPrice)
- Gas consumption (mpg, right–side axis)
- Linear approximation: km/Eu = 36.4–0.19S

X-axis: Speed on Flat Road (km/h)
Left Y-axis: Distance per Energy Cost (km/Eu)
Right Y-axis: Fuel Consumption (km/l)

Cost per Distance or Time, 2018 Tesla Model 3 Long Range RWD

(Assumptions: A: electricity cost Eu0.37/KWh (charging efficiency excluded) B: gasoline cost Eu1.32/liter
C. fuel mileage 13 km/l at 97 km/h down 1 km/l every 8 km/h D: battery degradation of 12% for capacity of 66 KWh)

Legend:
- Gas cost per 150 km
- Electricity cost per 150 km
- Gas cost per driving hour
- Electricity cost per driving hour
- Gas consumption (km/l, right)

X-axis: Speed on Flat Road (km/h)
Left Y-axis: Cost (Eu)
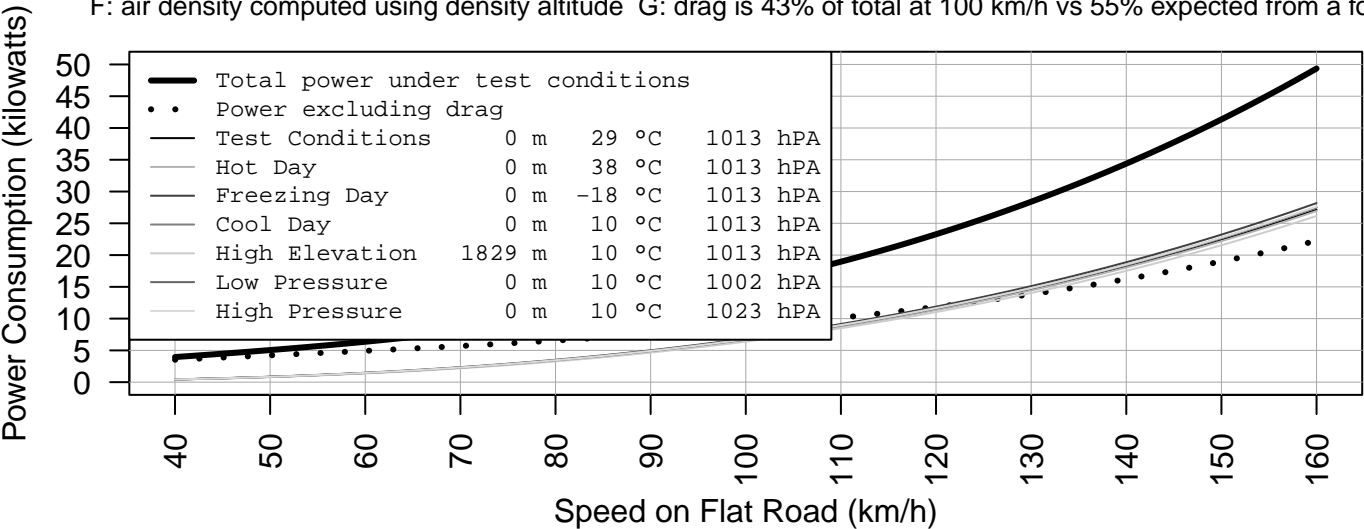Right Y-axis: Gas Consumption (km/l)

Estimated Range At Uphill/Downhill Grades and Speeds, 2018 Tesla Model 3 Long Range RWD

Assumptions: A: weight 1928 kg (with 113 kg passenger weight) B: regen efficiency 70%
C: battery degradation 12% for capacity of 66 KWh   D: flat road linear range approximation = R = 900−4.6S
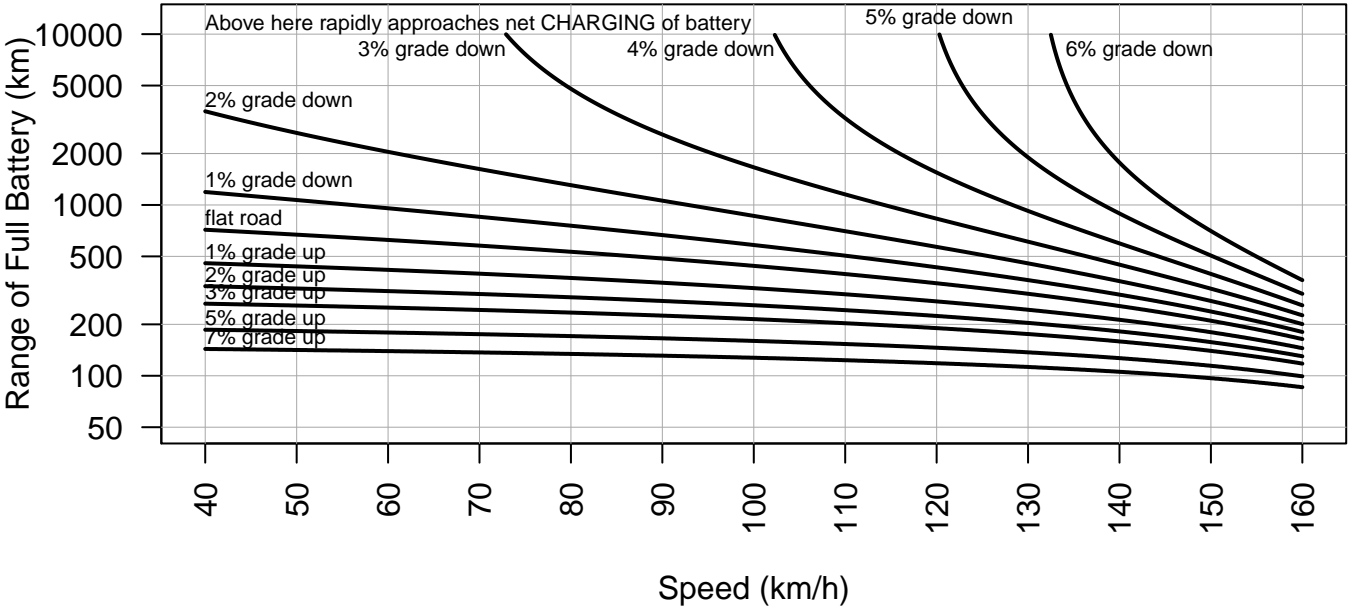
Drag Power Consumption at Speeds, 2018 Tesla Model 3 Long Range RWD

Assumptions: A: weight 1928 kg (with 113 kg passenger weight) B: drag coefficient 0.23 C: frontal area 2.22 sq. m.
D: power approximation P = ((14S−1060)S/10000+12)S/100−4.8 E: test conditions temp and barometer estimated post−facto
F: air density computed using density altitude G: drag is 43% of total at 100 km/h vs 55% expected from a forum
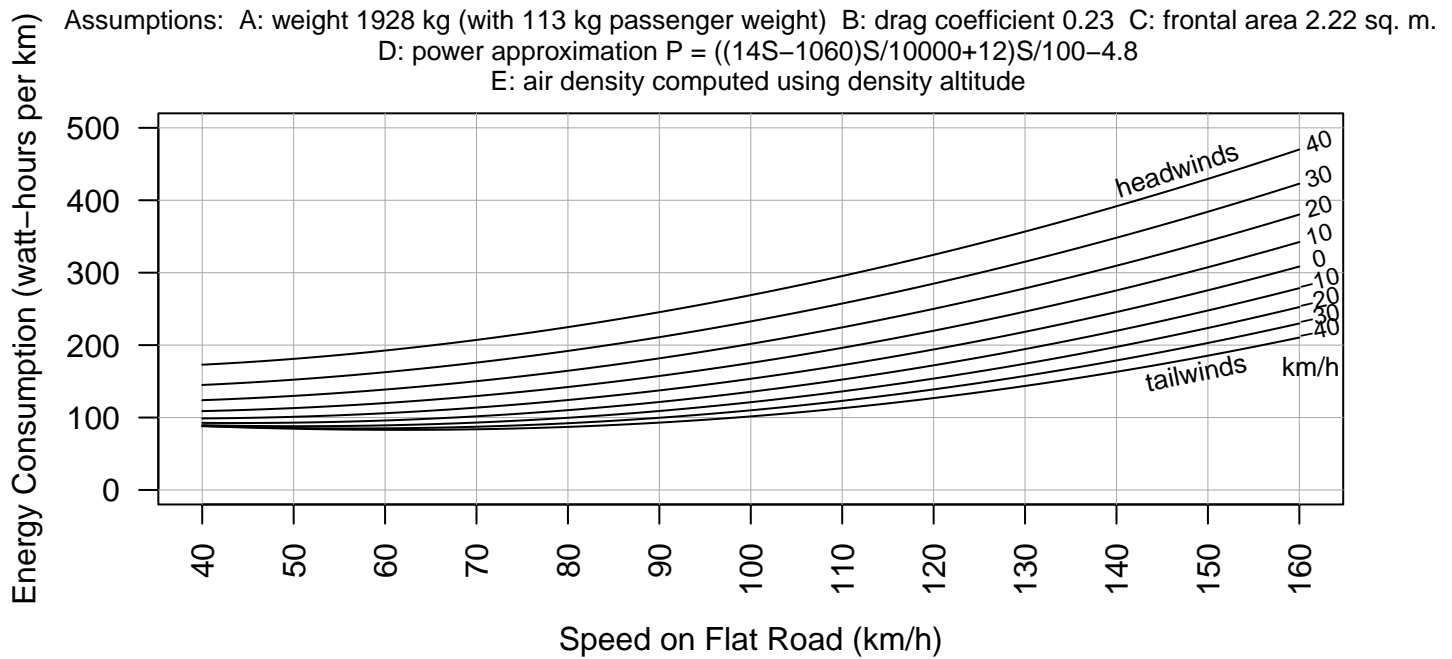
Energy Consumption at Car and Wind Speeds, 2018 Tesla Model 3 Long Range RWD

Assumptions: A: weight 1928 kg (with 113 kg passenger weight) B: drag coefficient 0.23 C: frontal area 2.22 sq. m.
D: power approximation P = ((14S−1060)S/10000+12)S/100−4.8
E: air density computed using density altitude

Energy Consumption (watt–hours per km) vs Speed on Flat Road (km/h)

headwinds: 40, 30, 20, 10, 0
tailwinds: 10, 20, 30, 40   km/h

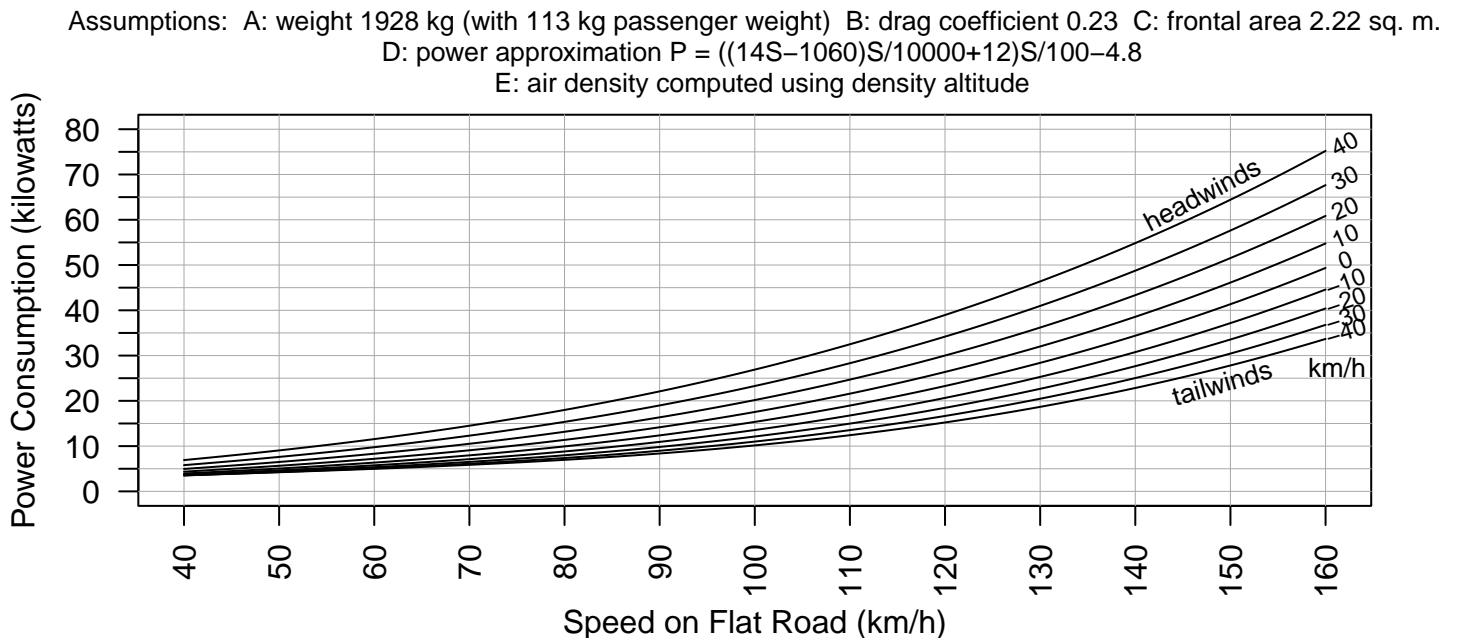# Power Consumption at Car and Wind Speeds, 2018 Tesla Model 3 Long Range RWD

Assumptions: A: weight 1928 kg (with 113 kg passenger weight) B: drag coefficient 0.23 C: frontal area 2.22 sq. m.
D: power approximation P = ((14S−1060)S/10000+12)S/100−4.8
E: air density computed using density altitude

Power Consumption (kilowatts) vs Speed on Flat Road (km/h)

headwinds: 40, 30, 20, 10, 0
tailwinds: 10, 20, 30, 40   km/h

Range at Car and Wind Speeds, 2018 Tesla Model 3 Long Range RWD

Assumptions: A: weight 1928 kg (with 113 kg passenger weight) B: drag coefficient 0.23 C: frontal area 2.22 sq. m.
D: power approximation P = ((14S−1060)S/10000+12)S/100−4.8 E: battery degradation 12% for capacity of 66 KWh
F: air density computed using density altitude

Range of Full Battery (km)

40 km/h tailwind
30 km/h tailwind
20 km/h tailwind
10 km/h tailwind
No wind
10 km/h headwind
20 km/h headwind
30 km/h headwind
40 km/h headwind

Speed on Flat Road (km/h)