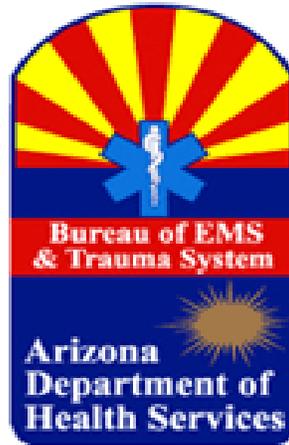


**ARIZONA DEPARTMENT OF HEALTH SERVICES
BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM**



**LEVEL IV TRAUMA CENTERS
INTERFACILITY TRANSFERS
ARIZONA STATE TRAUMA REGISTRY 2011**

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Data and Quality Assurance Section

Report No. 13-2-LV4

Level IV Trauma Centers

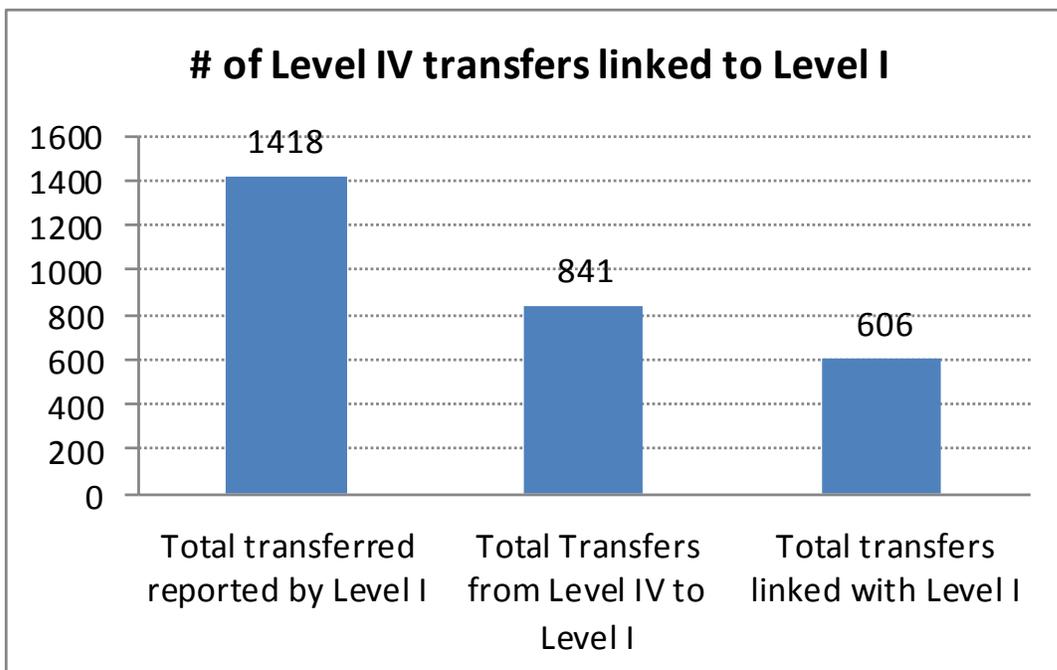
Data Source: Arizona State Trauma Registry 2011

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This quarterly report includes data from the fifteen (15) [state designated](#) Level IV Trauma Centers dispersed primarily in the [rural areas](#) of Arizona. The [Arizona State Trauma Registry](#) (ASTR) received data on 4,872 trauma patients treated at these Level IV Trauma Centers in 2010 and 2011.

After initial treatment in a Level IV Trauma Center, 841 patients were transferred to a Level I Trauma Center.

This quarterly report includes **ONLY** linked data from Level IV and Level I Trauma Centers. This resulted in 606 (72%) records being linked to Level I Trauma Center records. The report suggests that the Level IV Trauma Centers are appropriately sending sick trauma patients to a higher level of care. Of the patients sent, a vast majority were admitted into the ICU, the hospital floor, or the OR.



Opportunities for Improvements:

Level I Trauma Centers reported that they received 1418 patients from Level Is. Level IVs reported that they transferred 841 to Level I Trauma Centers. Ideally, both Level I and Level IV Trauma Centers would be able to identify and report the same patients that suffered a traumatic injury.

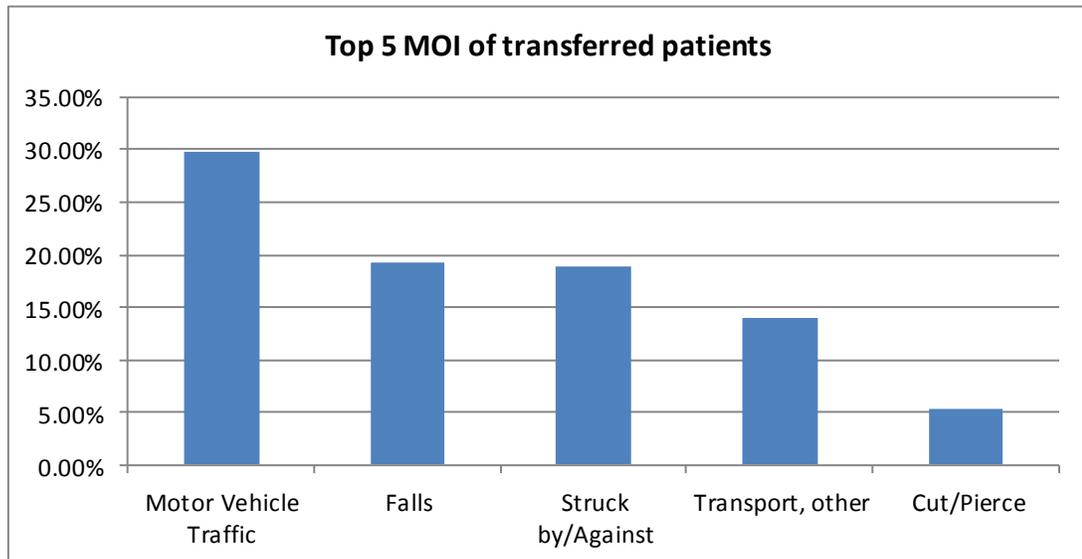
There is a disparity between the number of trauma transfers received by Level I Trauma Centers and the number of transfers recorded by Level IV Trauma Centers. Approximately 41% of transferred patients are not reported by Level IV Trauma Centers.

*Variables used were last name, first name, date of birth, gender, ED admit date and name of transfer facility. The variable 'last name' was selected as blocking variable so that pairs of records had an initial amount of similarity before determining the probability of a match. One day difference between ED admit date at Level IV and ED admit date at Level I was allowed if all other variables matched.

Level IV Trauma Centers
Data Source: Arizona State Trauma Registry 2011
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Transferred patients at Level I Trauma Centers

This report describes the mechanisms of injury (MOI) of transfer patients as identified at a Level I Trauma Center.

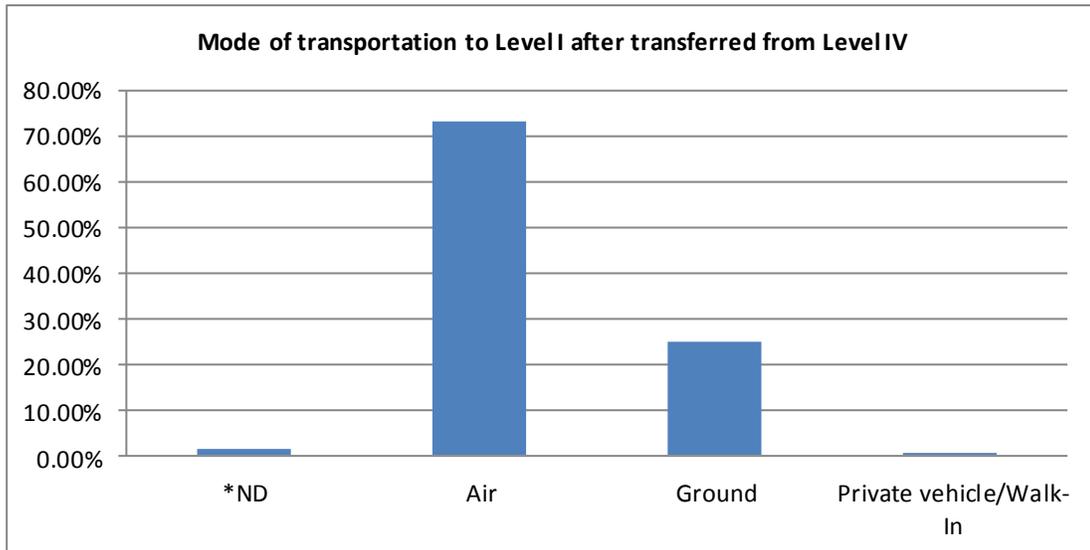


Mechanism of injury	N	%
Motor Vehicle Traffic	181	29.86%
Falls	117	19.30%
Struck by/Against	114	18.81%
Transport, other	85	14.02%
Cut/Pierce	32	5.28%
Unspecified	23	3.79%
Firearm	13	2.14%
Other Specified	10	1.65%
Machinery	6	0.99%
Pedestrian, Other	6	0.99%
Natural/Environmental	6	0.99%
Pedal Cyclist, Other	5	0.82%
Suffocation	3	0.49%
Fire/Burn	3	0.49%
Drowning	1	0.16%
Not elsewhere classifiable	1	0.16%

Motor vehicle traffic is the top mechanism of injury for trauma patients, followed by falls, and being struck by or against something.

State-wide [prevention efforts](#) could focus on reducing the severity and the occurrence of these mechanisms.

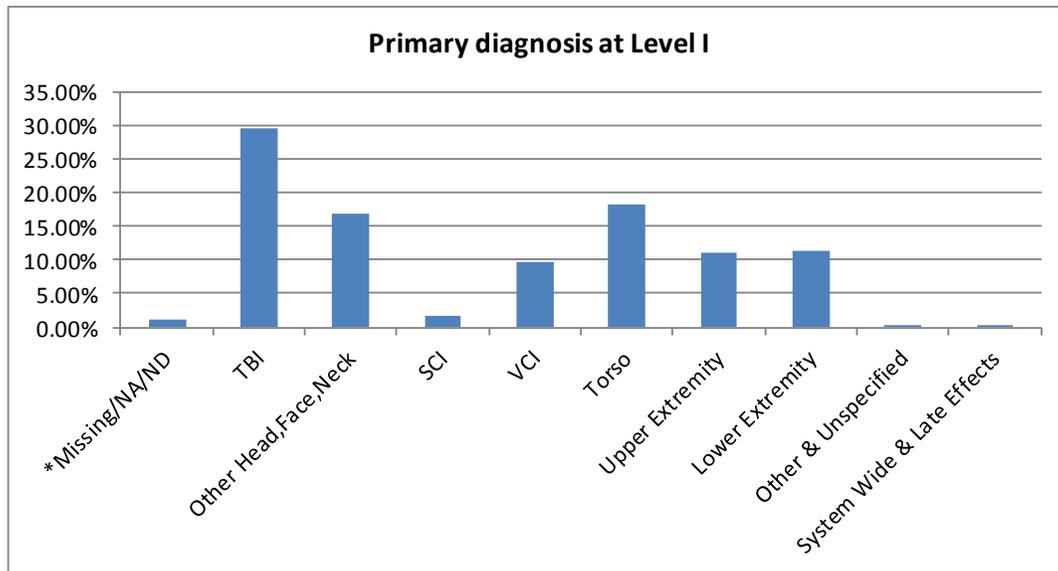
Level IV Trauma Centers
Data Source: Arizona State Trauma Registry 2011
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As reported by both levels of trauma centers, more than 70% of the patients were transferred to a Level I Trauma Center by air ambulance.

Mode of Transportation	N	%
*ND	9	1.48%
Air	442	72.93%
Ground	152	25.08%
Private vehicle/Walk-In	3	0.49%

Level IV Trauma Centers
Data Source: Arizona State Trauma Registry 2011
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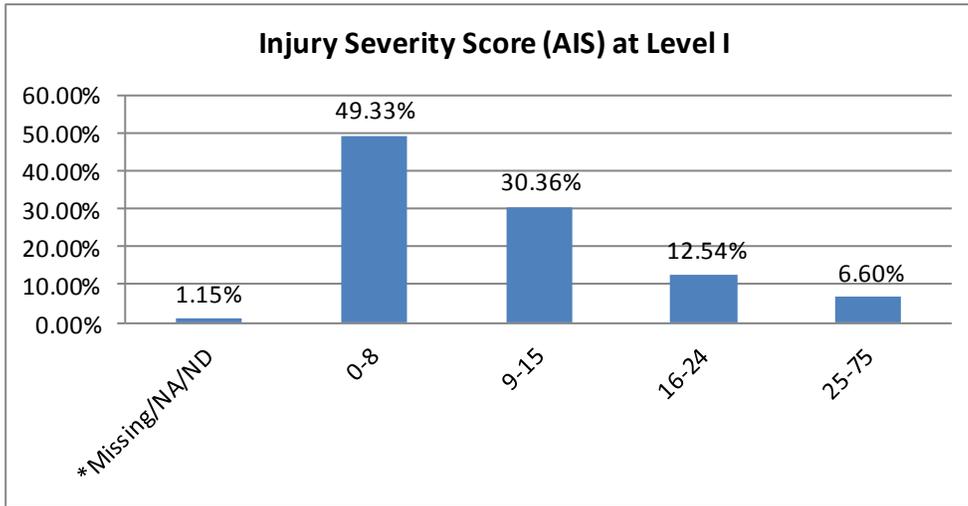


Thirty percent of the linked, transferred patients had a diagnosed traumatic brain injury (TBI) by a Level I Trauma Center.

Primary diagnosis	N	%
*Missing/NA/ND	6	0.99%
TBI	180	29.70%
Other Head,Face,Neck	102	16.83%
SCI	10	1.65%
VCI	59	9.73%
Torso	110	18.15%
Upper Extremity	67	11.05%
Lower Extremity	69	11.38%
Other & Unspecified	*	*
System Wide & Late Effects	*	*

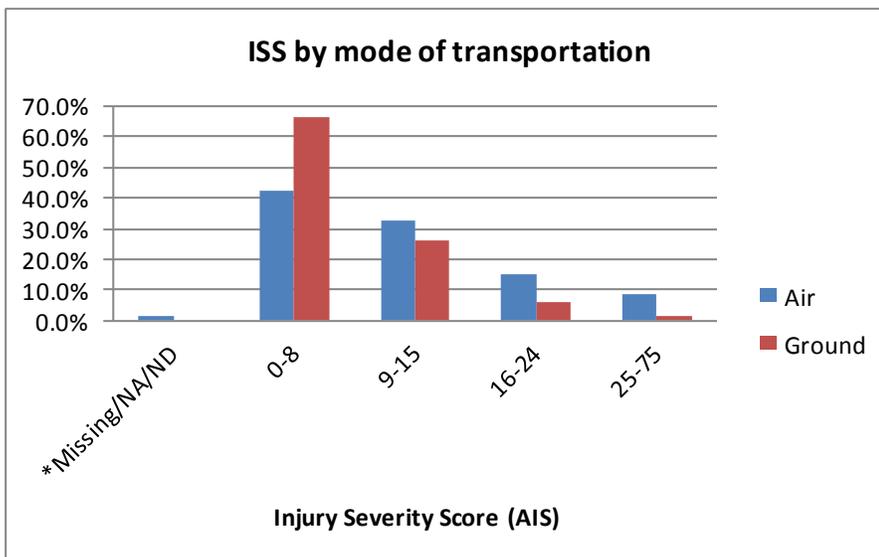
*Numbers too small to report

Level IV Trauma Centers
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injury Severity Score (AIS)	N	%
*Missing/NA/ND	7	1.15%
1-8	299	49.33%
9-15	184	30.36%
16-24	76	12.54%
25-75	40	6.60%

Approximately 80% of all transferred patients were diagnosed as moderately injured (AIS score of ≤ 15).
 Approximately 19% of all transferred patients were considered severely injured at Level I Trauma Centers.



Injury Severity Score by mode of transportation	transport			
	Air		Ground	
	N	%	N	%
*Missing/NA/ND	7	1.58%	0	0
1-8	188	42.53%	101	66.44%
9-15	143	32.35%	40	26.31%
16-24	66	14.93%	9	5.92%
25-75	38	8.59%	2	1.31%

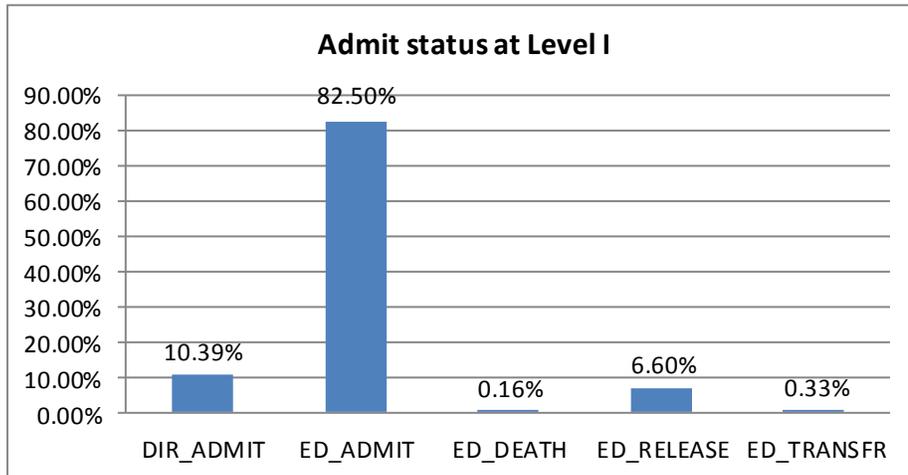
The patients that are less severely injured were more likely to travel by ground. There were more patients flown for moderately injured patients. Further considerations beyond ISS should be made when determining the transport method to a Level I Trauma Center.

Level IV Trauma Centers

Data Source: Arizona State Trauma Registry 2011

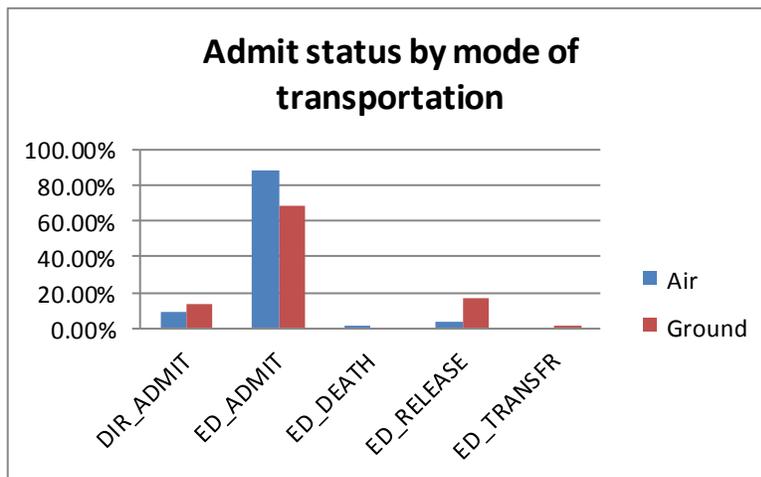
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After being transferred from Level IV Trauma Center, most of the patients (93%) were either directly admitted or admitted from emergency department (ED) at Level I Trauma Centers.



Admit status	N	%
DIR_ADMIT	63	10.39%
ED_ADMIT	500	82.50%
ED_DEATH	1	0.16%
ED_RELEASE	40	6.60%
ED_TRANSFR	2	0.33%

Among those patients who were transferred to a Level I Trauma Center by air transport, 97% were admitted and 3% were released from the ED of a Level I Trauma Center.



Admit status by mode of transportation	transport			
	Air		Ground	
	N	%	N	%
DIR_ADMIT	38	8.59%	20	13.15%
ED_ADMIT	390	88.23%	104	68.42%
ED_DEATH	1	0.22%	0	0%
ED_RELEASE	13	2.94%	26	17.10%
ED_TRANSFR	0	0%	2	1.31%

Approximately 88% of patients transported from a Level IV Trauma Center were admitted through the ED at the receiving facility. More patients that were released from the Level I Trauma Center ED were transported by ground ambulance.

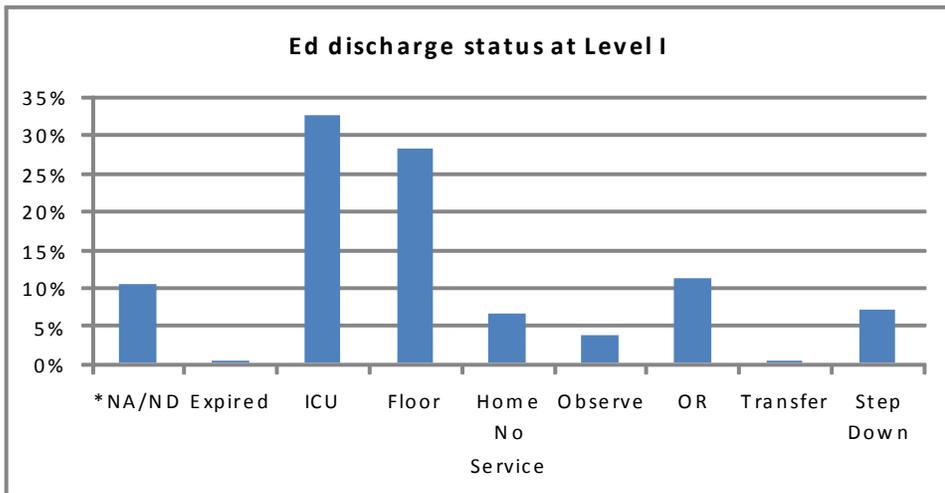
Level IV Trauma Centers

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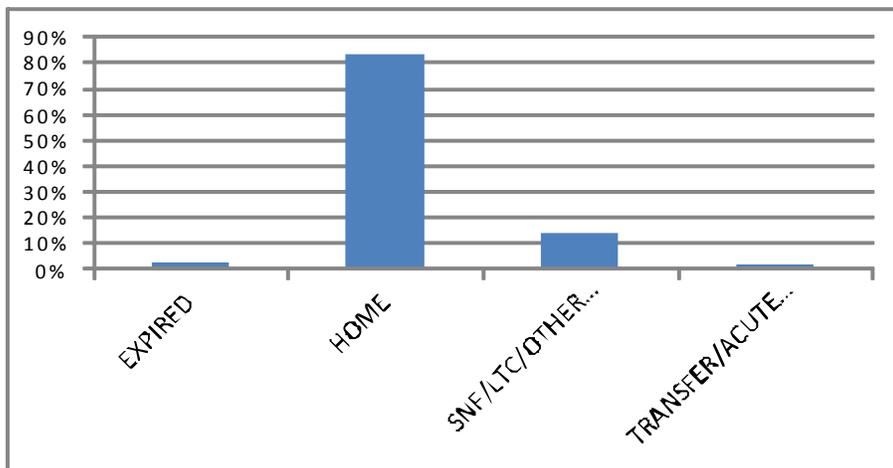
Total length of stay				
N	Missing	Median	25 th Percentile	75 th Percentile
606	0	2.0	1.0	5.0

Total Hospital Charges				
N	Missing	Median	25 th Percentile	75 th Percentile
600	6	\$30,208	\$16,814	\$61,575



ED discharge status	N	%
*NA/ND	63	10.39%
Expired	1	0.16%
ICU	197	32.50%
Floor	170	28.05%
Home No Service	40	6.60%
Observe	23	3.79%
OR	68	11.22%
Transfer	2	0.33%
Step Down	42	6.93%

A majority of patients went to the ICU or were admitted to the floor. Following treatment, a vast majority were discharged home. The median length of stay at a Level I Trauma Center was 2 days with a charge of \$30, 208 for the patient.



Final discharge status	N	%
EXPIRED	13	2.1%
HOME	503	83%
SNF/LTC/OTHER REHAB	82	13.5%
TRANSFER/ACUTE CARE	8	1.3%