

# Don't Go Head Over Wheels: A head to toe review of motorized scooter related trauma.

Learning objectives:

- Review common findings of whole body trauma related to the use of motorized scooters
- Provide a broad scope of minor and major injuries to illustrate the wide variety of possible trauma associated with motorized scooters



<https://www.li.me/second-street>

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<https://www.bird.co/platform/>

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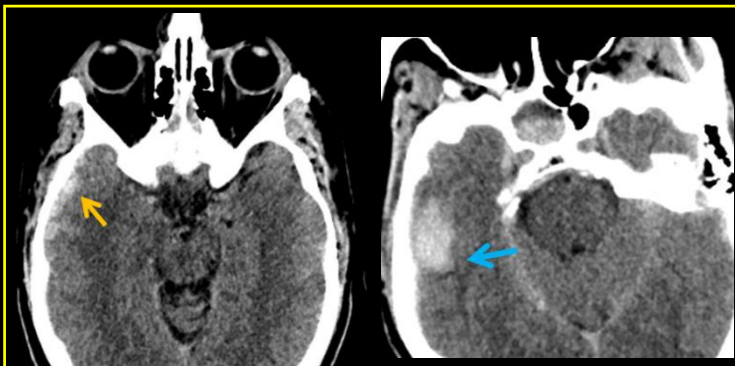
# Background

- First introduced in 2017
- In over 100 major cities
- Over 20 million rides
- Travel up to at least 15 miles per hour
- \$1 to start and \$0.15 per additional minute
- Use of these scooters is available to any person with access to smartphone applications
- In 2018, California passed a law only requiring helmets for riders under 18
- First DUI conviction in September 2018 for driving a scooter while intoxicated
- Indianapolis EMS reported ~30% of injuries occurred while the rider was intoxicated
- 32,400 injuries reported in the US from 2013-2017
- Approximately 1,800 required inpatient admission
- In 2017, there was a 77% increase in scooter related traumas in patients aged 21-36
- Patients of all ages are effected
  - Most injuries (34.6%) occur in school aged children
  - Older patients sustain more severe injuries

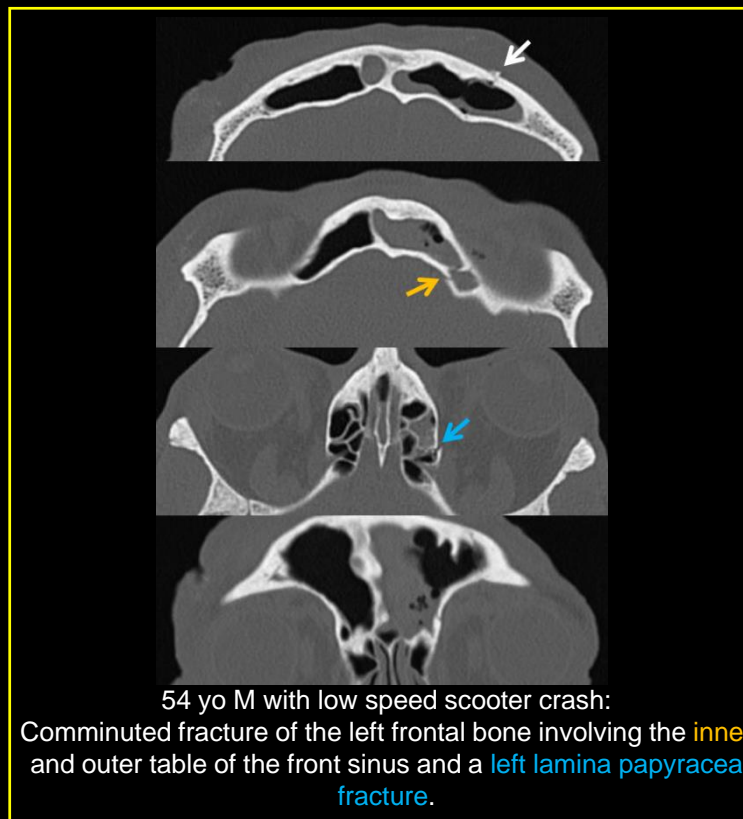


Most of the cities where Lime scooters are available  
<https://www.li.me/locations>

# Head and face

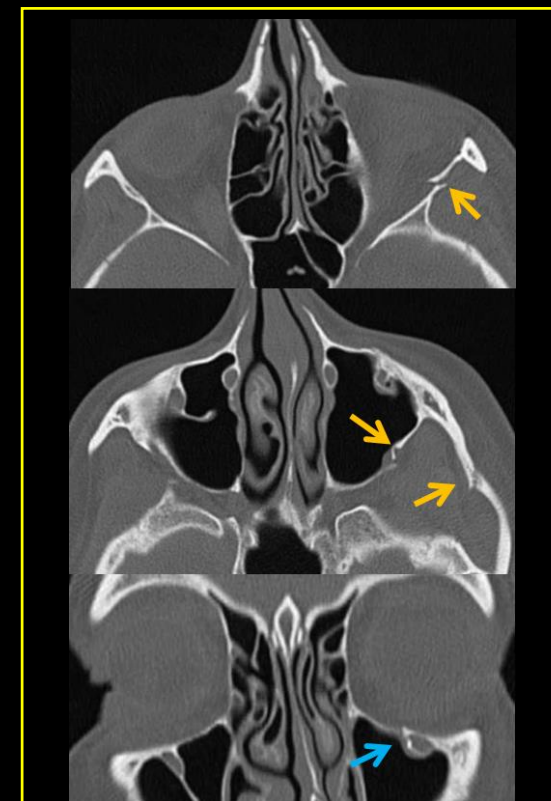


43 yo M hit by a car while riding a scooter:  
Subdural hematoma and intraparenchymal hemorrhage, patient later expired.



54 yo M with low speed scooter crash:  
Comminuted fracture of the left frontal bone involving the inner and outer table of the front sinus and a left lamina papyracea fracture.

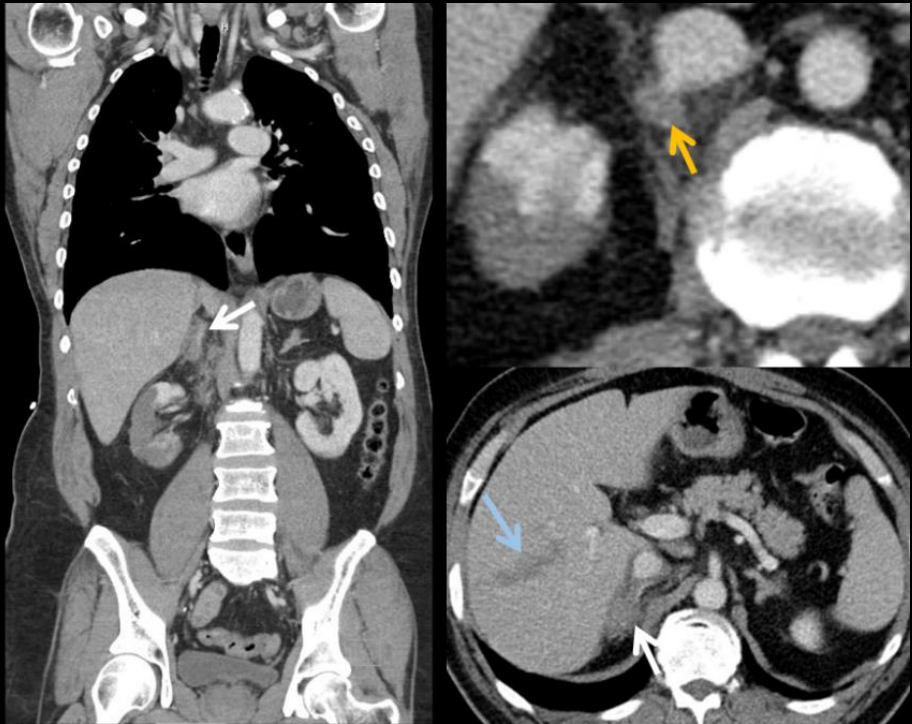
**FACT:** Most craniofacial traumas occur in kids aged 6-12 and spare the face.\*



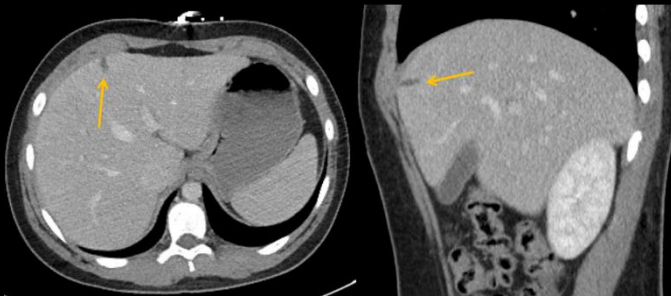
18 yo F who fell off a scooter:  
Left zygomaticomaxillary complex/tripod fracture with involvement of the left infraorbital canal

**FACT:** From 2008 to 2017, there were an estimated 32,001 craniofacial injuries related to motorized scooters.\*

# Body



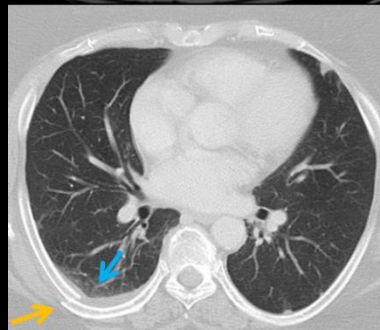
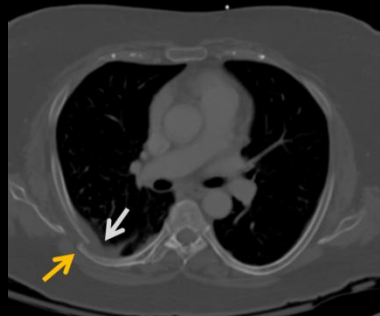
52 yo M hit by a car while riding scooter: **Right renal artery avulsion** with near complete lack of renal enhancement and right adrenal hematoma, **grade 2 liver laceration**



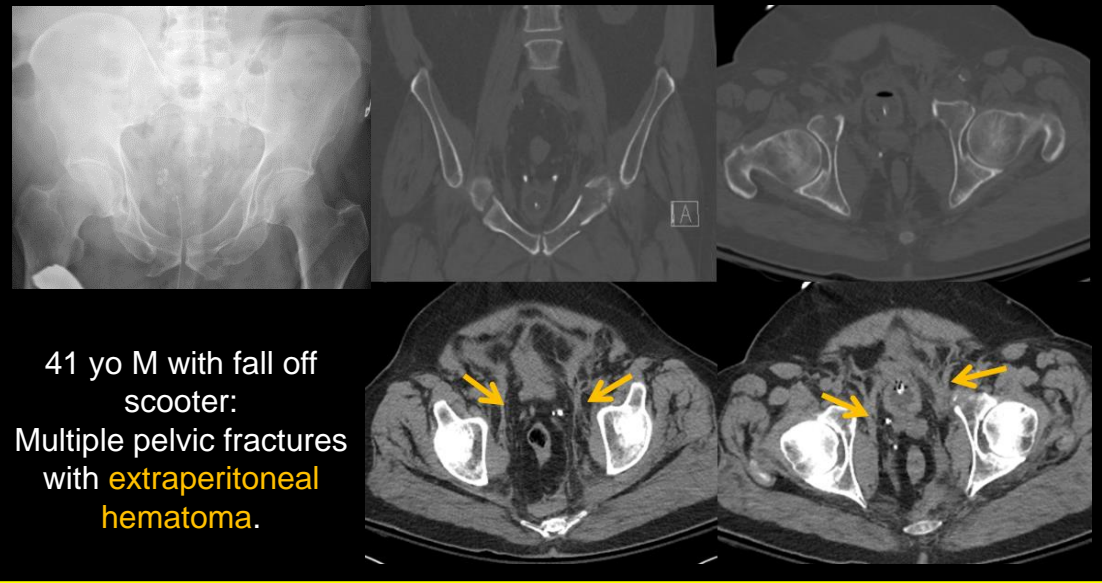
12 yo M with fall off scooter: Grade 2 **liver laceration**.

**FACT:** The chest (4.8%) and abdomen (5.6%) are similarly affected\*

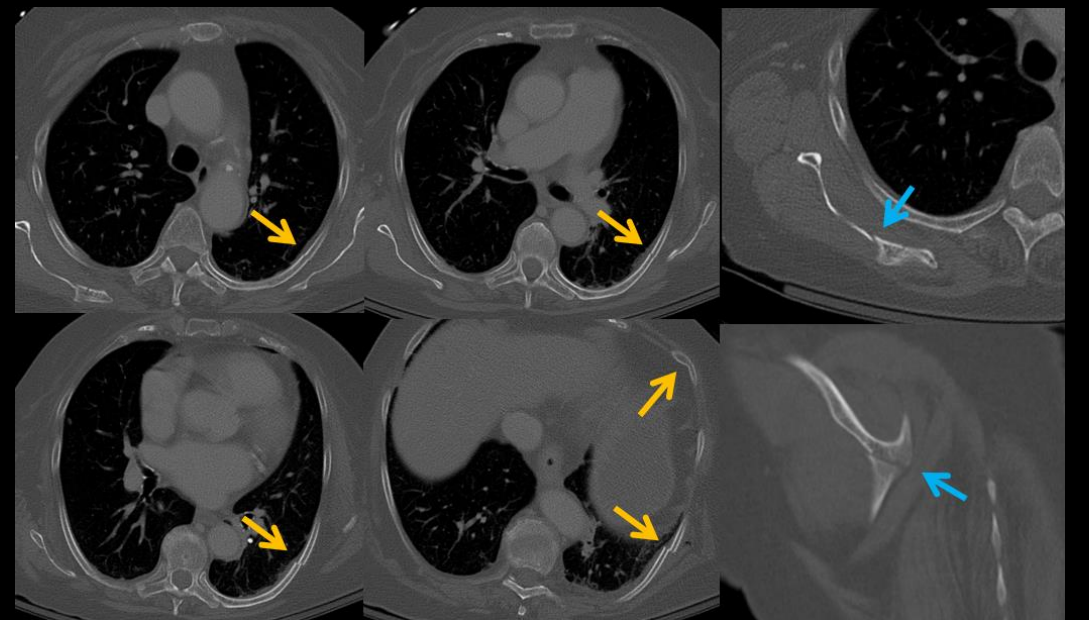
**FACT:** Between 2013-2017, approximately 11% of injuries involved internal organs\*



45 yo F who lost balance while riding a scooter: Multiple **rib fractures** and hemothorax and small **pulmonary contusion**



41 yo M with fall off scooter: Multiple pelvic fractures with **extraperitoneal hematoma**.



50 yo struck by a car while riding a scooter: Multiple **rib fractures** with flail chest clinically and **scapular body fracture**.

# Musculoskeletal

**FACT:** Approximately 8% of injuries involved non-rider pedestrians.\*



16 yo with fall from scooter:

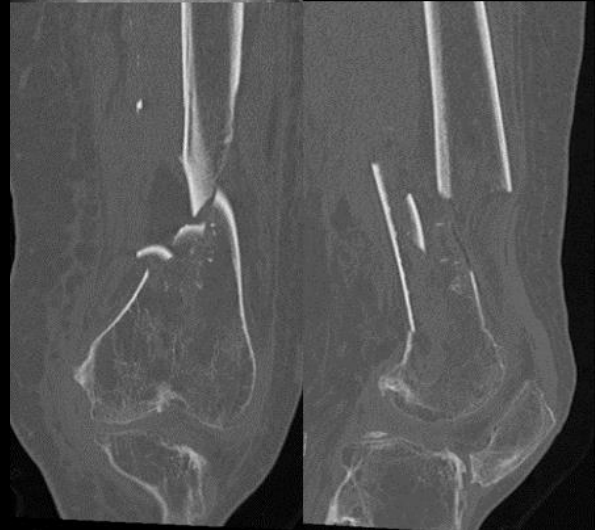
Comminuted, displaced intra-articular right distal radius fracture and nondisplaced right ulnar styloid fracture

**FACT:** 35.4% of fracture/dislocation injuries in scooter-related trauma involve the wrist or lower arm.\*\*

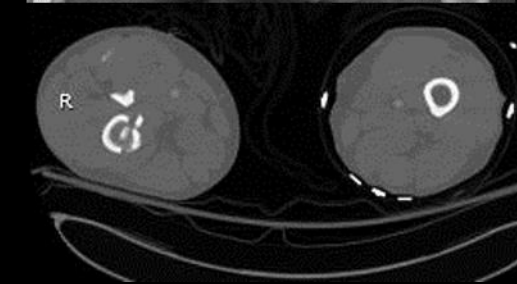
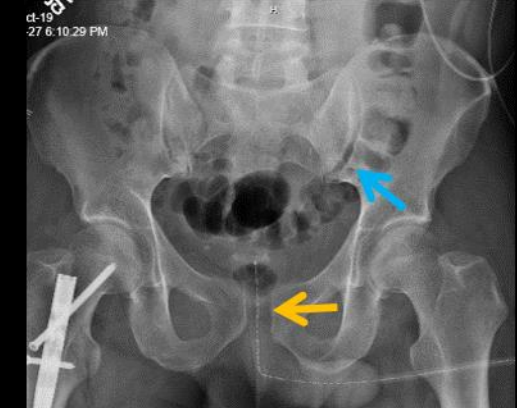


57 yo M fall from scooter:

Dislocation of the left long finger proximal interphalangeal joint.



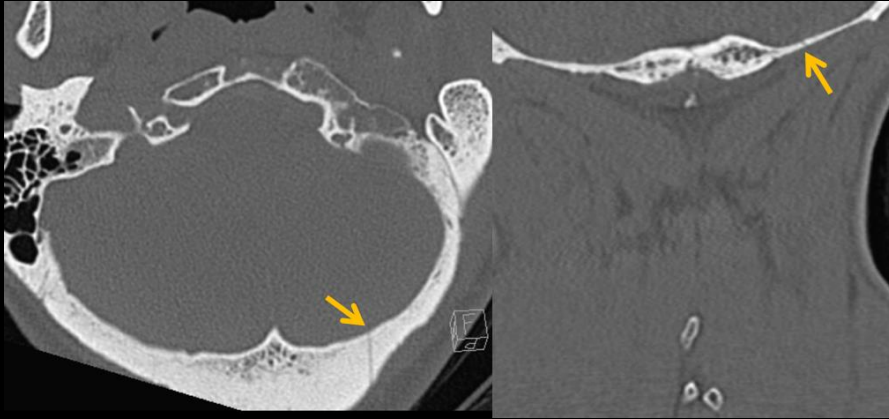
57 yo F with fall off scooter:  
Acute, comminuted, extra-articular fracture of the distal left femur with associated lipohemarthrosis.



59 yo F in motor vehicle vs scooter accident:

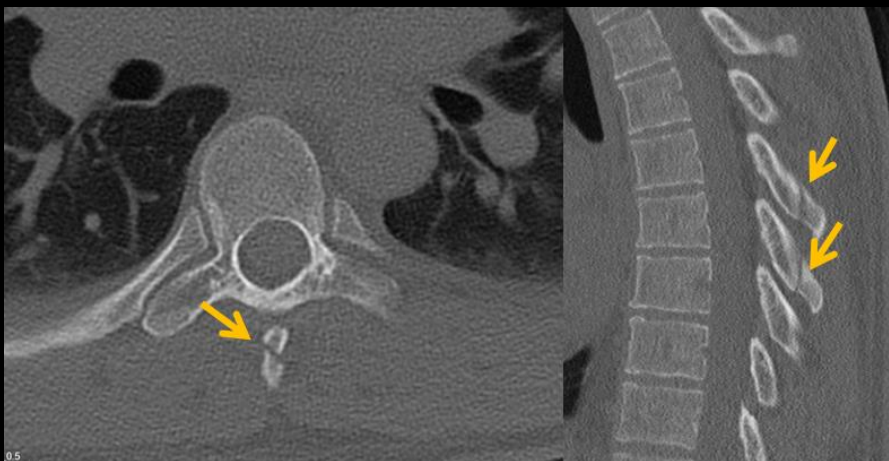
Comminuted femoral fracture, tibial spine fracture (not pictured), **pubic symphysis diastasis**, and **left sacroiliac joint rupture**

# Spine



65 yo F with fall off scooter:  
Nondisplaced **occipital bone fracture**.

**FACT:** 1.9% of injuries occur in the neck or cervical spine



37 yo F with fall of scooter:  
T5 and T6 spinous process fractures

# References

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