

Bikes 'n' Lights in North America: Findings from a Study Tour

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Setting the scene

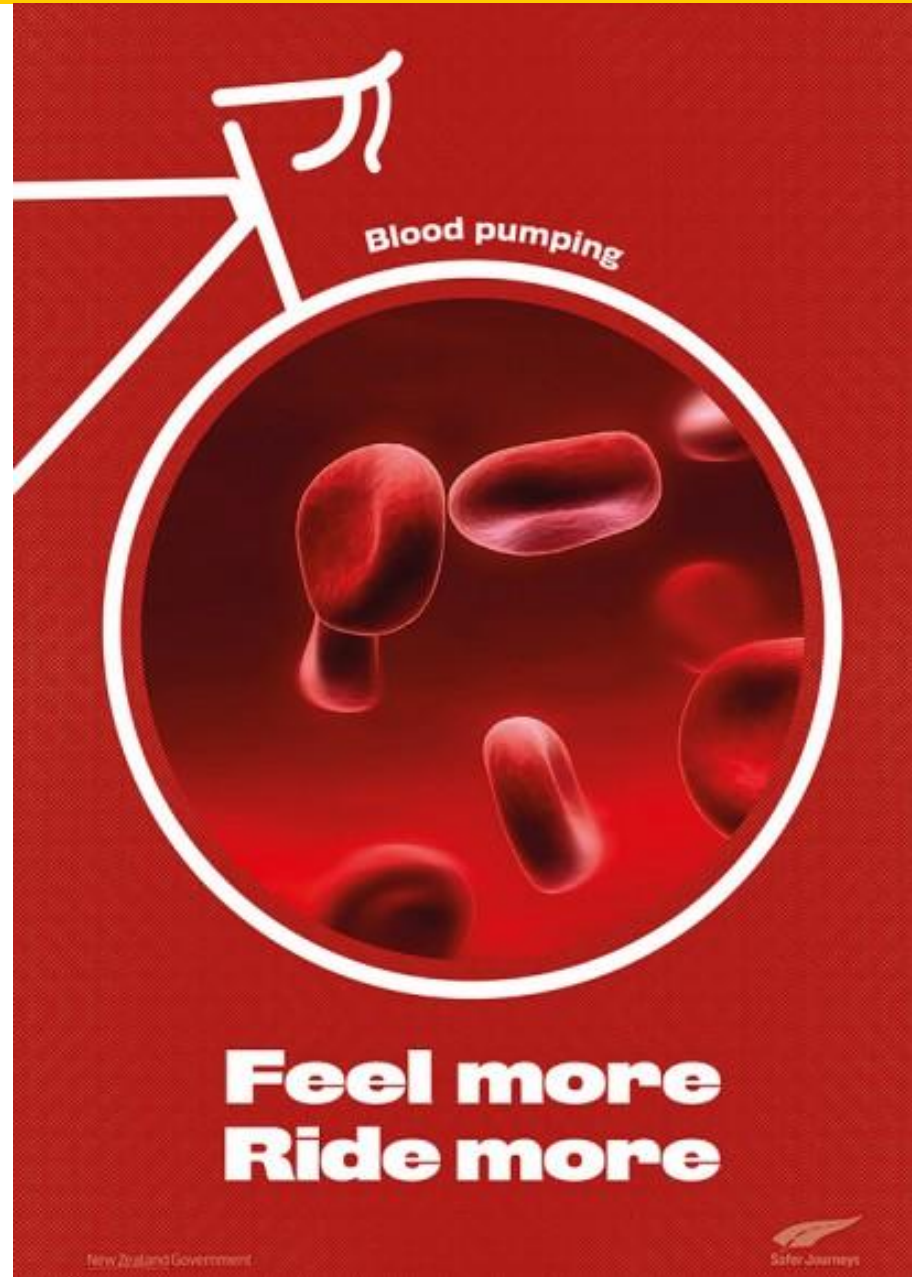
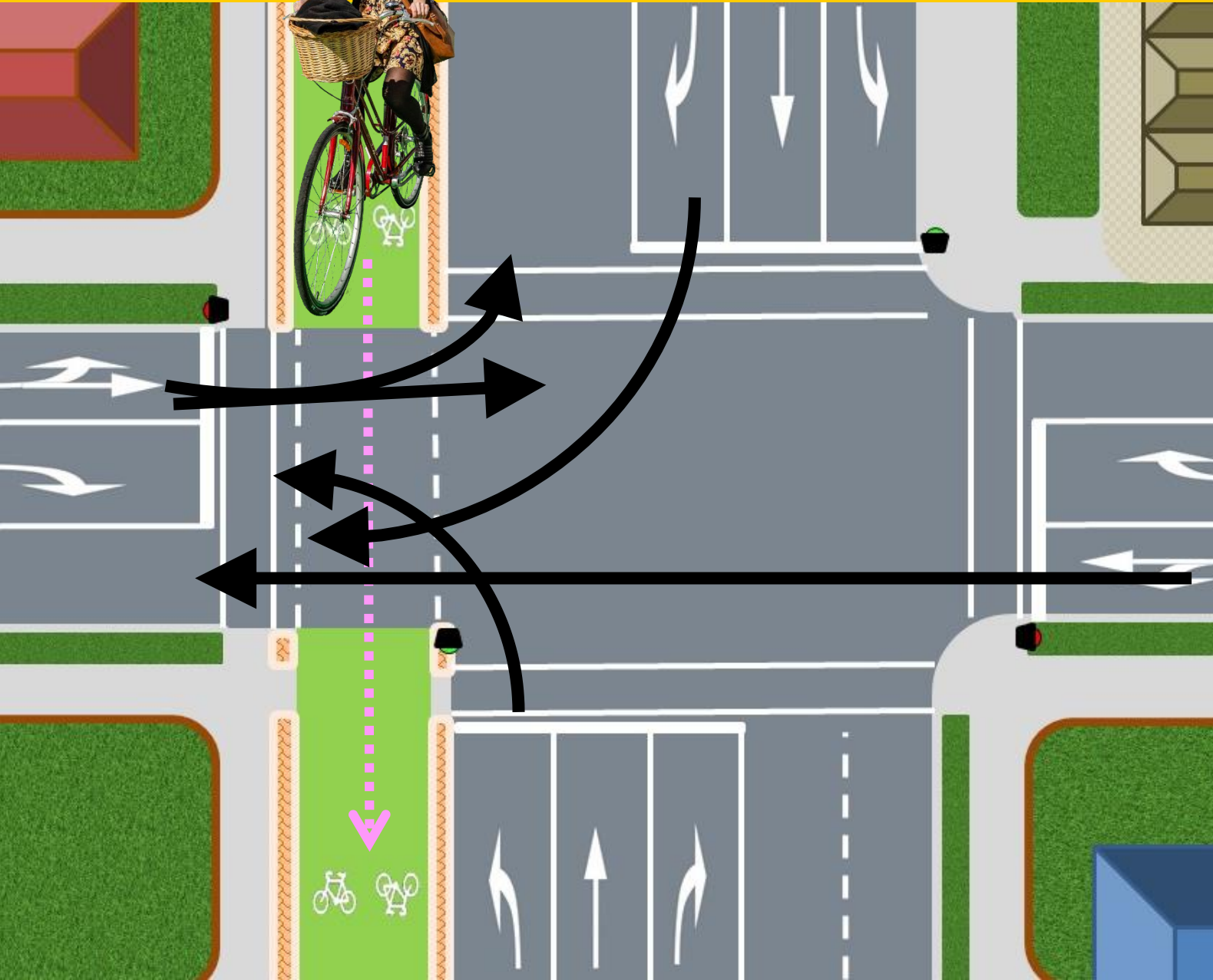


Photo: Auckland Transport

But...



Study focus

Got a good idea?



Ways of addressing the conflict
between cyclists and motorists
at **signalised intersections**
where **separated cycleways** are involved

**IPENZ Transportation Group
Study Award 2016**

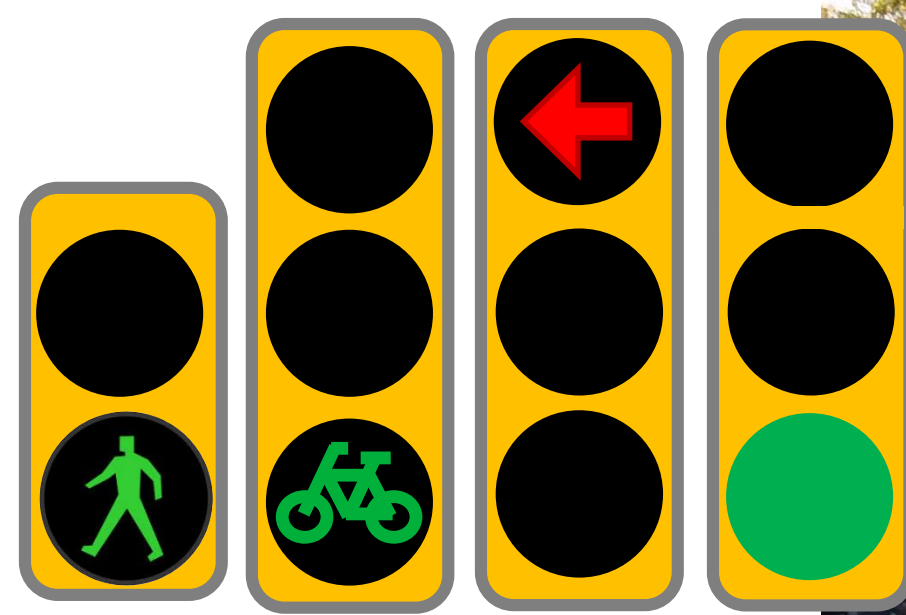
Study focus

Ways of addressing the conflict
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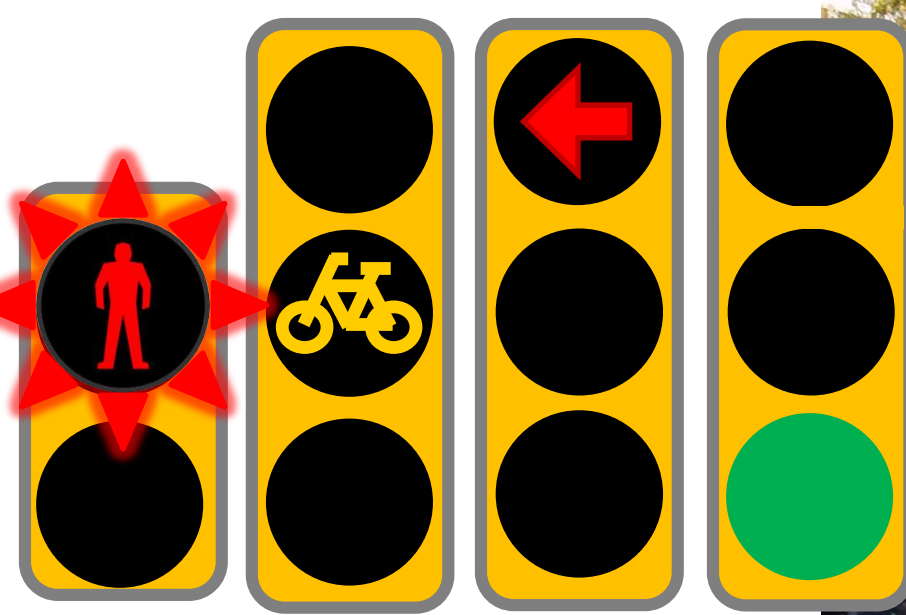
- United States of America and Canada
 - 7 cities
- Variety of treatments:
 - Full protection of all cycle movements
 - Filter turning of motor vehicles through cyclists
 - Addressing the conflict on the approach
 - Mixing zones
 - Lateral shift / transition
 - ‘Protected intersections’



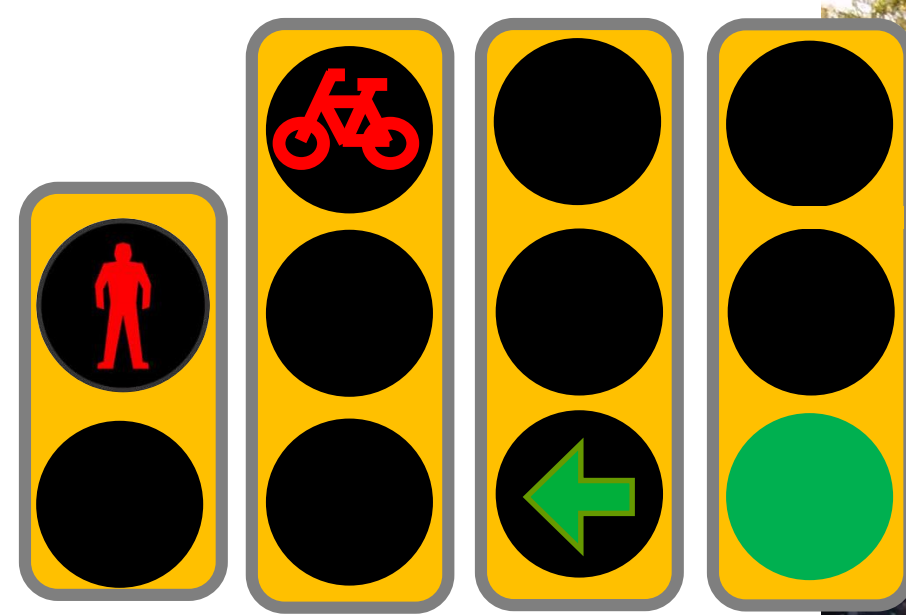
Protected (yet concurrent) phasing



Protected (yet concurrent) phasing



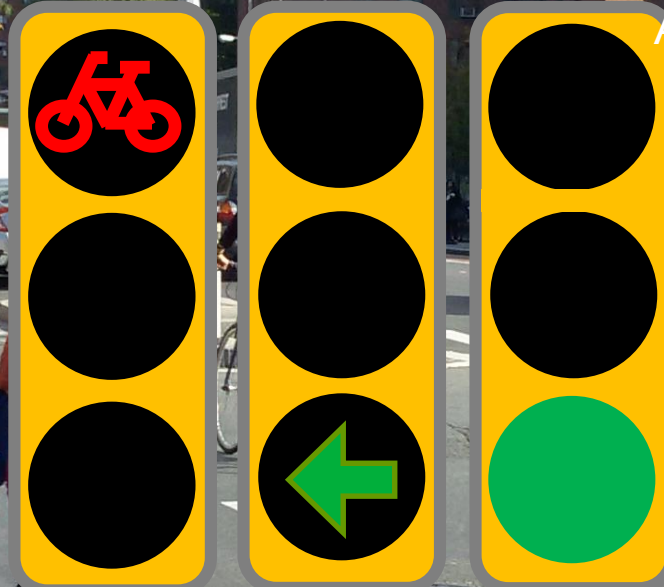
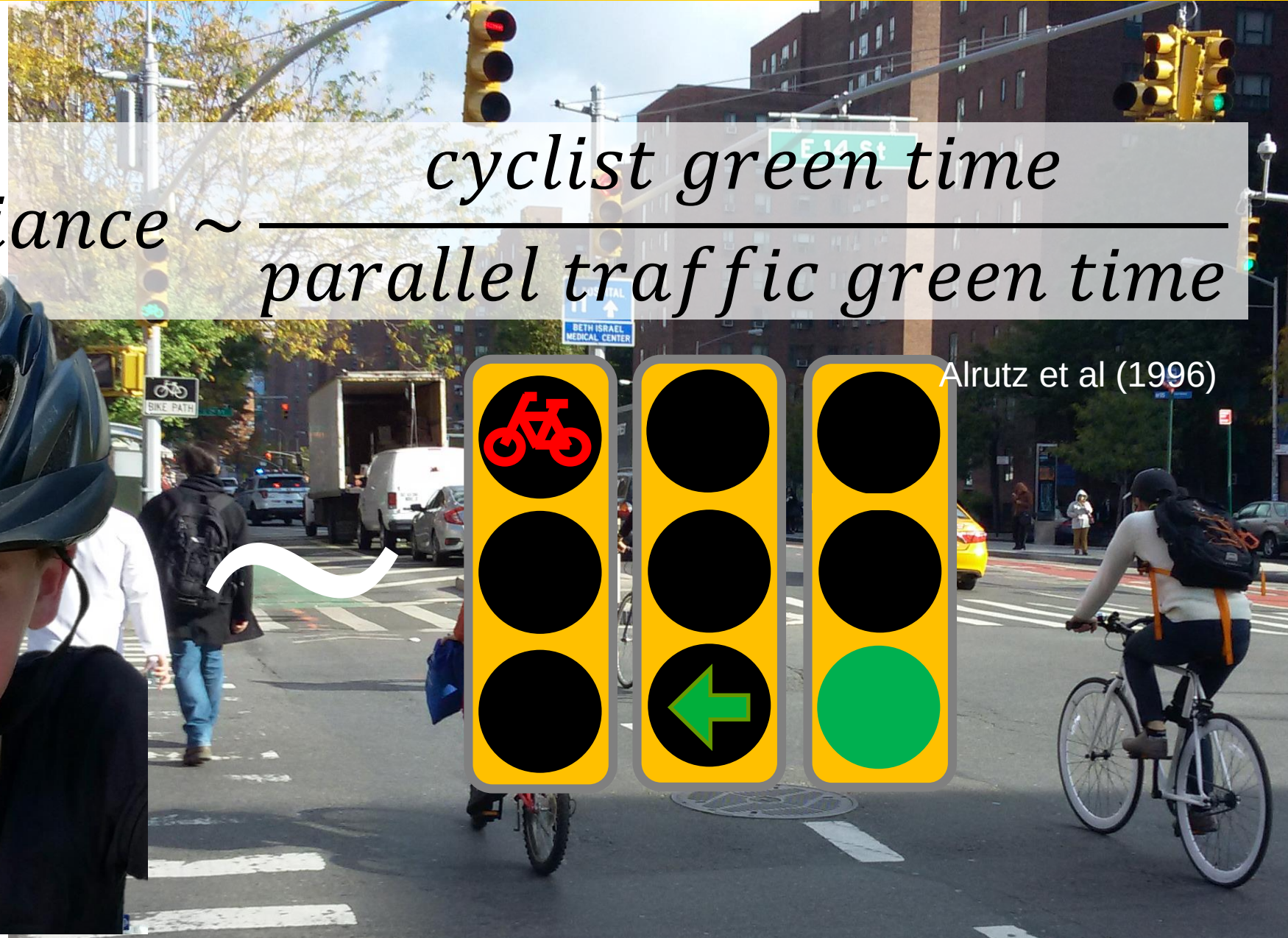
Protected (yet concurrent) phasing



Protected (yet concurrent) phasing

$$\text{Cyclist compliance} \sim \frac{\text{cyclist green time}}{\text{parallel traffic green time}}$$

Alrutz et al (1996)



Filter turning



New York City

Filter turning - signs



Cambridge



Toronto

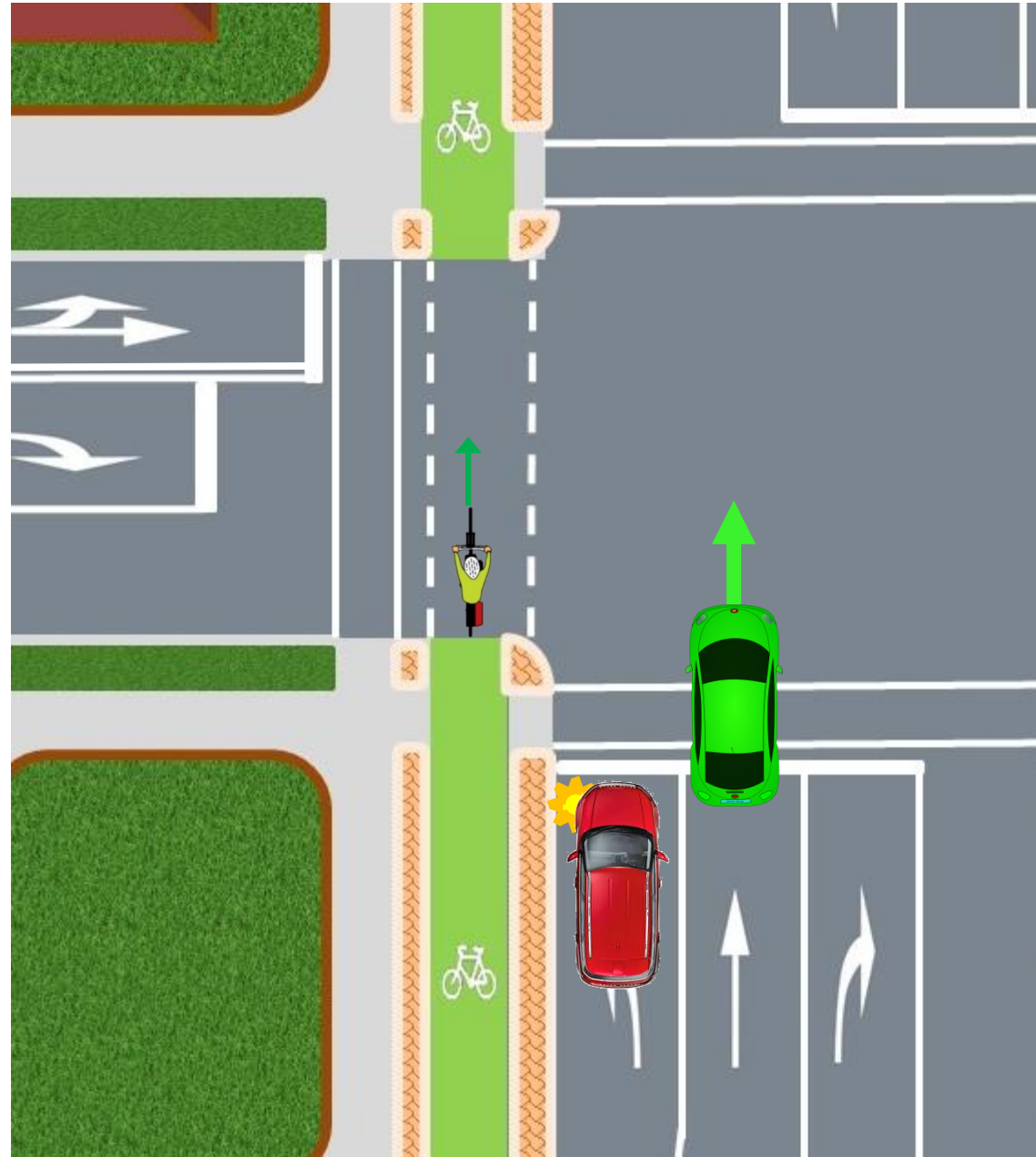
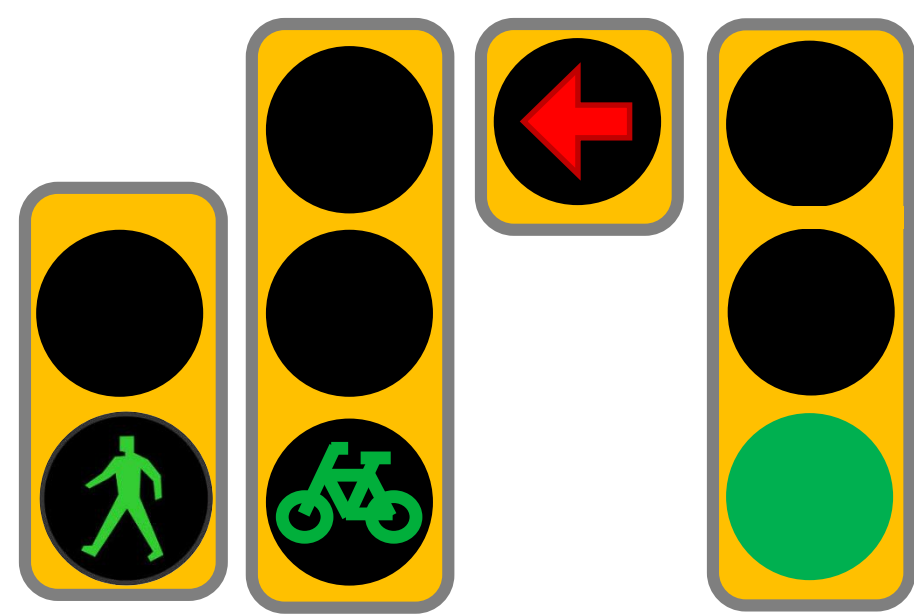


Seattle

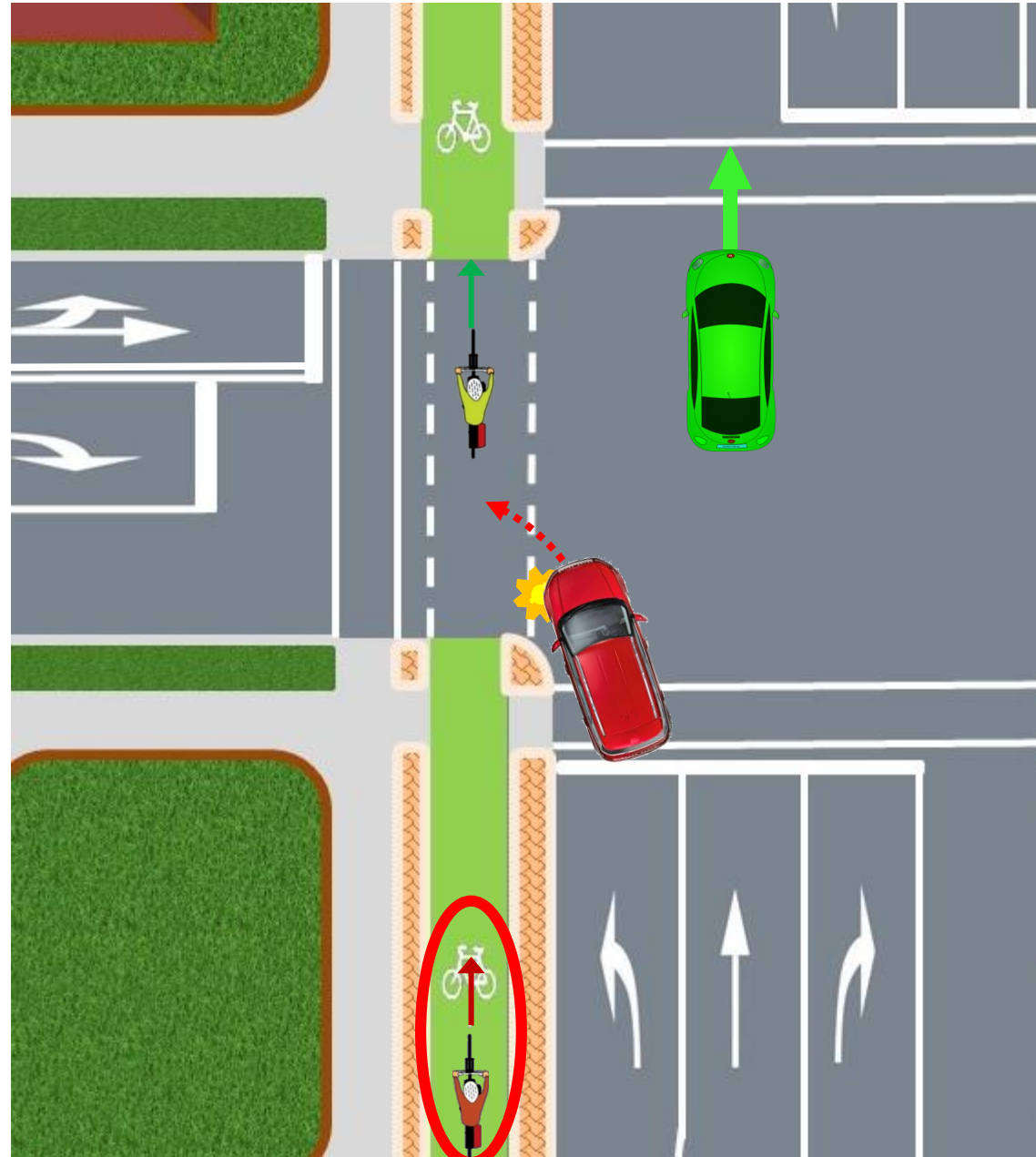
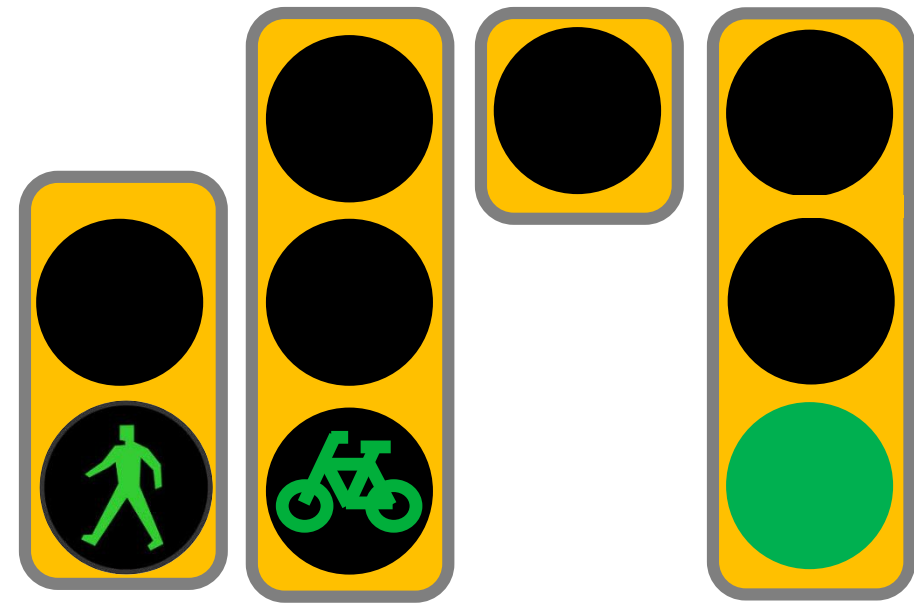
Filter turning - cycle head starts



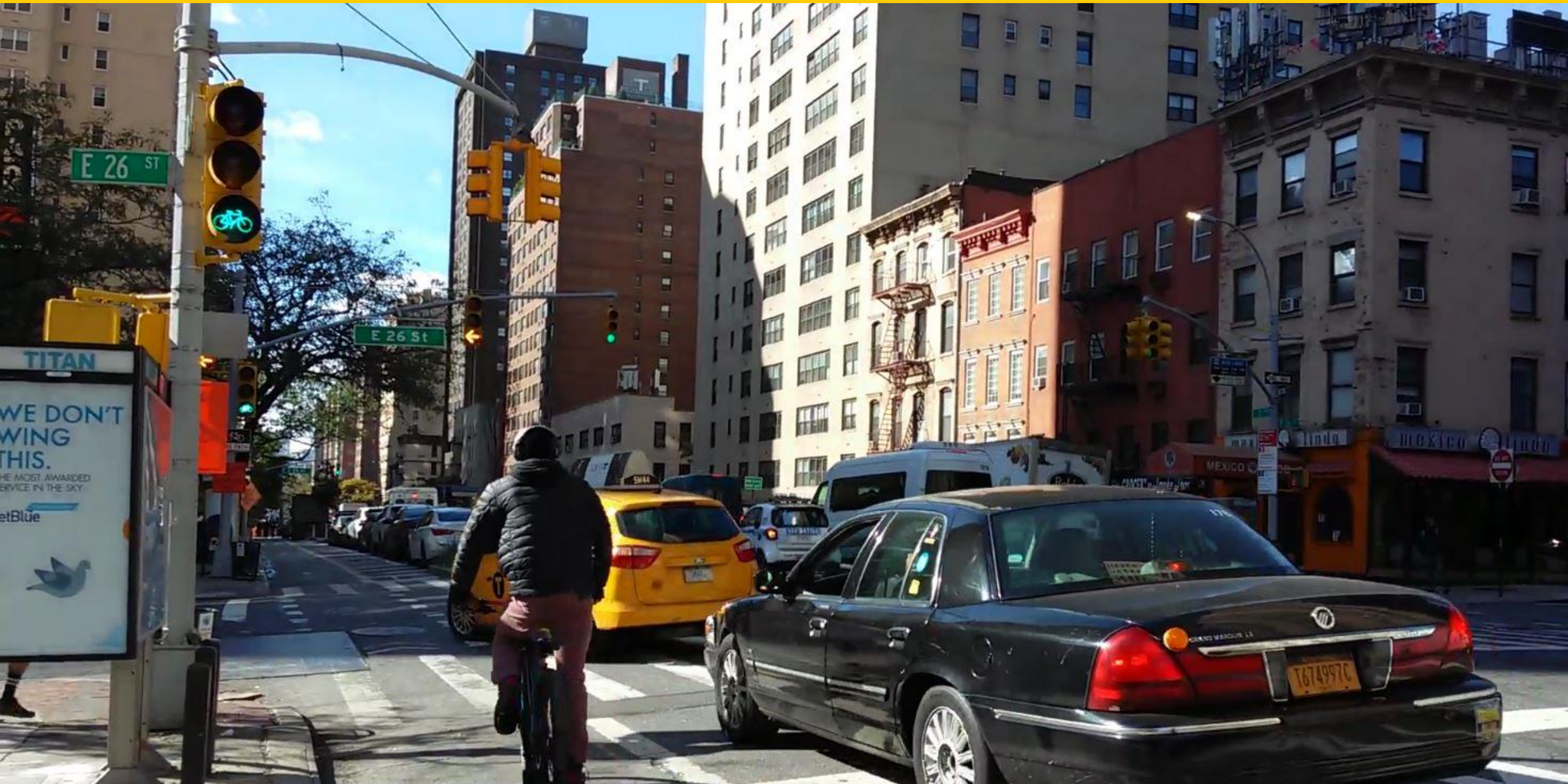
Filter turning - partial protection



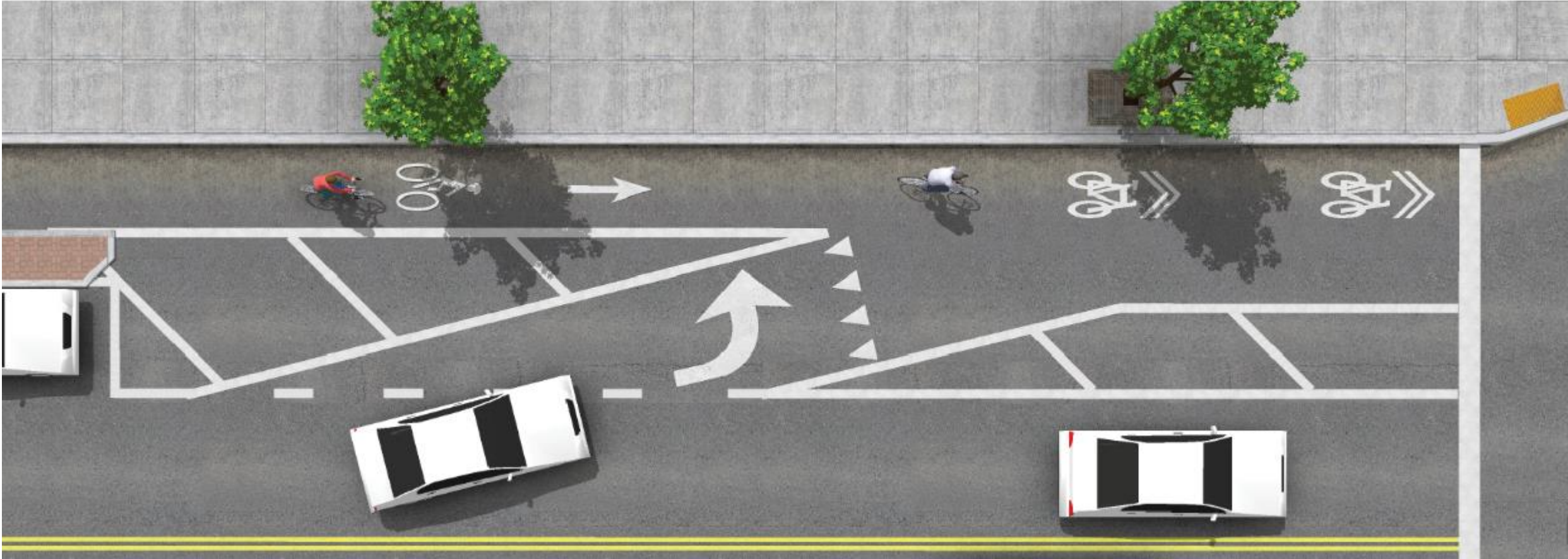
Filter turning - partial protection



Filter turning – flashing yellow arrows

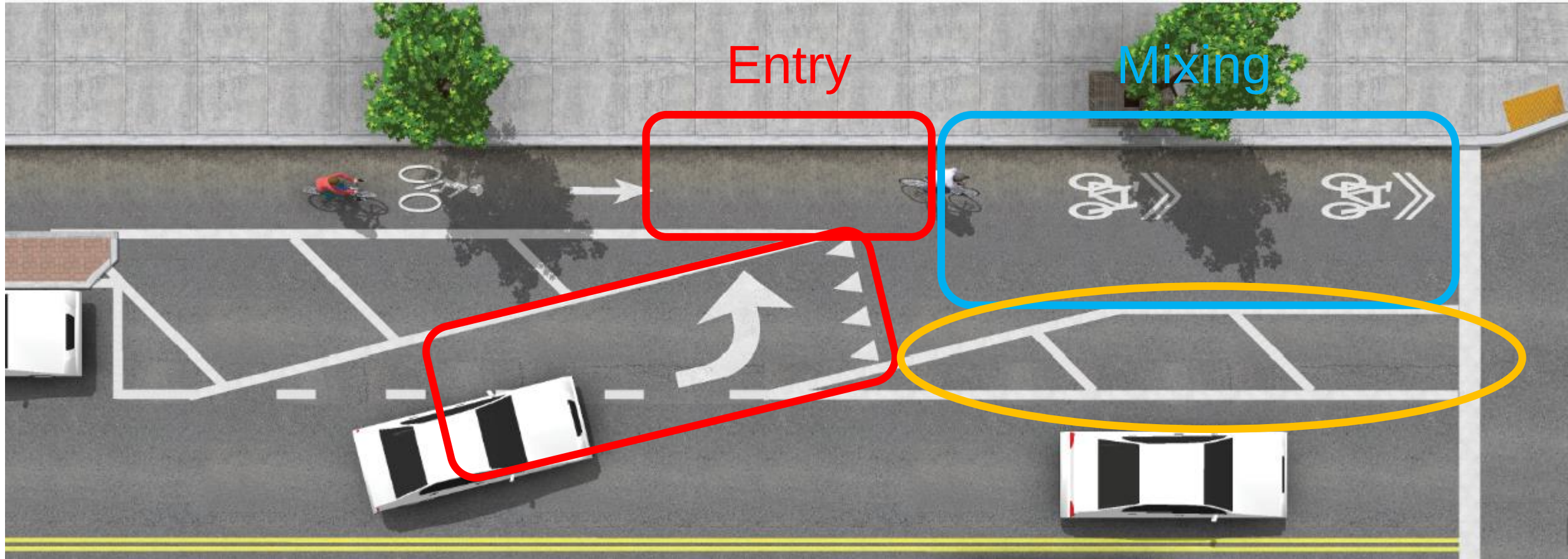


Addressing conflict on approach: **Mixing zones**



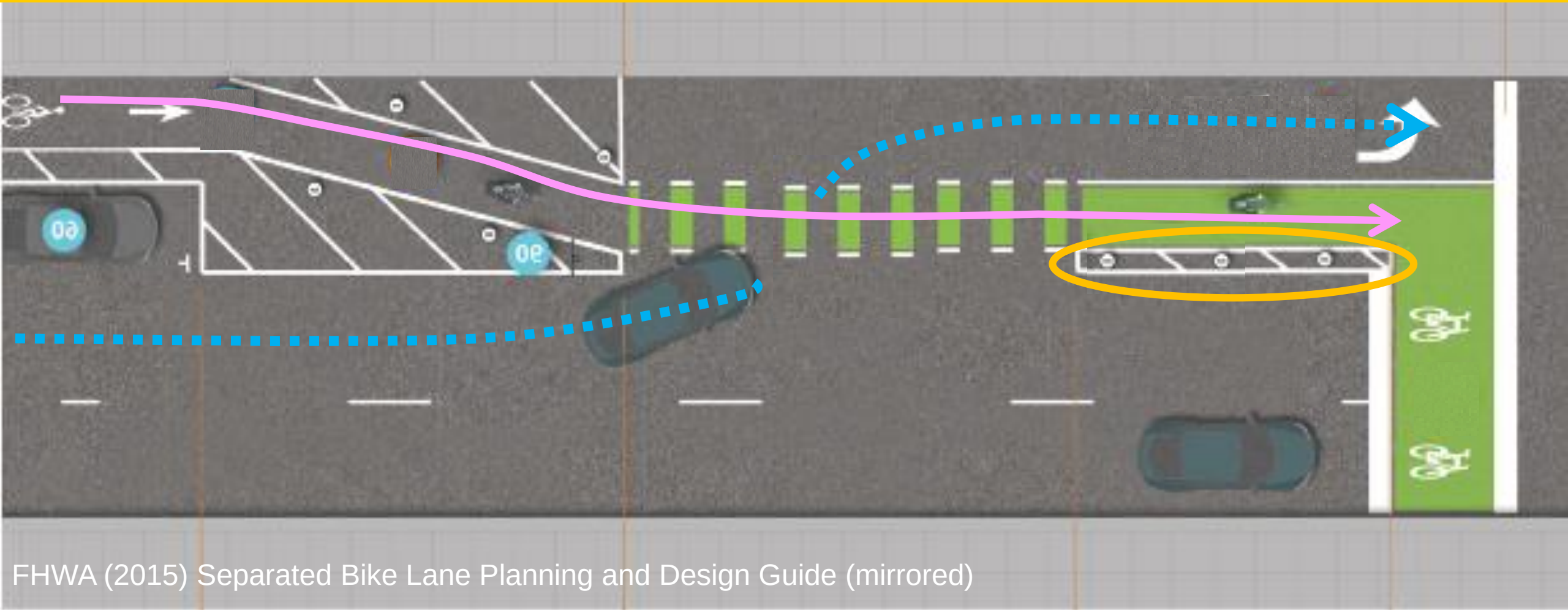
NACTO Urban Bikeway Design Guide (mirrored)

Addressing conflict on approach: **Mixing zones**



NACTO Urban Bikeway Design Guide (mirrored)

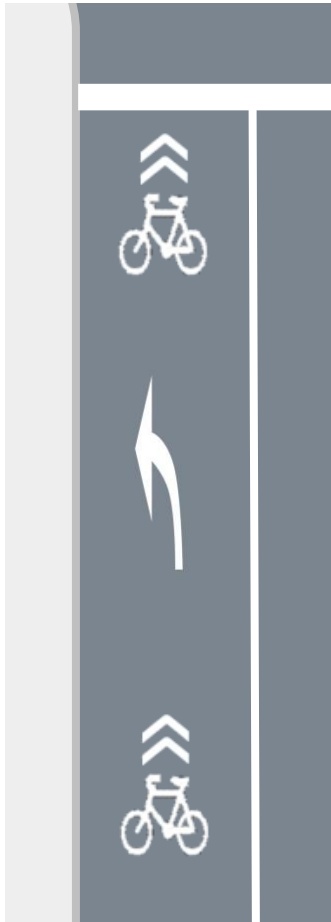
Addressing conflict on approach: Lateral shift / transition



FHWA (2015) Separated Bike Lane Planning and Design Guide (mirrored)

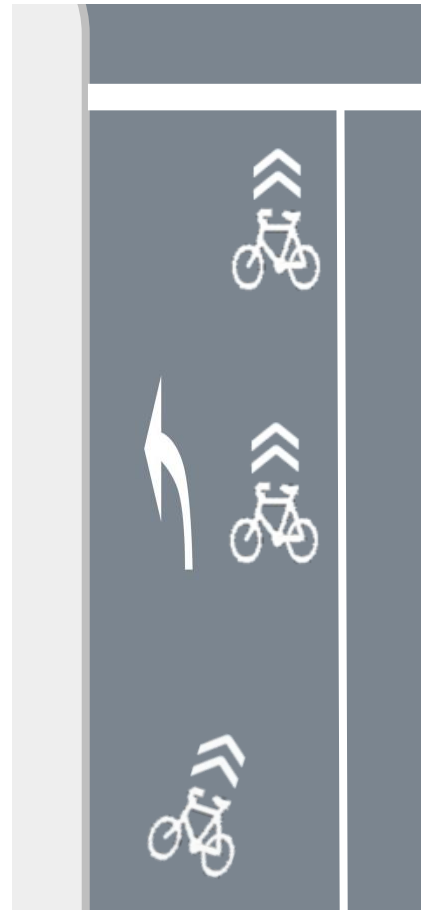
Lateral shift vs mixing zone

Narrow lane



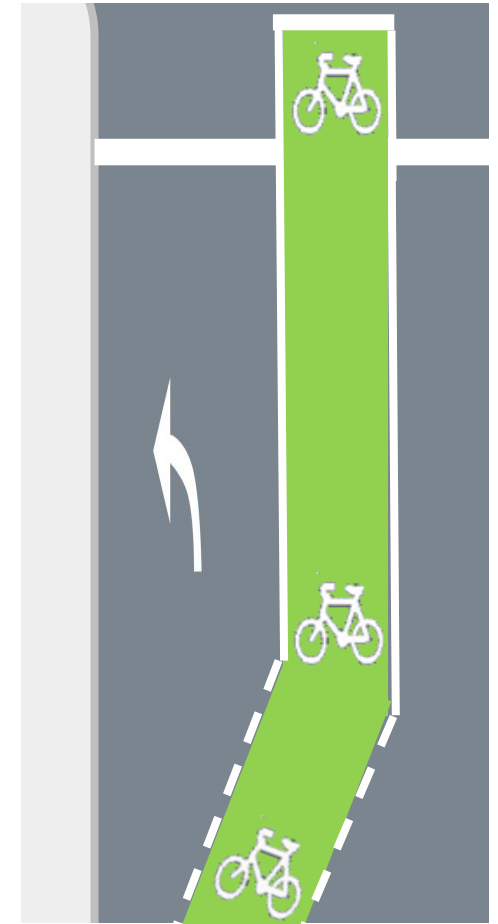
Single-file
mixing

Wide(r) lane



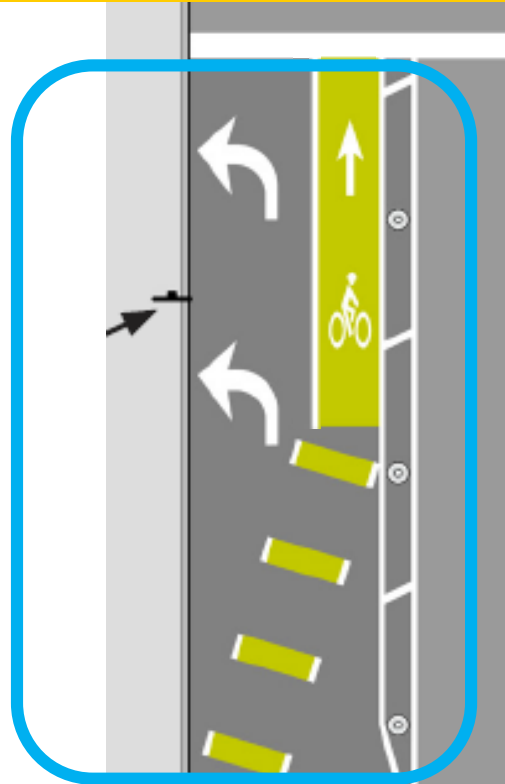
Side-by-side
mixing

— Wide enough lane

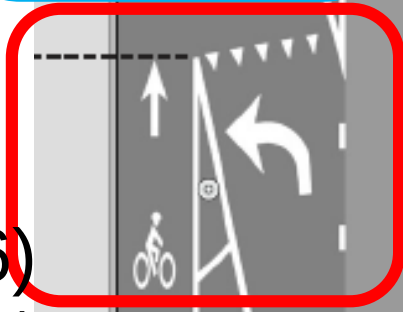


Dedicated cycle lane
(i.e. lateral shift)

Lateral shift vs mixing zone



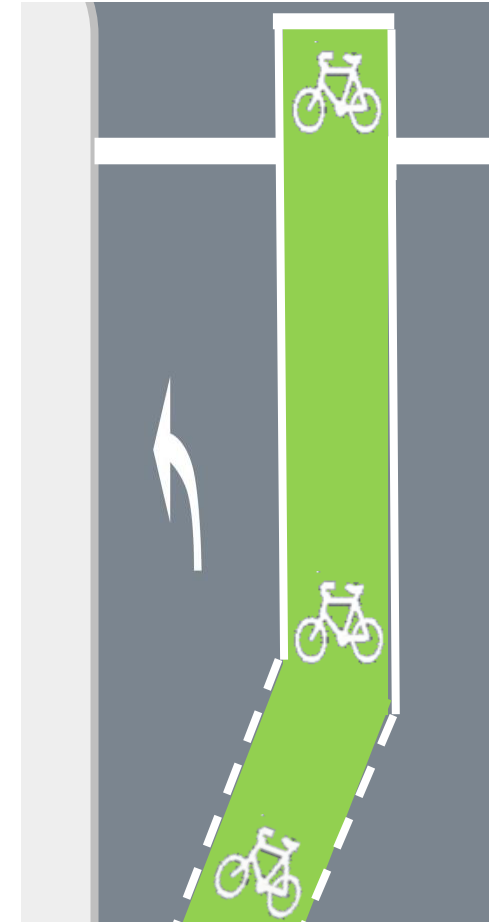
Lateral
shift



Entry

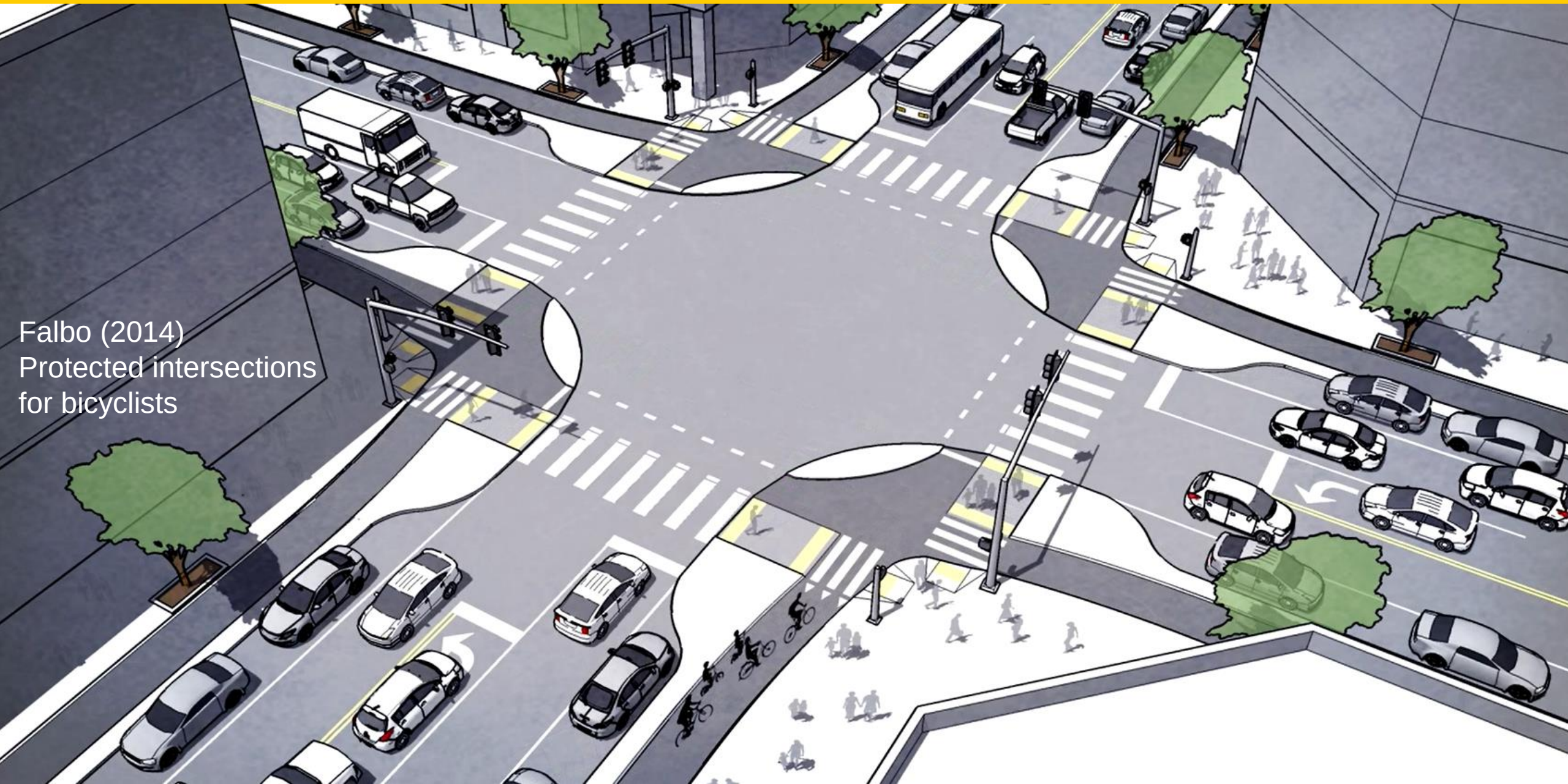
MassDOT (2016)
– mirrored and adapted

— Wide enough lane



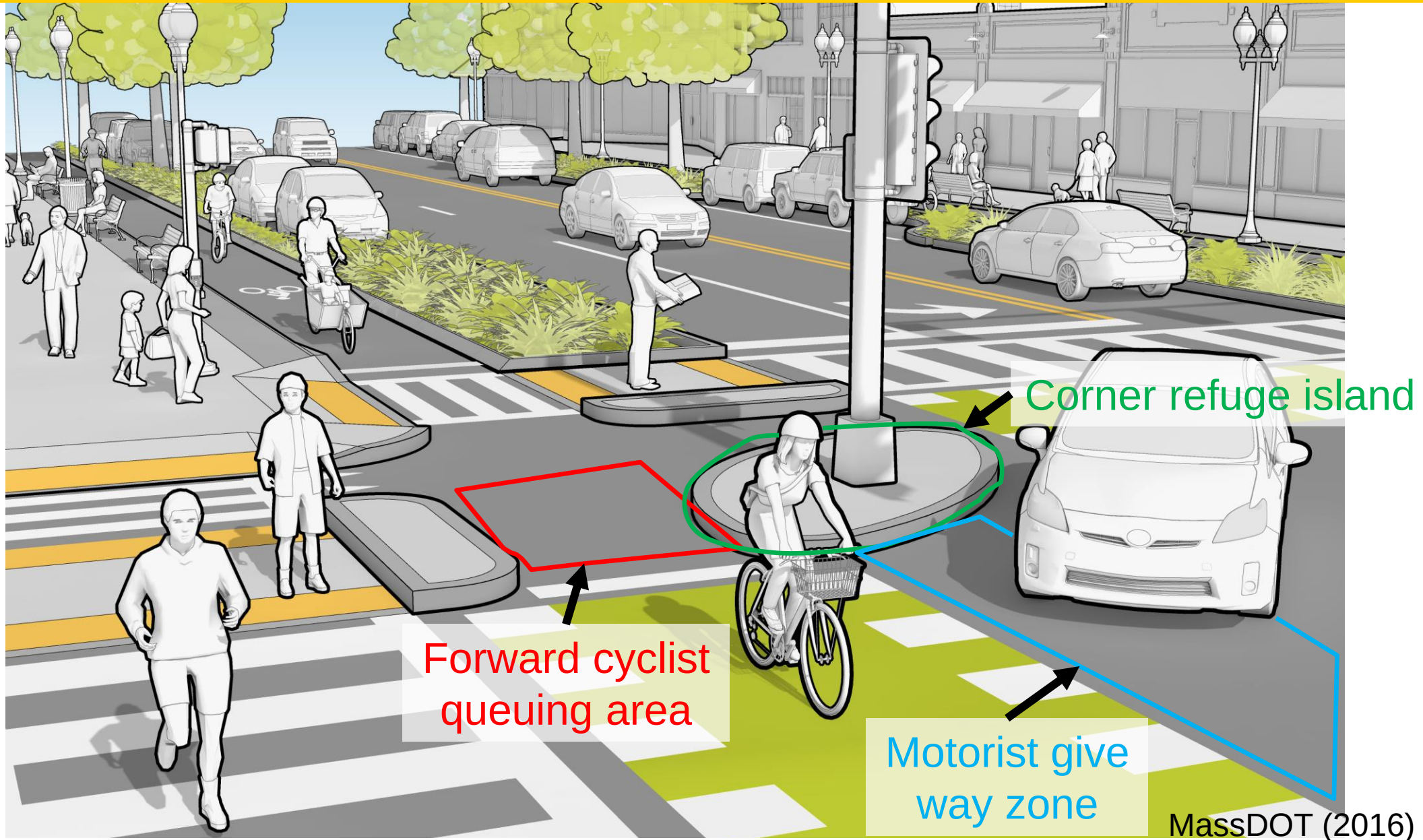
Dedicated cycle lane
(i.e. lateral shift)

Protected intersections



Falbo (2014)
Protected intersections
for bicyclists

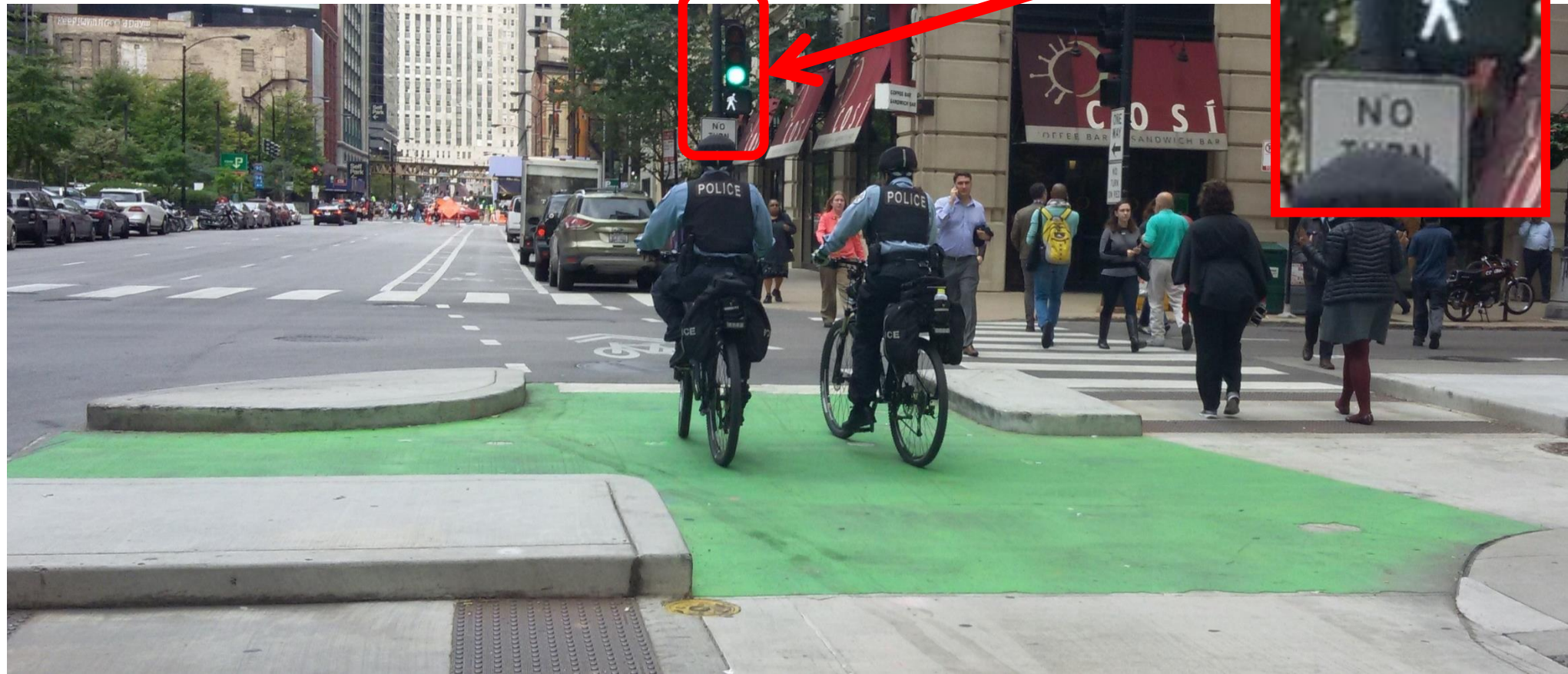
Protected intersections – layout



Protected intersections – phasing

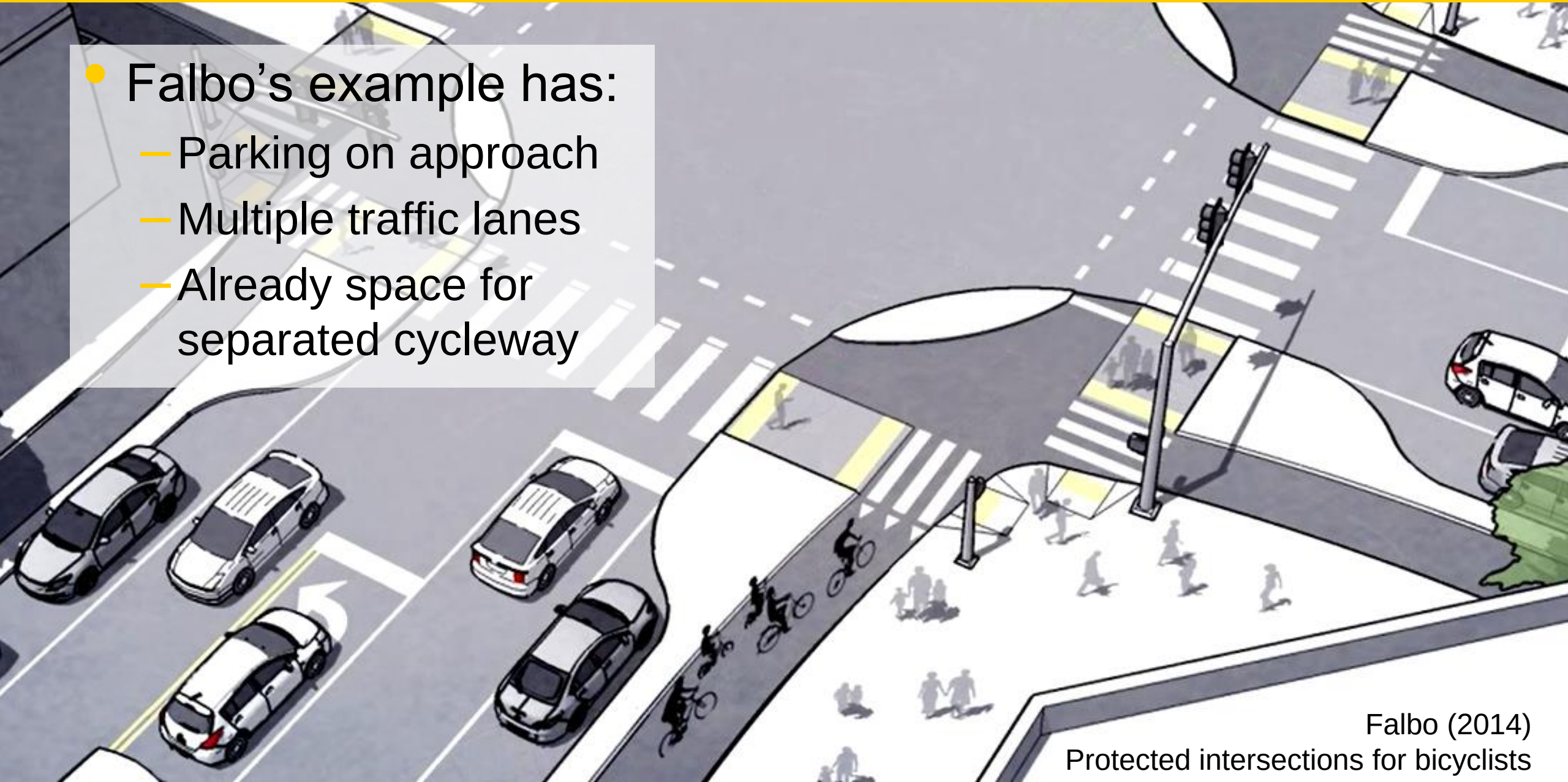
- Falbo (2014):
 - Fully protected / bicycle Barnes' dance
 - Cycle head start

- Chicago:



Protected intersections in New Zealand?

- Falbo's example has:
 - Parking on approach
 - Multiple traffic lanes
 - Already space for separated cycleway



Falbo (2014)
Protected intersections for bicyclists

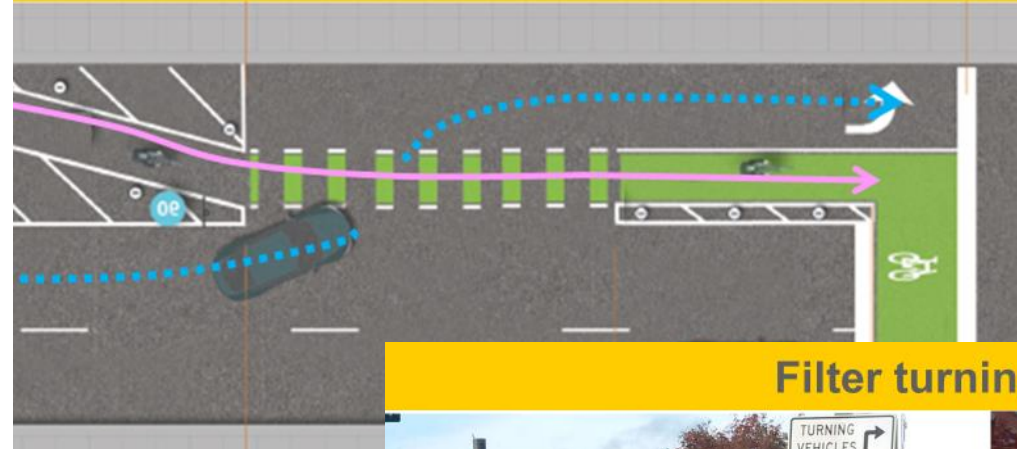
Protected intersections in New Zealand?

- NZ generally has:
 - ~~Parking on approach~~
 - ~~Multiple traffic lanes~~
 - *Hardly even space for separated cycleway?*

It'll be tricky -
let's not try

Yeah right.

Lateral shift / transition



Protected (yet concurrent) phasing



Filter turning

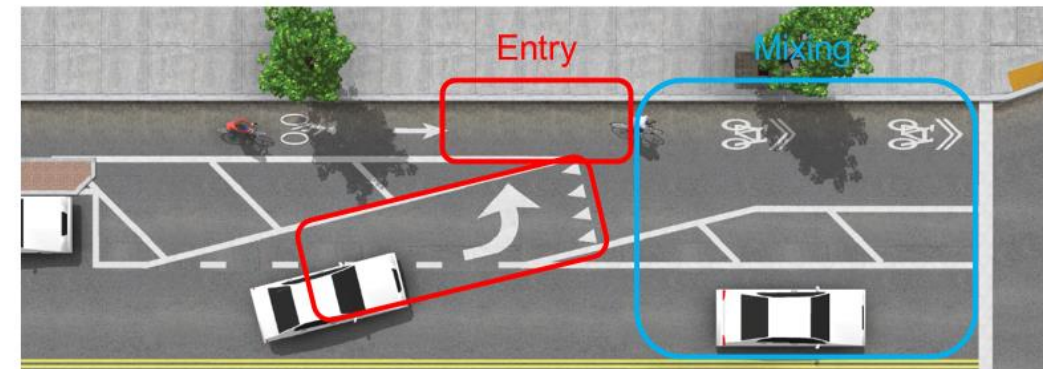


Which ones,
where???

Protected intersections



Mixing zones



Hierarchy of provision (Vancouver, adapted for driving on left)

1



2



3

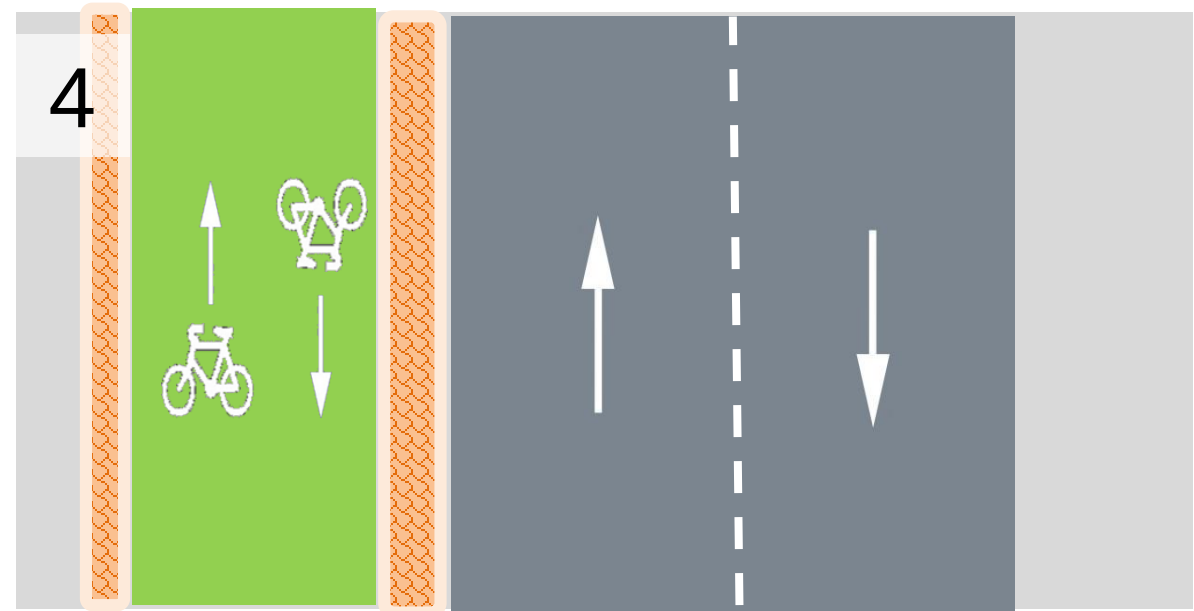
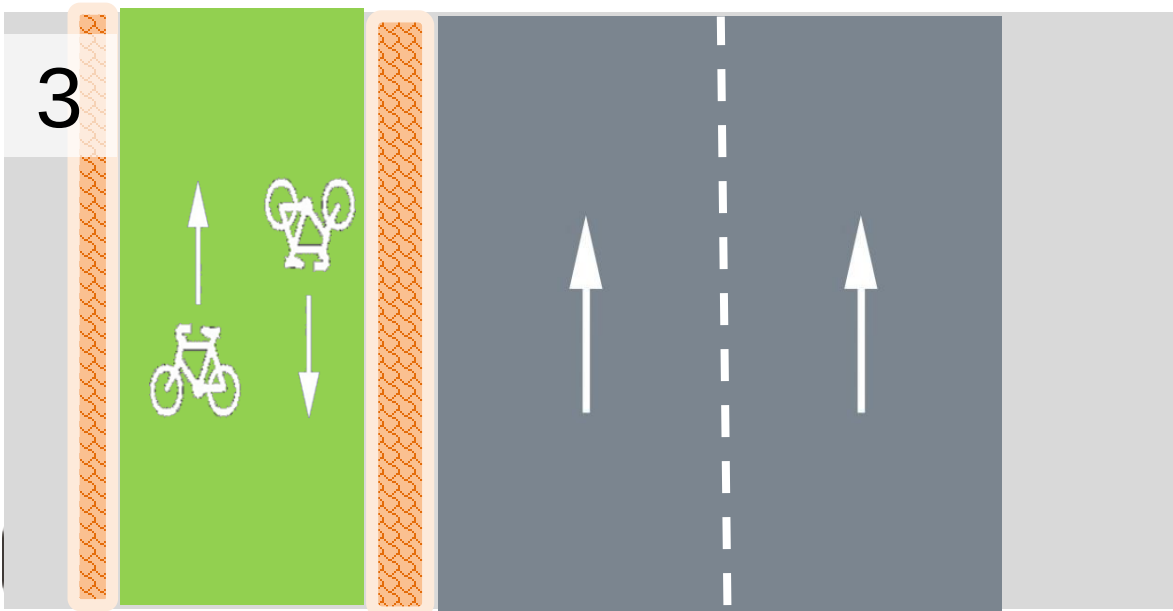
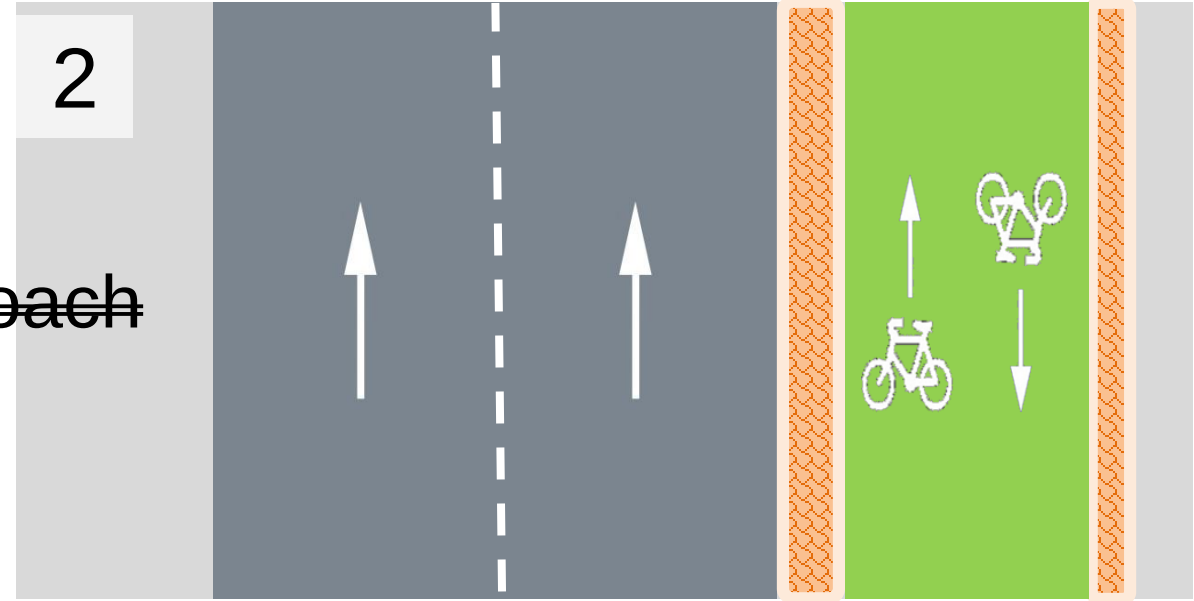


4

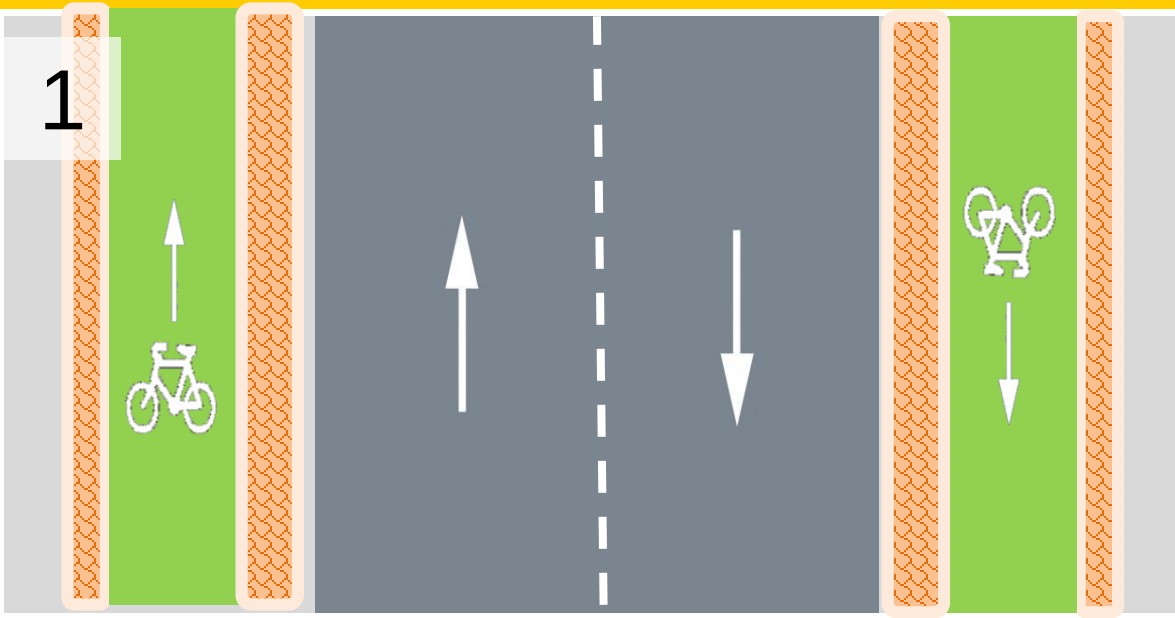


2-way cycleways – suitable treatments

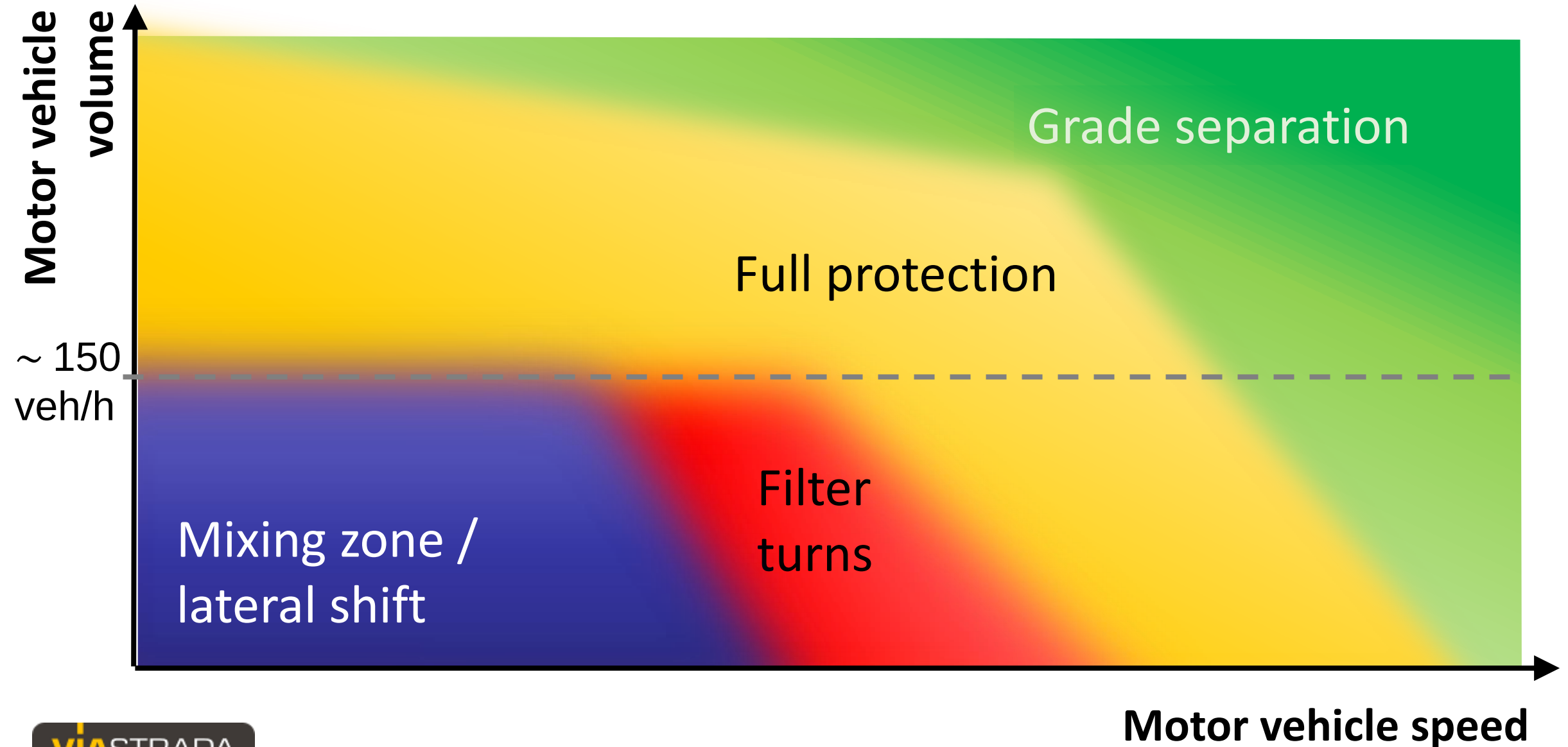
- Full protection
- ~~• Filter turning~~
- ~~• Addressing the conflict on the approach~~
 - ~~– Mixing zones~~
 - ~~– Lateral shift / transition~~
- *Protected intersections?*



1-way cycleways – treatment thresholds



1-way cycleways – treatment thresholds



Conclusions & Recommendations

- We're doing ok
 - Let's keep improving...



Conclusions & Recommendations

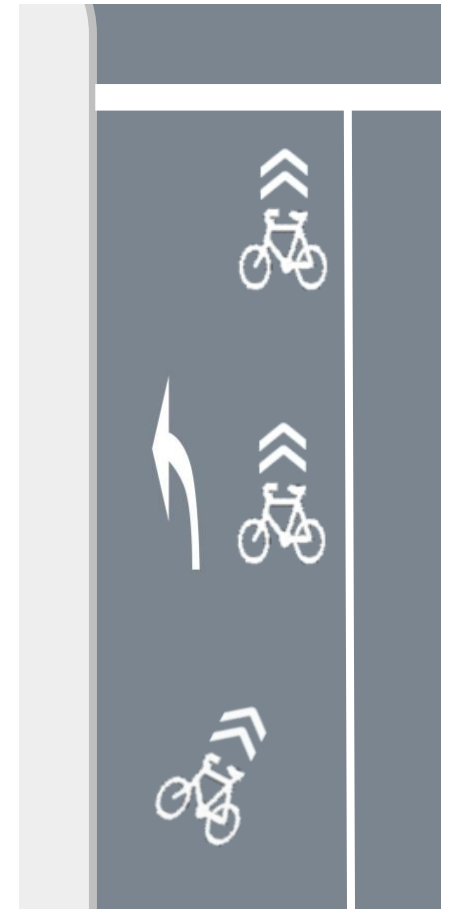
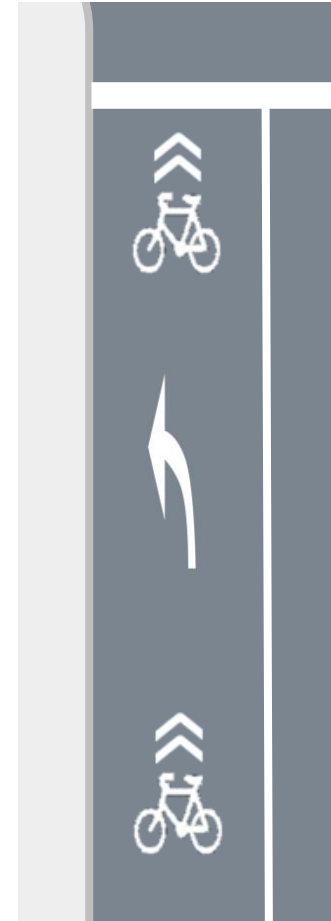
- We're doing ok
 - Let's keep improving...
- Need to consider filter turning
 - Not for 2-way / contraflow cycling
 - Flashing yellow arrows



New York

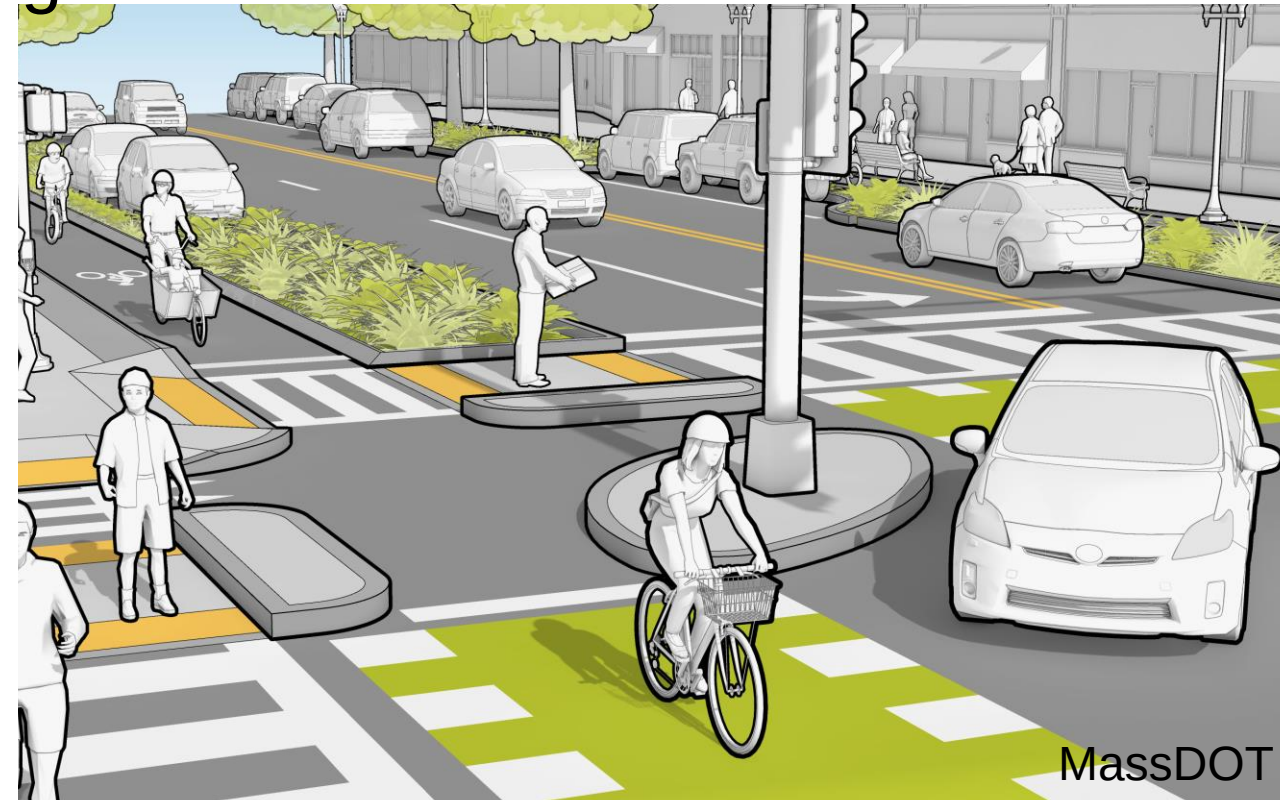
Conclusions & Recommendations

- We're doing ok
 - Let's keep improving...
- Need to consider filter turning
 - Not for 2-way / contraflow cycling
 - Flashing yellow arrows
- Place for good mixing zones
 - Widths & sharrow placement



Conclusions & Recommendations

- We're doing ok
 - Let's keep improving...
- Need to consider filter turning
 - Not for 2-way / contraflow cycling
 - Flashing yellow arrows
- Place for good mixing zones
 - Widths & sharrow placement
- Protected intersections
 - Where we can



Thank you to all who helped along the way!



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