5 år med fokus på sykkelulykker Hva har vi lært?

Jon Ramm-Pettersen MD PhD
Nevrokirurgisk avdeling
Oslo Universitetssykehus

AKUTTSTUE

Trygg Trafikk 2016

TRYGG TRAFIKK

ALT INNHOLD MEDIA KURS NETTBUTIKK OM OSS KONTAKT SØK

Forside / Statistikk / Sykkelulykker / Skriv ut

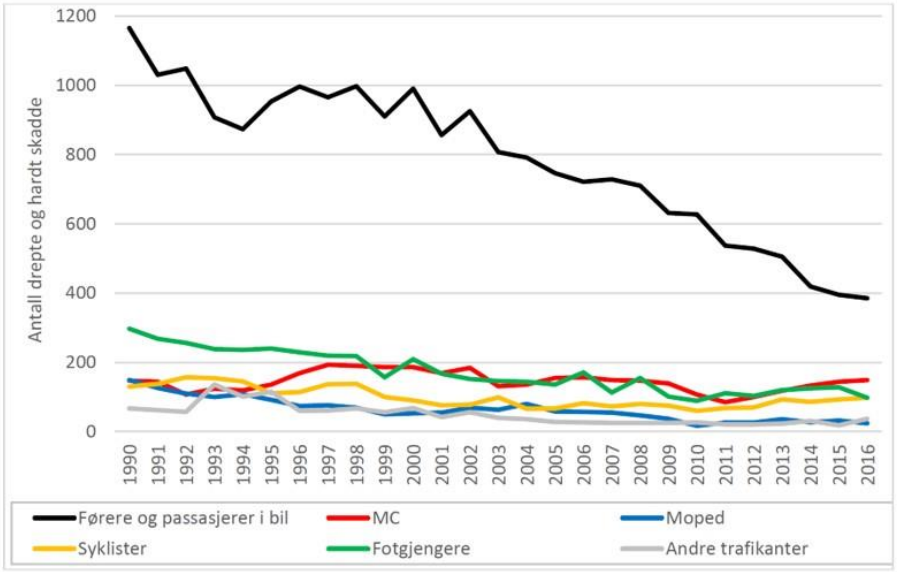
Ulykker på sykkel

I gjennomsnitt mister 10 personer livet på sykkel årlig, mens omtrent 65 personer blir alvorlig skadet.

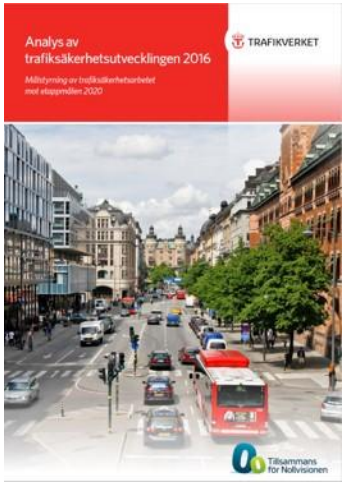
Det er anslått at rundt 4500 syklister årlig skades i trafikken, viser en beregning fra Transportøkonomisk institutt (TØI), basert på tall fra legevakt/akuttmottak (Rapport 793/2005). Den offisielle ulykkesstatistikken hos Statistisk sentralbyrå (SSB) viser langt færre syklistulykker. Det skyldes at mange sykkelulykker aldri blir rapportert, fordi de ikke blir politianmeldt.

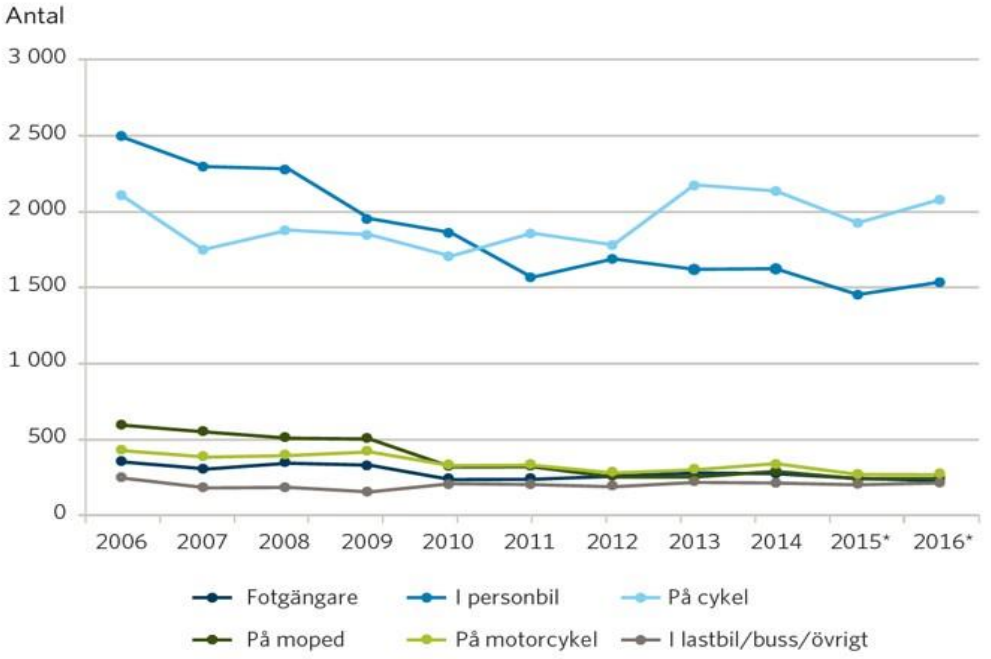
De alle fleste skadene etter sykkelulykker er på armer/hender og ben/føtter, og de aller fleste er mindre alvorlige. Blant de som søker legehjelp etter ulykker, har om lag 20 prosent hode- eller ansiktsskader. Ved å bruke hjelm kan disse skadene reduseres betydelig.

Antall drepte og hardt skadde i Norge og Sverige



Figur 2.4 – Utvikling i antall drepte og hardt skadde for ulike trafikantgrupper





Figur 7. *Prognostiserat antal allvarligt skadade 2006–2016 fördelat efter trafikantkategori. *På grund av rutinförändringar har 2015 och 2016 justerats för internt bortfall. Källa: Strada.*

- **Er antallet sykkelulykker stigende? Alvorlighetsgrad?**
- **Hva karakterisere hode- og nakke-skader ved sykkelulykker?**
- **Er offentlig norsk statistikk korrekt?**

- Ullevål er traumesenteret i Helse Sør-Øst, med et oppland på 3 millioner innbyggere
- Nevrotraumatologi for hele Helse Sør-Øst
- Prospektivt traumeregister
- Uttrekk av sykkelulykker for 2005 til 2016

Epidemiologi sykkelulykker

Accident Analysis and Prevention 148 (2020) 105836

Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

The number of patients hospitalized with bicycle injuries is increasing - A cry for better road safety

Ingar Næss [a,*], Pål Galteland [b], Nils Oddvar Skaga [c], Torsten Eken [a,c], Eirik Helseth [a,d], Jon Ramm-Pettersen [b]

[a] Institute of Clinical Medicine, Faculty of Medicine, University of Oslo, Oslo, Norway
[b] Department of Maxillofacial Surgery, Oslo University Hospital, Oslo, Norway
[c] Department of Anaesthesiology, Oslo University Hospital, Oslo, Norway
[d] Department of Neurosurgery, Oslo University Hospital, Oslo, Norway

ARTICLE INFO

Keywords:
Bicycling
Health promotion
Transportation
Wounds and injuries
Accidents
Traffic

ABSTRACT

Introduction: Norwegian authorities encourage people to commute by bicycle to improve public health, decrease rush-hour traffic jams and reduce pollution. However, increasing the number of bicyclists, especially in the rush-hour traffic, may increase the number of serious bicycle injuries.
Objective: To explore trends in hospitalized bicycle injuries at a Norwegian level I trauma centre during the last decade.
Methods: Data was extracted from the prospectively registered institutional trauma registry. We identified patients admitted after bicycle injuries between 2005 and 2016.
Results: A total of 1543 patients were identified. Median age was 40 years (range 3–91) and 73 % were males. The

Table 1
Patient characteristics.

	n	%
Gender:		
Male	1126	73
Female	417	27
Type of crash:		
Single bicycle crash	1053	68
Motorized vehicle crash	410	27
Collision with another bicycle	63	4.1
Collision with pedestrian	7	<1
Other	10	<1
Pre-injury ASA-PS:		
ASA 1	1206	78
ASA 2	254	16
ASA 3	81	5.2
ASA 4	2	<1
Alcohol (tested on suspicion):		
Positive test	144	9.3
Negative test	119	7.7
Not tested	1280	83
Helmet use:		
Helmet	678	44
No helmet	578	37
Unknown	287	19
Mode of transport:		
Ground ambulance	1185	77
Helicopter ambulance	320	21
Other	38	2.5
Admission:		
Primary	940	61
Secondary	603	39
- Local hospital	311	20
- OAEOC	292	19

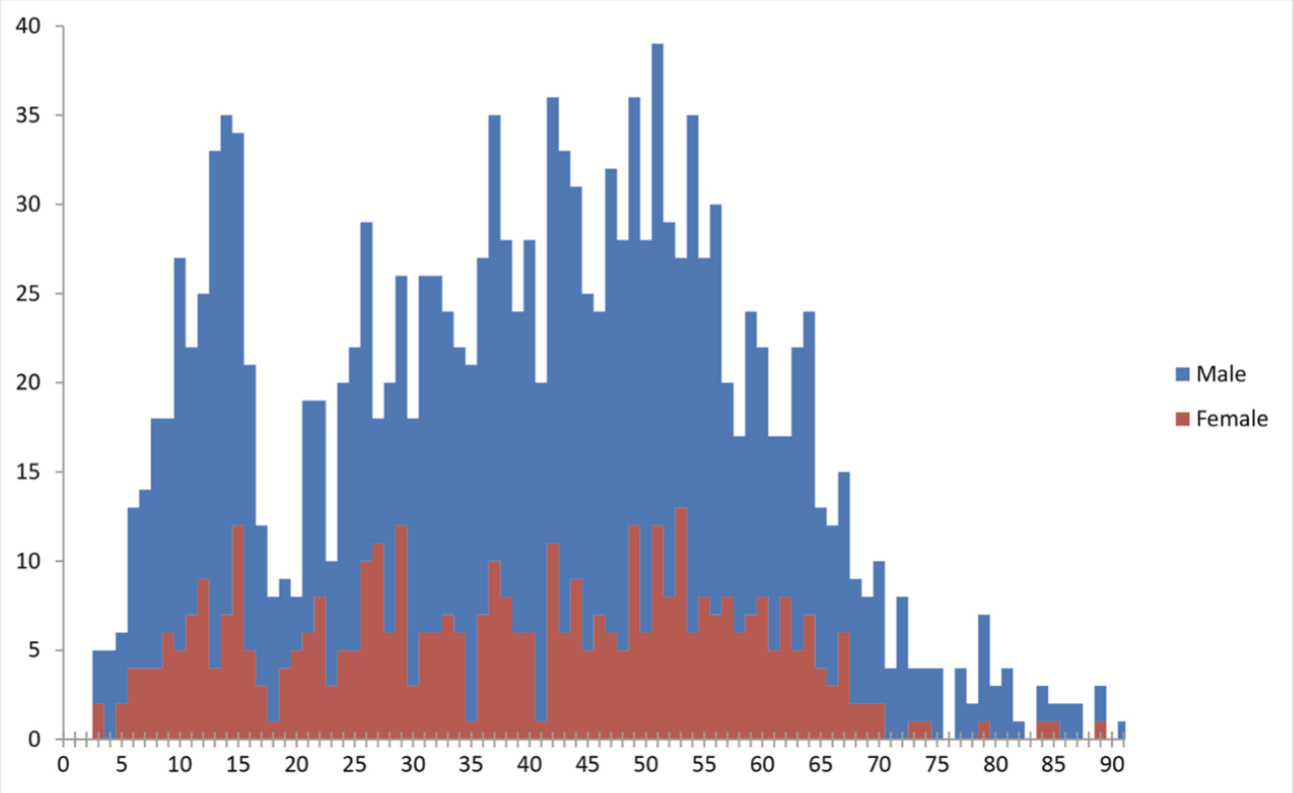


Fig. 1. Age distribution (stacked columns) for the hospitalized bicyclists, 1-year intervals.

Epidemiologi sykkelulykker

Epidemiologi sykkelulykker

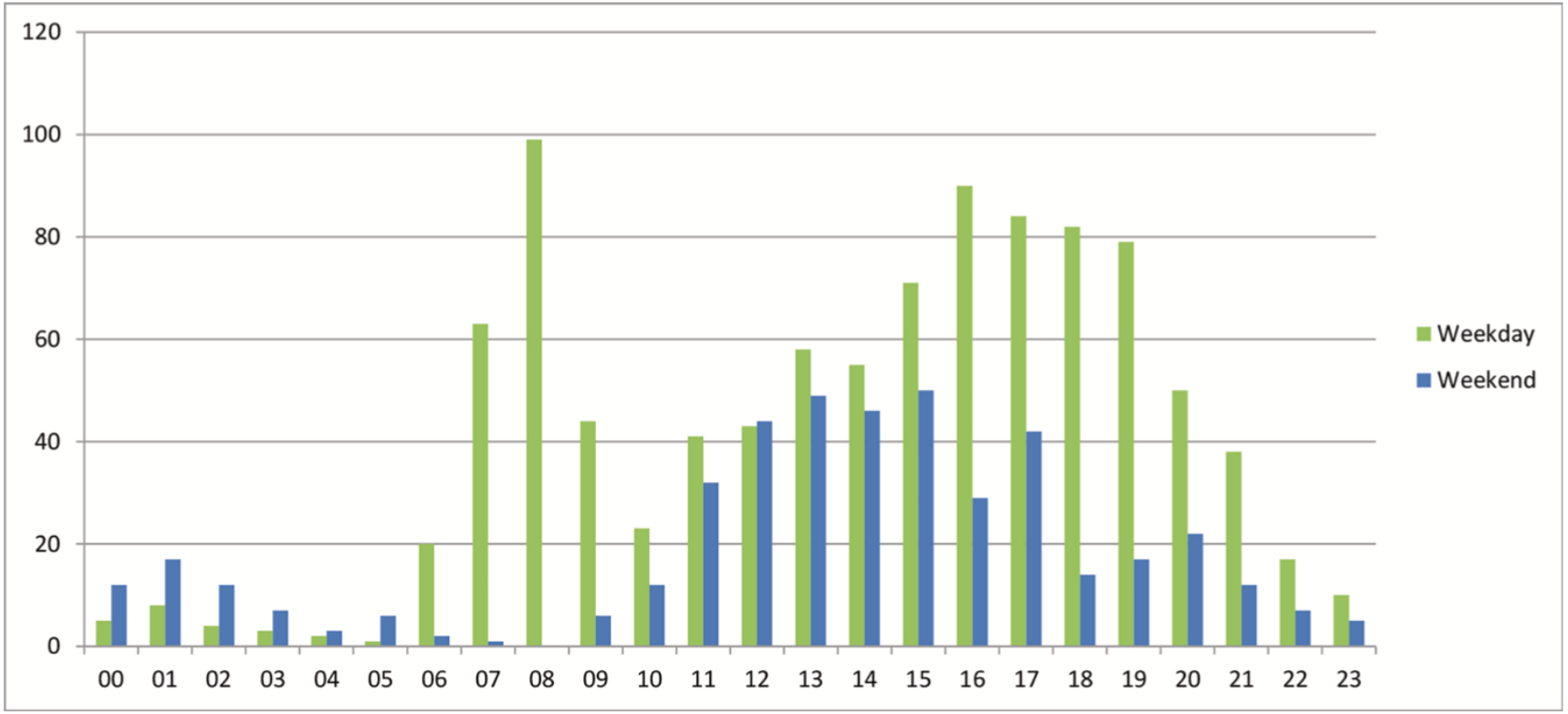


Fig. 3. Time of injury for 1437 hospitalized bicyclists, displayed in absolute numbers (missing data for 106 bicyclists).

Epidemiologi sykkelulykker

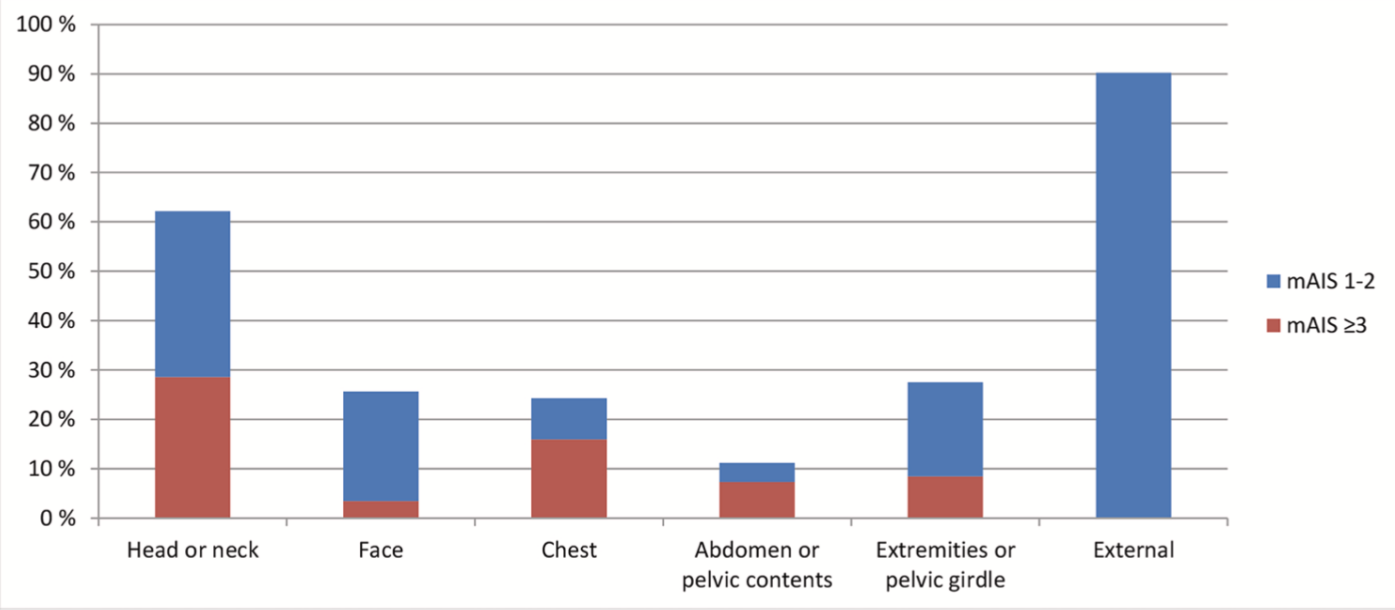


Fig. 4. Distribution of injuries for hospitalized bicyclists according to the six defined ISS body regions. Severity of injury is shown as maximum AIS (mAIS). mAIS 1-2 is mild and moderate injury, while 3 or above is a serious injury or worse. A patient may have injuries to several body regions.

Epidemiologi sykkelulykker

Table 3
Outcome data for hospitalized bicyclists.

Outcome	n	%	min	25 %	Median	75 %	max
Hospital length of stay (days)	1543	100	1	2	3	6	70
Days in the intensive care unit	1357	88	1	1	2	3	60
Ventilator days	226	15	1	2	4	13	51
Mortality at 30 days	36	2.3					

Epidemiologi sykkelulykker

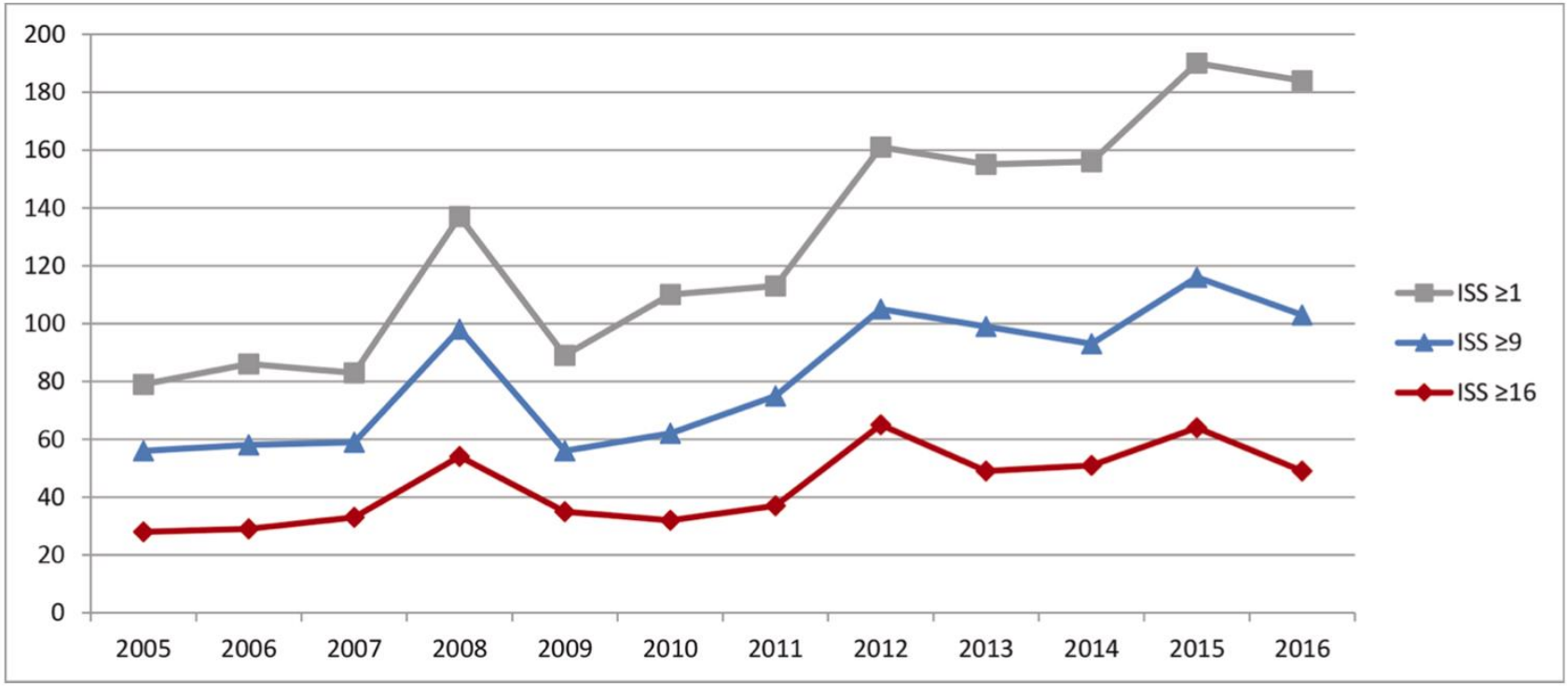


Fig. 5. Time trends for the annual number of hospitalized bicyclists at OUH-U, stratified by injury severity.

- Beskytter sykkelhjelm mot hodeskader?
- Hva fører til at det blir en alvorlig skade?

Beskytter sykkelhjelm mot hodeskader?

Table 2. The association of helmet wearing with head injury, acute neurosurgical procedures and mortality, adjusted for age and sex. Multivariable logistic regression. No helmet is the reference, and cyclists with head injury were compared to cyclists with no head injury

	Total N=1256	Helmet N=678	No helmet N=578	OR (95% CI)	p-valu	aOR[1] (95% CI)	-value[1]
Mild head injury	133 (11)	65 (10)	68 (12)	0.43 (0.29-0.63)	**<0.00**	0.43 (0.29-0.65)	**<0.001**
Moderate head injury	320 (25)	165 (24)	155 (27)	0.48 (0.35-0.64)	**<0.00**	0.48 (0.35-0.65)	**<0.001**
Serious head injury	372 (30)	150 (22)	222 (38)	0.30 (0.23-0.40)	**<0.00**	0.29 (0.22-0.39)	**<0.001**
Any head injury	825 (66)	380 (56)	445 (77)	0.38 (0.30-0.49)	**<0.00**	0.38 (0.30-0.49)	**<0.001**
Acute cranial neurosurgery[2]	116 (9)	37 (3)	79 (14)	0.37 (0.24-0.55)	**<0.00**	0.36 (0.24-0.54)	**<0.001**
Mortality	27 (2)	10 (2)	17 (3)	0.49 (0.22-1.09)	0.08	0.50 (0.22-1.11)	0.09

1 - Adjusted for age, sex and pre-injury ASA PS.

2 - Individual patients who had one or more neurosurgical procedures performed.

Økende alder gir økende alvorlighetsgrad

Figure 1. Age and serious injury among hospitalzied bicyclists (% serious injury in different age groups, N=980, P<0.001).

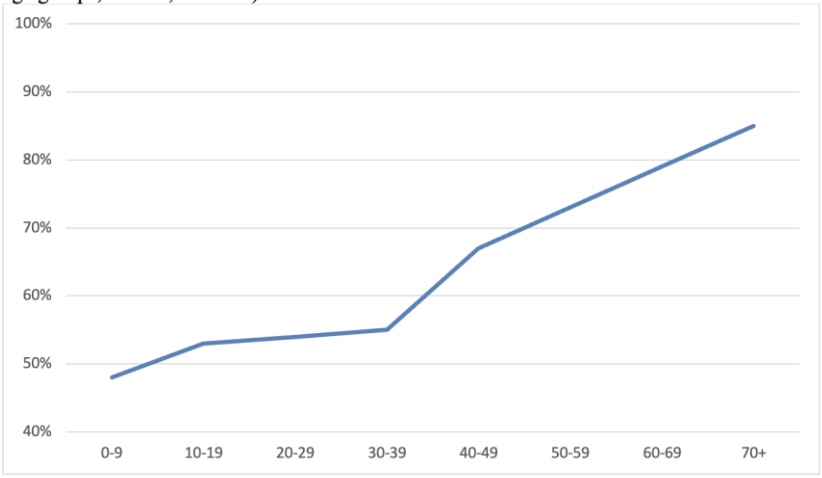
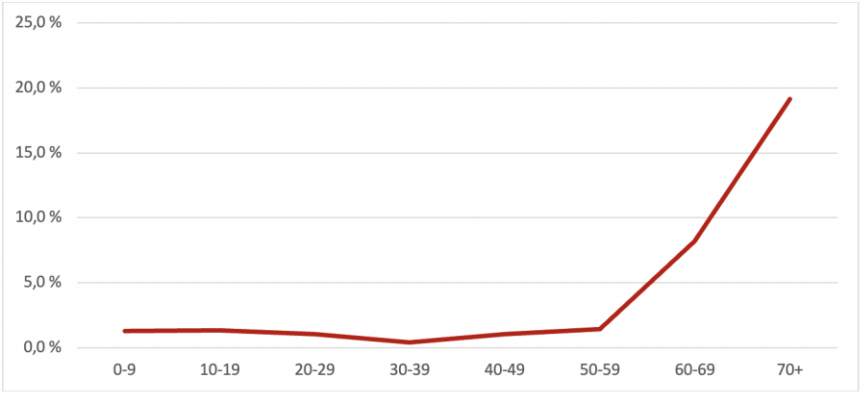


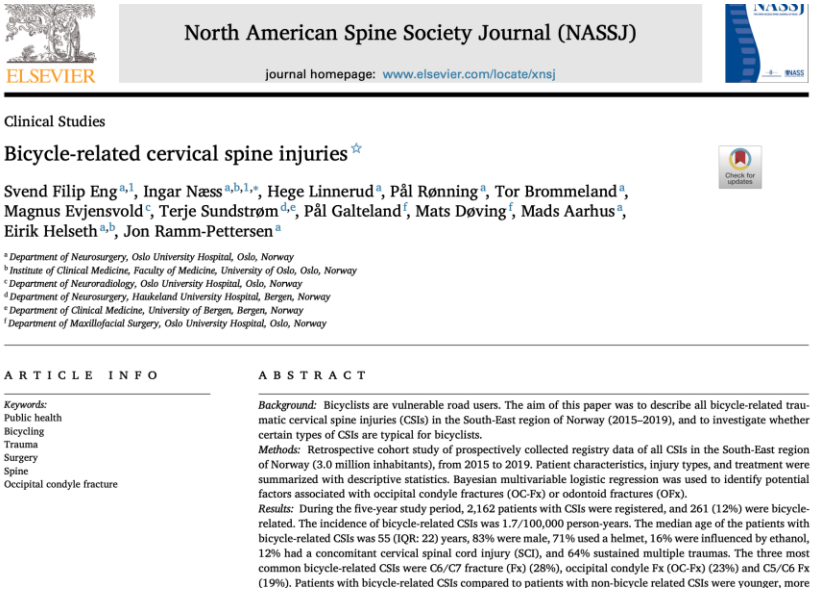
Figure 3. Age and fatal outcome among hospitalized bicyclists (% mortality in different age groups, N=36, p<0.001).



Sykkelskader og nakkebrudd

- Nakkeskaderegisteret ved Nevrokirurgisk avdeling – Ullevål

- Sykkelulykker forårsaket 12% av alle nakkebrudd, nest hyppigste årsak, etter fall



North American Spine Society Journal (NASSJ)

journal homepage: www.elsevier.com/locate/xnsj

Clinical Studies

Bicycle-related cervical spine injuries ☆

Svend Filip Eng [a,1], Ingar Næss [a,b,1,*], Hege Linnerud [a], Pål Rønning [a], Tor Brommeland [a], Magnus Evjensvold [c], Terje Sundstrøm [d,e], Pål Galteland [f], Mats Døving [f], Mads Aarhus [a], Eirik Helseth [a,b], Jon Ramm-Pettersen [a]

[a] Department of Neurosurgery, Oslo University Hospital, Oslo, Norway
[b] Institute of Clinical Medicine, Faculty of Medicine, University of Oslo, Oslo, Norway
[c] Department of Neuroradiology, Oslo University Hospital, Oslo, Norway
[d] Department of Neurosurgery, Haukeland University Hospital, Bergen, Norway
[e] Department of Clinical Medicine, University of Bergen, Bergen, Norway
[f] Department of Maxillofacial Surgery, Oslo University Hospital, Oslo, Norway

ARTICLE INFO

Keywords:
Public health
Bicycling
Trauma
Surgery
Spine
Occipital condyle fracture

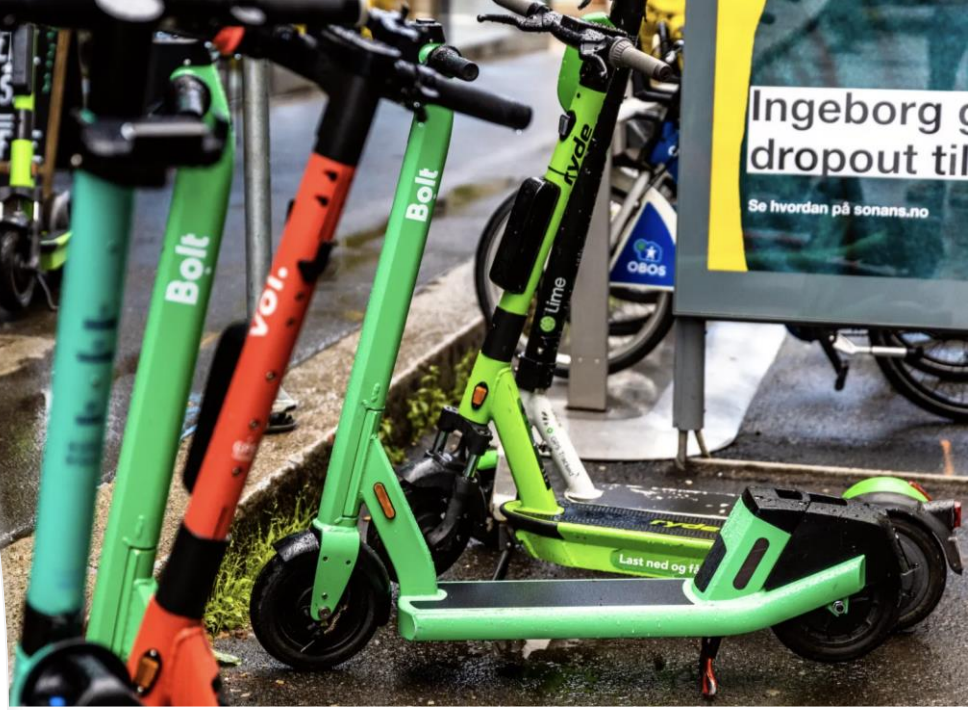
ABSTRACT

Background: Bicyclists are vulnerable road users. The aim of this paper was to describe all bicycle-related traumatic cervical spine injuries (CSIs) in the South-East region of Norway (2015–2019), and to investigate whether certain types of CSIs are typical for bicyclists.

Methods: Retrospective cohort study of prospectively collected registry data of all CSIs in the South-East region of Norway (3.0 million inhabitants), from 2015 to 2019. Patient characteristics, injury types, and treatment were summarized with descriptive statistics. Bayesian multivariable logistic regression was used to identify potential factors associated with occipital condyle fractures (OC-Fx) or odontoid fractures (OFx).

Results: During the five-year study period, 2,162 patients with CSIs were registered, and 261 (12%) were bicycle-related. The incidence of bicycle-related CSIs was 1.7/100,000 person-years. The median age of the patients with bicycle-related CSIs was 55 (IQR: 22) years, 83% were male, 71% used a helmet, 16% were influenced by ethanol, 12% had a concomitant cervical spinal cord injury (SCI), and 64% sustained multiple traumas. The three most common bicycle-related CSIs were C6/C7 fracture (Fx) (28%), occipital condyle Fx (OC-Fx) (23%) and C5/C6 Fx (19%). Patients with bicycle-related CSIs compared to patients with non-bicycle related CSIs were younger, more

El-sparkesykkel – Oslo Skadelegevakt



- Registrering av sykkelulykkerfra jan 2019,
  - mars 2019 ble utleie av el-sparkesykler innført
  - Registrert ut mars 2020

- Hvem er det som skader seg på el-sparkesykkel?
- Er el-sparkesykkel ulykker like alvorlige som sykkelulykker?

- 3191 sykkelskader
- 2341 sykkel
- 850 El-sparkesykkel

Figure 1. Age Distribution Between Electric Scooter (e-Scooter) and Bicycle Groups

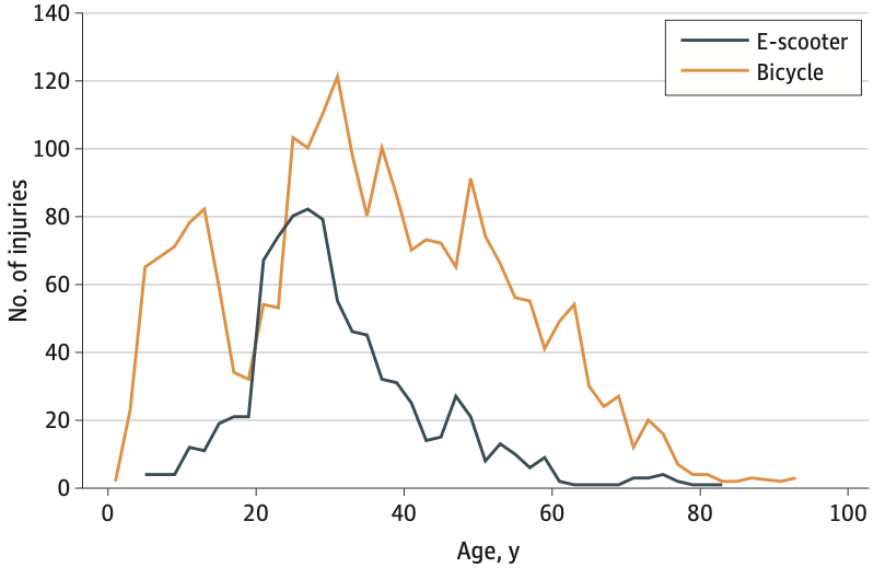


Figure 2. Timeline of Electric Scooter (e-Scooter) and Bicycle Injuries During 24 Hours

Table 1. Patient Characteristics of Injured Electric Scooter (e-Scooter) Riders and Bicyclists

Characteristic	No. (%)			*P* value[a]
	All (N = 3191)	e-Scooter (n = 850)	Bicycle (n = 2341)	
Mean (SD) age, y	34 (17)	31 (12)	35 (18)	<.001
Sex				
Female	1165 (36.5)	321 (37.7)	844 (36.1)	.38
Male	2026 (63.5)	529 (62.2)	1497 (63.9)	
Intoxication				
Yes	516 (16.2)	336 (39.5)	180 (7.7)	<.001
No	2582 (80.9)	484 (56.9)	2098 (89.6)	
Unknown	93 (2.9)	30 (3.5)	63 (2.7)	
Helmet				
Yes	1474 (46.2)	18 (2.1)	1456 (62.2)	<.001
No	1485 (46.5)	707 (83.8)	778 (32.2)	
Unknown	232 (7.3)	125 (14.7)	107 (4.6)	
No. of injuries[b]	3839	997	2842	
Injury severity[c]				
Minor	2554 (66.5)	675 (67.7)	1879 (66.1)	.06
Moderate	988 (25.7)	233 (23.4)	755 (26.6)	
Severe	296 (7.7)	89 (8.9)	207 (7.3)	
Body region				
Head and neck	953 (24.8)	317 (31.7)	636 (22.4)	<.001
Thorax	236 (6.1)	41 (4.1)	195 (6.9)	<.001
Abdomen, pelvis, lumbar spine	116 (3.0)	13 (1.3)	103 (3.6)	<.001
Upper limb	1617 (42.1)	341 (34.2)	1276 (44.9)	<.001
Lower limb	917 (23.9)	285 (28.6)	632 (22.2)	<.001

Veien videre

- Utfordringer
  - Offentlig statistikk er åpenbart feil
  - Ingen har oversikt over total antall, alvorlighetsgrad eller konsekvens av sykkelulykker
  - Skifte i transportulykker i by-områdene, vekk fra bil og MC-ulykker til sykkelulykker
  - Manglende tall gir manglende innsats
    - Riktige tall (Legevakten) gir riktig innsats

Prosjektgruppen

- Forskere
  - Ingar Næss,
  - Pål Galteland
  - Mats Døving
  - Ausust Stray
  - Sven Philip Eng
- Traumeregisteret
  - Nils Oddvar Skaga
  - Torsten Eken
- Legevakten
  - Henrik Siverts
  - Martine Enger
  - Knut Melhus
- Odontoligske fakultet
  - Amer Sehic
  - Tor Påske Utheim
- Nevrokirurgisk avdeling
  - Eirik Helseth
  - Mads Aarhus
  - Pål Rønning
  - Hege Linnerud
  - Tor Brommeland
  - Terje Sundstrøm
  - Jon Ramm-Pettersen