

Small rec off-road motor vehicle v1
Definition Factsheet & Technical Brief

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Definition Description: The goal of this definition is to detect emergency department (ED) visits related to small recreational off-road motor vehicles, including all-terrain vehicles (ATVs), utility task vehicles (UTVs), dune buggies, golf carts, go carts, dirt bikes, motor/cross bikes, snowmobiles, or snow bikes. This includes traffic-related and non-traffic-related accident injuries. With this information, public health agencies can monitor the burden and trends of ED visits related to these types of accidents, understand the types of injuries that result, and identify possible places/methods for prevention.

New or Revised Definition: New

Date Added to ESSENCE: April 2026

Use-Cases for Definition:

Case-finding: Not Intended as Use Case

Trend monitoring: Primary

Early outbreak detection: Not Intended as Use Case

Emergent Condition: Secondary

Justification: There are ICD-10 codes for these type of injuries, but the specific appropriate codes are not always assigned and reported. By querying the chief complaint we can get a better understanding of the burden of small recreational off-road motor vehicle accidents and the resulting types of injuries.

Data Source During Development: Emergency Department visits

Validation Methods: Five jurisdictions (North Dakota, Washington, Minnesota, North Carolina, and Wisconsin) manually reviewed the data details of ED visits returned by the initial version of the query. Each jurisdiction classified visits as true or false positives and calculated positive predictive values. False positives were visits where the accident occurred in the distant past and was not the reason for the current visit, or the person was lifting or performing maintenance on the vehicle itself when the person was injured. False positives were reviewed to identify patterns of why they were included, and the query was improved, where possible, to remove false positives.

The jurisdictions manually reviewed the results of the updated, final query and calculated positive predictive values for the final version of the query.

Validation Results: For the final version of this query, the positive predictive values were 99% for North Dakota, 95% for Minnesota, 99% for North Carolina, and 98% for Wisconsin.

Limitations: Injuries suffered while lifting, moving, or performing maintenance on a vehicle can be difficult to negate, and therefore might be included. The authors decided to include syntax to search for “side by side” type ATVs which, despite efforts to negate specific terms (e.g., “living in”), can result in some unexpected false positives not related to “side by side” ATVs. The query does not limit visits to certain types of symptoms or reasons for visit. As a result, the query might return visits where a small recreational off-road motor vehicle was mentioned but the reason for visit was not related to a small recreational off-road motor vehicle accident (e.g., patient had a heart attack and was transported on an ATV).

Definition Fields and Structure:

The Chief Complaint Discharge Diagnosis Parsed Free Text field (also applied to Chief Complaint History) is used to query discharge diagnosis codes and free text with exclusions (as necessary), to develop the syndrome definition.

Visits are included if they have either of the following:

- One or more of the diagnosis codes listed in Table 1.
- Text terms or abbreviations that refer to small recreational off-road motor vehicles (all-terrain vehicles (ATVs), utility task vehicles (UTVs), dune buggies, golf carts, go carts, dirt bike, motor/cross bike, snowmobiles, or snow bikes).

Visits are excluded if they have Chief Complaint or Chief Complaint History text terms that:

- Refer to the occurrence happening in the distant past.
- Indicate the person was performing maintenance on the vehicle or loading or lifting the vehicle.
- Indicate the visit was for a follow up or medication refill.
- Indicate the visit was related to skiing or ski patrol.

Detailed Definition Components

Table 1. Inclusion and exclusion terms

Type	Terms	Description
Inclusions		
Discharge Diagnosis: ICD-10-CM	V86.02XA	Driver of snowmobile injured in traffic accident
	V86.12XA	Passenger of snowmobile injured in traffic accident
	V86.22XA	Person on outside of snowmobile injured in traffic accident
	V86.32XA	Unspecified occupant of snowmobile injured in traffic accident
	V86.42XA	Person injured while boarding or alighting from snowmobile
	V86.52XA	Driver of snowmobile injured in nontraffic accident
	V86.62XA	Passenger of snowmobile injured in nontraffic accident
	V86.72XA	Person on outside of snowmobile injured in nontraffic accident
	V86.92XA	Unspecified occupant of snowmobile injured in nontraffic accident
	V86.03XA	Driver of dune buggy injured in traffic accident
	V86.13XA	Passenger of dune buggy injured in traffic accident
	V86.23XA	Person on outside of dune buggy injured in traffic accident
	V86.33XA	Unspecified occupant of dune buggy injured in traffic accident
	V86.43XA	Person injured while boarding or alighting from dune buggy
	V86.53XA	Driver of dune buggy injured in nontraffic accident

V86.63XA	Passenger of dune buggy injured in nontraffic accident
V86.73XA	Person on outside of dune buggy injured in nontraffic accident
V86.93XA	Unspecified occupant of dune buggy injured in nontraffic accident
V86.05XA	Driver of 3- or 4- wheeled all-terrain vehicle (ATV) injured in traffic accident
V86.15XA	Passenger of 3- or 4- wheeled all-terrain vehicle (ATV) injured in traffic accident
V86.25XA	Person on outside of 3- or 4- wheeled all-terrain vehicle (ATV) injured in traffic accident
V86.35XA	Unspecified occupant of 3- or 4- wheeled all-terrain vehicle (ATV) injured in traffic accident
V86.45XA	Person injured while boarding or alighting from a 3- or 4- wheeled all-terrain vehicle (ATV)
V86.55XA	Driver of 3- or 4- wheeled all-terrain vehicle (ATV) injured in nontraffic accident
V86.65XA	Passenger of 3- or 4- wheeled all-terrain vehicle (ATV) injured in nontraffic accident
V86.75XA	Person on outside of 3- or 4- wheeled all-terrain vehicle (ATV) injured in nontraffic accident
V86.95XA	Unspecified occupant of 3- or 4- wheeled all-terrain vehicle (ATV) injured in nontraffic accident
V86.06XA	Driver of dirt bike or motor/cross bike injured in traffic accident
V86.16XA	Passenger of dirt bike or motor/cross bike injured in traffic accident
V86.26XA	Person on outside of dirt bike or motor/cross bike injured in traffic accident
V86.36XA	Unspecified occupant of dirt bike or motor/cross bike injured in traffic accident
V86.46XA	Person injured while boarding or alighting from dirt bike or motor/cross bike
V86.56XA	Driver of dirt bike or motor/cross bike injured in nontraffic accident
V86.66XA	Passenger of dirt bike or motor/cross bike injured in nontraffic accident
V86.76XA	Person on outside of dirt bike or motor/cross bike injured in nontraffic accident
V86.96XA	Unspecified occupant of dirt bike or motor/cross bike injured in nontraffic accident
V86.09XA	Driver of other special all-terrain or other off-road motor vehicle injured in traffic accident
V86.19XA	Passenger of other special all-terrain or other off-road motor vehicle injured in traffic accident
V86.29XA	Person on outside of other special all-terrain or other off-road motor vehicle injured in traffic accident

Discharge Diagnosis: SNOMED concepts	V86.39XA	Unspecified occupant of other special all-terrain or other off-road motor vehicle injured in traffic accident
	V86.49XA	Person injured while boarding or alighting from other special all-terrain or other off-road motor vehicle
	V86.59XA	Driver of other special all-terrain or other off-road motor vehicle injured in nontraffic accident
	V86.69XA	Passenger of other special all-terrain or other off-road motor vehicle injured in nontraffic accident
	V86.79XA	Person on outside of other special all-terrain or other off-road motor vehicles injured in nontraffic accident
	V86.99XA	Unspecified occupant of other special all-terrain or other off-road motor vehicle injured in nontraffic accident
	81826000	All-terrain vehicle, device (physical object)
	214733004	Fall from off-road land motor vehicle
	302974001	Accident involving off-road land motor vehicle (event)
	242131001	Dragged by off-road land motor vehicle
	242130000	Run over by off-road land motor vehicle
	269656002	Overturning of off-road land motor vehicle (event)
	242135005	Off-road land motor vehicle in collision with object (event)
	242137002	Off-road land motor vehicle in collision with pedestrian (event)
	269658001	Accident to off-road land motor vehicle involving animals (event)
	302976004	Off-road land motor vehicle in collision with fixed object (event)
	242138007	Off-road land motor vehicle in collision with railway train (event)
	242136006	Off-road land motor vehicle in collision with road motor vehicle (event)
	242140002	Fall while boarding or alighting from off-road land motor vehicle (event)
	242139004	Accident while boarding or alighting from off-road land motor vehicle (event)
	269657006	Accident due to being thrown against fixture in off-road land motor vehicle (event)
	242141003	Injury from moving part off-road land motor vehicle while boarding or alighting (disorder)
	214744007	Hit by off-road land motor vehicle
	214766000	Nontraffic accident involving being run over or dragged by off-road motor vehicle, except snow vehicle (event)
	214778001	Nontraffic accident involving being thrown against some part of or object in, off-road motor vehicle, except snow vehicle, of motor vehicle injured (event)
	269655003	Accident due to breakage of part of off-road land motor vehicle (event)

	242134009	Off-road land vehicle in collision with animal-drawn vehicle (event)
	242132008	Off-road land vehicle in collision with ridden animal (event)
	242133003	Off-road land vehicle in collision with unriden animal (event)
	64174005	Snowmobile, device (physical object)
	214665005	Hit by motor-driven snow vehicle (event)
	214666006	Nontraffic accident involving being hit by motor-driven snow vehicle, driver of motor vehicle injured (event)
	214668007	Nontraffic accident involving being hit by motor-driven snow vehicle, motor cyclist injured (event)
	214667002	Nontraffic accident involving being hit by motor-driven snow vehicle, passenger of motor vehicle injured (event)
	214669004	Nontraffic accident involving being hit by motor-driven snow vehicle, passenger on motor cycle injured (event)
	214672006	Nontraffic accident involving being hit by motor-driven snow vehicle, pedal cyclist injured (event)
	214673001	Nontraffic accident involving being hit by motor-driven snow vehicle, pedestrian injured (event)
	214671004	Nontraffic accident involving being hit by motor-driven snow vehicle, rider of animal or occupant of animal-drawn vehicle injured (event)
	214653006	Fall from motor-driven snow vehicle (event)
	214654000	Nontraffic accident involving fall from motor-driven snow vehicle, driver of motor vehicle injured (event)
	242129005	Dragged by motor-driven snow vehicle (event)
	214641007	Accident off public road involving motor-driven snow vehicle (event)
	242128002	Run over by motor-driven snow vehicle (event)
	302973007	Collision of motor-driven snow vehicle (event)
	214699008	Nontraffic accident involving collision of motor-driven snow vehicle, not on public highway, driver of motor vehicle injured (event)
	214703006	Nontraffic accident involving collision of motor-driven snow vehicle, not on public highway, occupant of tram injured (event)
	214702001	Nontraffic accident involving collision of motor-driven snow vehicle, not on public highway, passenger on motor cycle injured (event)
	214705004	Nontraffic accident involving collision of motor-driven snow vehicle, not on public highway, pedal cyclist injured (event)
	214704000	Nontraffic accident involving collision of motor-driven snow vehicle, not on public highway, rider of animal or occupant of animal-drawn vehicle injured (event)
	214676009	Overturning of motor-driven snow vehicle (event)
Chief Complaint, Chief Complaint History	Terms and abbreviations that refer to all-terrain vehicles, utility vehicles, four-wheelers, three-wheelers, side-by-side utility vehicles, dune buggies, dirt bikes, motocross bikes, golf carts, go carts, snowmobiles, and snow bikes.	
Exclusions		
Discharge Diagnosis:	Z760	Repeat prescription
Chief Complaint, Chief Complaint History	Terms that refer to side by side that has a different meaning than the type of utility vehicle. Terms that refer to the occurrence happening in the distant past. Terms that indicate the person was working on or loading or lifting the vehicle. Terms that indicate the person was seeking a return to work notice or was having a follow-up visit. Terms that indicate the visit was related to skiing or ski patrol.	

Plain Language Syntax Description

The diagnosis codes are searched for ICD-10 codes related to injuries while being a passenger, driver, people outside of vehicle, or boarding or alighting a small recreational off-road motor in traffic and non-traffic accidents. The diagnosis codes are searched for SNOMED codes related to these vehicles.

Chief Complaint and Chief Complaint History are searched for phrases that indicate the visit was related to a small recreational off-road motor vehicle.

Certain phrases indicating the visit was related to lifting, loading, or performing maintenance on the vehicle, or that the visit was a recheck or medication refill visit, or that the accident occurred in the distant past are excluded. In addition, terms that indicate the visit was related to skiing or ski patrol are excluded.

Table 2. ESSENCE syntax

Use the following URL and click "Configuration Options" to see the query setup:

https://essence2.syndromicsurveillance.org/nssp_essence/servlet/TemporalTimeSeriesViewer?sessionAttributeID=2922_04_03_2026_21_52_46_3111

Search CC and DD Parsed Free Text with Also Apply to Chief Complaint History:

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(,^;V86[0-9][23569]XA^,OR,^;81826000;^,OR,^;214733004;^,OR,^;302974001;^,OR,^;242131001;^,OR,^;242130000;^,OR,^;269656002;^,OR,^;242135005;^,OR,^;242137002;^,OR,^;269658001;^,OR,^;302976004;^,OR,^;242138007;^,OR,^;242136006;^,OR,^;242140002;^,OR,^;242139004;^,OR,^;269657006;^,OR,^;242141003;^,OR,^;214744007;^,OR,^;214766000;^,OR,^;214778001;^,OR,^;269655003;^,OR,^;242134009;^,OR,^;242132008;^,OR,^;242133003;^,OR,^;64174005;^,OR,^;214665005;^,OR,^;214666006;^,OR,^;214668007;^,OR,^;214667002;^,OR,^;214669004;^,OR,^;214672006;^,OR,^;214673001;^,OR,^;214671004;^,OR,^;214653006;^,OR,^;214654000;^,OR,^;242129005;^,OR,^;214641007;^,OR,^;242128002;^,OR,^;302973007;^,OR,^;214699008;^,OR,^;214703006;^,OR,^;214702001;^,OR,^;214705004;^,OR,^;214704000;^,OR,^;214676009;^),OR,(,^all[-]terrain vehicle^,OR,^ATV^,ANDNOT,(,^[a-z]ATV^,or,^ATV[a-z]^),OR,^utility vehicle^,OR,^UTV^,ANDNOT,(,^[a-z]UTV^,or,^UTV[a-z]^),OR,^4_wheeler^,OR,^3_wheeler^,OR,^4wheeler^,OR,^3wheeler^,OR,^four_wheeler^,OR,^three_wheeler^,OR,^forwheeler^,OR,^for_wheeler^,OR,^fourwheeler^,OR,^4- wheeler^,OR,^dirtbike^,OR,^dirt bike^,OR,^golf[ck]art^,or,^golf_[ck]art^,OR,^go[ck]art^,OR,^go_[ck]art^,OR,^dune buggy^,OR,^dunebuggy^,OR,^snowmobile^,OR,^snowmobil^,OR,^snow mobile^,OR,^snow mobil^,OR,^snowmachine^,OR,^snow machine^,OR,^snogo^,OR,^snowgo^,OR,^snow go^,ANDNOT,(,^[a-z]snow go^,or,^snow go[a-z]^),OR,^sno go^,ANDNOT,(,^[a-z]sno go^,or,^sno go[a-z]^),OR,^snowbike^,OR,^snow bike^,OR,^skidoo^,OR,^skij[-]doo^,OR,^motorcros^,OR,^motocros^,OR,^side_by_side^,ANDNOT,(,^lives in^,OR,^living in^,OR,^side_by_side assist^,OR,^walk side_by_side^,OR,^walking side_by_side^,OR,^images side_by_side^,OR,^side_by_side lacera^,OR,^stand side_by_side^,OR,^standing side_by_side^,OR,^side_by_side vision^,OR,^side_by_side double vision^,OR,^worked side_by_side^,OR,^side_by_side chairs^,OR,^neck side_by_side^),),ANDNOT,(,^stepping off^,OR,^working on^,OR,^working under^,OR,^fixing^,OR,^pick^up^,OR,^clutch^,OR,^lift^,OR,^pull^,OR,^trailer^,OR,^load^,ANDNOT,^upload^,OR,^trying to start^,OR,^snowmobile helmet^,OR,^snowmobile lane^,OR,^snowmobile In^,OR,^skiing^,OR,^skier^,OR,^ski patrol^,OR,^skipatrol^,or,^motorcycle^,OR,^ATV helmet^,OR,^weeks ago^,OR,^wks ago^,OR,^months ago^,OR,^month ago^,OR,^years ago^,OR,^year ago^,OR,^yrs ago^,OR,^yr ago^,OR,^wound check^,OR,^medication refill^,OR,^recheck^,OR,^;Z760^,OR,^return to work^,OR,^still UTV^,OR,^previous ATV^,OR,^previous snowmobile^,OR,^previous snow mobile^,OR,^Past Medical History^all[-]terrain vehicle^,OR,^Past Medical History^[UA]TV accident^,OR,^Past Medical History^four_wheeler^,OR,^Past Medical History^4_wheeler^,OR,^Past Medical History^snowmobile^,OR,^Past Medical History^snow mobile^,OR, ^Past Medical History^dune buggy^,OR,^Past Medical History^dunebuggy^,OR,^Past Medical History^golf[ck]art^,OR,^Past Medical History^ golf_[ck]art^,OR,^Past Medical History^go[ck]art^,OR,^Past Medical History^go_[ck]art^,OR,^Past Medical History^dirtbike^,OR,^Past Medical History^dirt bike^,)
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In a separate Chief Complaint History field, add the following negation criteria:

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ISNULL,OR,^,ANDNOT,(,^stepping off^,OR,^working on^,OR,^working under^,OR,^fixing^,OR,^pick^up^,OR,^clutch^,OR,^lift^,OR,^pull^,OR,^trailer^,OR,^load^,ANDNOT,^upload^,OR,^trying to start^,OR,^snowmobile helmet^,OR,^snowmobile lane^,OR,^snowmobile In^,OR,^skiing^,OR,^skier^,OR,^ski patrol^,OR,^skipatrol^,or,^motorcycle^,OR,^ATV helmet^,OR,^weeks ago^,OR,^wks ago^,OR,^months ago^,OR,^month ago^,OR,^years ago^,OR,^year ago^,OR,^yrs ago^,OR,^yr ago^,OR,^wound check^,OR,^medication refill^,OR,^recheck^,OR,^return to work^,OR,^still UTV^,OR,^previous ATV^,OR,^previous snowmobile^,OR,^previous snow mobile^,OR,^Past Medical History^all[-]terrain vehicle^,OR,^Past Medical History^[UA]TV accident^,OR,^Past Medical History^four_wheeler^,OR,^Past Medical History^4_wheeler^,OR,^Past Medical History^snowmobile^,OR,^Past Medical History^snow mobile^,OR, ^Past
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Medical History^dune buggy^,OR,^Past Medical History^dunebuggy^,OR,^Past Medical History^golf[ck]art^,OR,^Past Medical History^ golf_[ck]art^,OR,^Past Medical History^go[ck]art^,OR,^Past Medical History^go_[ck]art^,OR,^Past Medical History^dirtbike^,OR,^Past Medical History^dirt bike^,)