



# A Systematic Literature Review on Injury Prevention in Transportation Sector

Jathin Katikala<sup>1</sup>(✉) and Vincent G. Duffy<sup>1,2</sup>

<sup>1</sup> School of Industrial Engineering, Purdue University, West Lafayette, IN, USA  
{jkatikala, duffy}@purdue.edu

<sup>2</sup> Department of Agricultural and Biological Engineering, Purdue University, West Lafayette, IN, USA

**Abstract.** Accidents caused by vehicles of transportation domain are the leading cause of death worldwide. Nearly 75% of road deaths happen in developing countries. The road traffic accident rate caused by four-wheeled vehicles is the highest among the reported statistics on road traffic accidents. Standing motorized scooters' popularity has been continuously increasing in major cities of the USA and surge of traumatic injuries is observed in many hospitals. This report will analyze bibliometric data using tools like Harzing's Publish or Perish, VOSviewer, MAXQDA, Mendeley, BibExcel, and CiteSpace to provide a systematic literature review of publications on the above-mentioned subject. Analysis is performed on articles considered from a variety of outlets, including Google Scholar, Web of Science, SpringerLink, ResearchGate, and a few chapters from Salvendy's Handbook of Human Factors and Ergonomics, Fourth Edition. A co-citation analysis was performed to identify the most significant publications in the literature. This article also discusses how potential studies like usage of autonomous vehicles, usage of virtual reality, reducing human intervention, and increasing human-computer interaction can avoid accidents in the transportation industry.

**Keywords:** Injuries · Prevention · Transportation · Autonomous vehicles · Human-computer interaction · Technology · Bibliometric analysis · Harzing · VOSviewer · MAXQDA · Mendeley

## 1 Introduction

The transportation sector plays one of the most crucial roles in maintaining a smooth flow of day-to-day activities in the world. Rollover crashes are responsible for a considerable number of injuries and fatalities that we are considering in this article. There are a wide number of reasons for the cause of rollover crashes like surroundings being dark without sufficient lighting, rainy climate, improper overtaking by truck vehicles, the age of the vehicle, traffic volume at that instant, the number of lanes on the road, the speed limit, terrain of the road (Anarkooli et al. 2017). There is also a huge soar in the popularity of standing motorized scooters in many major cities in the United States of America. Since the safety regulations are poorly defined for the riders, many hospitals are experiencing

a massive rise in traumatic injuries associated with standing motorized scooters. Recent findings have pointed that there has been an exponential rise in emergency department visits due to standing motorized scooter-related trauma in hospitals (Kim and Campbell 2021).

Accidents caused by vehicles of transportation domain are the leading cause of death worldwide. Nearly 75% of road deaths happen in developing countries. The road traffic accident rate caused by four-wheeled vehicles is the highest among the statistics that are reported on road traffic accidents (Al Turki 2014). Some of these accidents are caused due to lack of sufficient knowledge on new technology by drivers. This issue is clearly emphasized in (van der Laan 1997) and techniques to assess the acceptance of technology are discussed in detail. According to a survey by National Highway Traffic Safety Administration, 93% of traffic accidents are caused due to human error. Ground falls are the most common cause of injury in these crashes. Injuries associated with ground-level falls have become a serious global problem. More than 60% of traumatic brain injury cases in old-aged people are the result of falls (Kim et al. 2021). According to research, injuries due to crashes are the leading cause of death among American teenagers. American teenagers drive cars, motorcycles, and bicycle. In most states, teenagers can obtain an unrestricted driver's license at the age of just 16 years ("Differences in Transportation-Related Injury" n.d.). The Commission for Global Road Safety believes that it is quite crucial to stop this preventable and horrific rise in road injuries. We will discuss how increasing human-computer interaction and increase in usage of autonomous vehicles can prevent the injuries in accidents in detail in later sections.

## 2 Purpose of Study

The objective of this study is to conduct a systematic literature review of studies on the topic of injuries and crashes in the transportation sector from a Human automation perspective. Other examples that illustrate the bibliometric analysis methodology in this style are shown in the literature (Duffy and Duffy 2020). Bibliometric analysis, including scientific methodologies, provides a systematic and overall analysis in showing how critical it is to prevent injuries in crashes. Bibliometric analysis methods including MAXQDA, VOS Viewer, Publish or Perish-Harzing, Mendeley, BibExcel were used in this study for data collection, content analysis, trend analysis, and co-citation analysis. Based on these bibliometric data analyses, results and conclusions can be drawn, nudging future studies in the right direction to avoid injuries in motor vehicle crashes.

### 3 Research Methodologies

#### 3.1 Data Collection

The first stage of the research involved gathering data for analysis by searching three keywords through many databases, including SpringerLink, Google Scholar, Scopus, and Web of Science. More findings were found in Google Scholar than in any other database. By logging into the library system and accessing the relevant database and conducting a keyword search, Purdue Libraries was able to access Web of Science, Scopus, and SpringerLink.

(SpringerLink n.d.). Harzing's Publish or Perish (Harzing's Publish or Perish n.d.) can be used to extract papers from Google Scholar. Harzing's Publish or Perish can search for articles and retrieve bibliometric data from a variety of databases, including Crossref, Google Scholar, Scopus (Scopus n.d.), Pubmed, and others. However, access to the other databases which are not affiliated with Purdue requires an external subscription and is limited to only 1000 articles in a search.

I used "Injury Prevention", "Automation" and "Transportation" to search for the articles that talk about the topics that are related to our required keywords in Google Scholar. This search was done on Harzing's Publish or Perish initially. The search resulted in 1000 results and the corresponding bibliometric metadata was extracted to analyze like co-citation analysis and co-author analysis. Explanation of these analyses in much detail is in the later sections. The second search was on the Web of Science, Scopus, and SpringerLink databases through Purdue Library as mentioned above. The metadata from Web of Science ("Web of Science" n.d.) includes the author, article title, keywords, abstract, and citations for every article. This kind of metadata is not available in Harzing's metadata for the corresponding search. The same keywords were used again to look up the articles that correspond to our topic of discussion in the search. This search resulted in around 5,800 articles. The metadata of these articles is collected to do the systematic literature review.

#### 3.2 Data Analysis

The first study was a pattern analysis using data from the Web of Science database. Web of Science has in-built tools to analyze the data obtained from the database. The data point corresponding to the year 2021 would be corrupt and was excluded. It is because the year 2021 has just begun and that data point might deviate from the original trend. This exclusion aids in better understanding the trend and to eliminate the corrupt data point of the year 2021 in the trend.

The following figure shows the trend analysis for injury prevention in the last 24 years. We can observe that the issue of injury prevention was quite prevalent even back in 1996. There was a steady rise in the trend from 1996 to 2015 in the number of articles published every year. There was a slight dip in the curve between 2015 to 2018 but the peak is observed in 2019. A similar pattern emerged on examining the data from Harzing’s (Fig. 1).

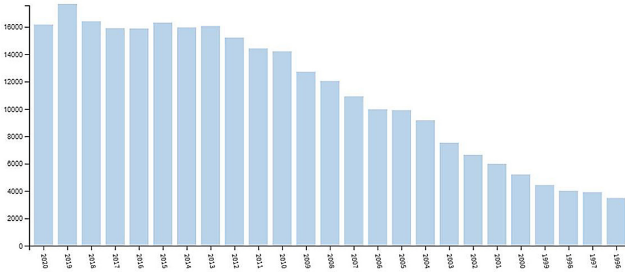


Fig. 1. Trend analysis of articles on injury prevention

The following figure depicts the top sources of titles for injury prevention. The in-built tools of the Web of Science were used for this research (Fig. 2).

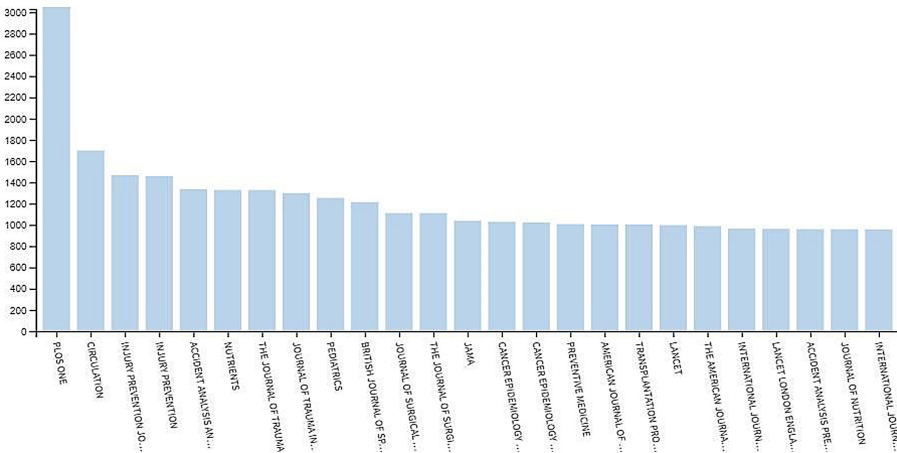
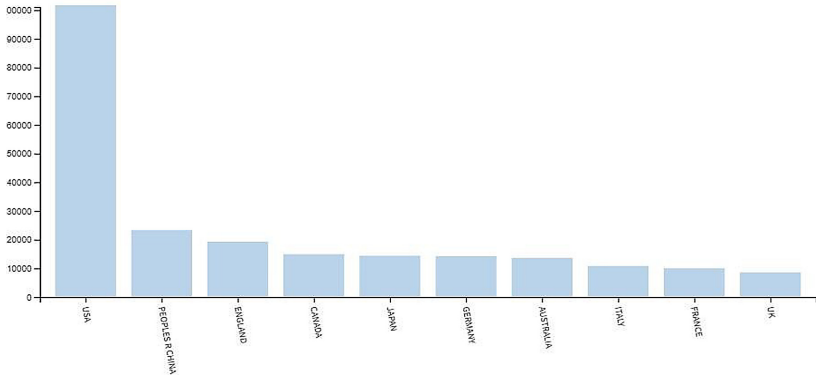


Fig. 2. Source titles analysis for injury prevention

The following figure shows a country-wise filter on the number of articles published on injury prevention. It can be observed that the USA has published the highest number of articles when compared to other regions of the world. It can be interpreted that the USA faces more issues of injuries in motor vehicle crashes or at workstations than other countries (Fig. 3).



**Fig. 3.** Analysis of the number of articles published by a region on injury prevention

After the initial analyses to understand the criticalness of injury prevention, other analyses were performed to provide a more robust systematic review of literature on injury prevention in the transportation sector. The VOSviewer software was used to conduct the next step. It is a tool that can generate cluster diagrams of co-author analysis, co-citations analysis, and keywords analysis (Kurniawan and Duffy n.d.). The databases used for the analyses were Web of Science and Google Scholar through Harzing’s Publish or Perish. Extracted the bibliometric data from these databases to perform the analyses as mentioned above. One important aspect to be considered when examining the cluster diagrams is the size of the bubbles for each author. The size of each bubble represents the number of his or her publication and the connecting line between authors or citations represents the co-citation links.

MAXQDA software was used to perform the next step. MAXQDA (“MAXQDA” n.d.) is another tool that helps us in visualizing the keywords in the set of collected articles. The same keywords are then used in MAXQDA to do an extended lexical search. MAXQDA can perform a lexical search across multiple articles at the same time. CiteSpace is another software which is used to perform citation bursts. Further analysis is shown on the collected bibliometric metadata to extract authorship information into leading tables and was further visualized using pivot charts using Microsoft Excel. The next step was performed using “Mendeley” to retrieve some articles that are relevant to “injury prevention”, “automation” and “transportation” and generate a Chicago-style citation. Mendeley (“Mendeley” n.d.) is a managing software that is equipped with some amazing features regarding citations and references.

## 4 Results

### 4.1 Keyword Search

As mentioned previously, the research started with data collection by searching 3 keywords in various databases: Scopus, Web of Science, Google Scholar, and SpringerLink. The Google Scholar database is accessed using Harzing’s Publish or Perish program, while the other databases are accessed by logging into a Purdue account and using the

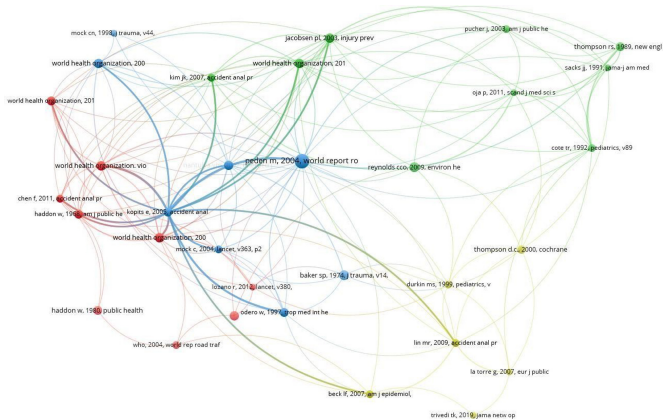
Purdue Library function. Table 1 below illustrates the database and the corresponding number of articles obtained from the keywords in each database, respectively.

**Table 1.** The number of articles in each database was generated with the mentioned keyword search

Database	Number of articles	Keywords used
Google Scholar	560	Injury Prevention, Automation and Transportation
Web of Science	220	Injury Prevention, Automation and Transportation
Scopus	380	Injury Prevention, Automation and Transportation
SpringerLink	1135	Injury Prevention, Automation and Transportation

### 4.2 Co-citation Analysis

Bibliometric data with citation information is needed to perform co-citation analysis. “The degree of connectivity between pairs of papers is examined using citation analysis” (Fahimnia et al. 2015). VOSviewer creates clusters from pairs of papers that are cited together. This research method is used to evaluate the most important paper for them by measuring the number of times the papers are cited. The more co-citations two documents receive, the higher their co-citation strength. This technique is also quite often used for identifying the intellectual structure of a research domain. Bibliometric data was extracted from Web of Science in a text file and is inputted into the VOSviewer to perform full count analysis. The keywords used in Web of Science are “Injury Prevention” and “Transportation”. The counting method used to generate the desired diagram was “Full counting” (Fig. 4).



**Fig. 4.** Co-citation cluster map

The parameters used to obtain the Co-citation analysis are:

1. Minimum number of citations of a cited reference: 5.
2. Out of the 12958 cited references, 33 meet the threshold.
3. Out of the 33 items in the network, the largest set of connected items consisted of 32 items.

The results of the co-citation cluster diagram are as follows (Tables 2 and 3):

**Table 2.** Results of co-citation analysis from VOSviewer

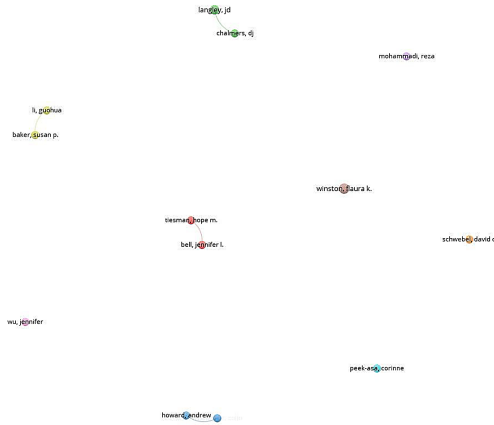
Type	Number of them available
Items	32
Clusters	4
Links	154
Total Link Strength	199

**Table 3.** Results of authors, year of publication, number of citations, and link strengths

Authors	Year of publication	Citations	Link strength
Peden M et al.	2004	18	34
Jackobsen P et al.	2003	7	24
Kopits E et al.	2005	6	21
Thompson D C et al.	1992	6	15
Sacks JJ et al.	1968	6	14
Kim J K et al.	2007	5	15
Haddon W et al.	1968	5	12

### 4.3 Co-authorship Analysis

The next step in the analysis is to use the bibliometric data to generate co-authorship cluster diagrams from VOSviewer. The metadata obtained from Web of Science is fed into the VOSviewer in a text file. CoAuthorship networks are powerful tools that are utilized to “assess collaboration trends and to identify leading scientists and organizations” (Fonseca et al. 2016). The keywords used in Web of Science are “Injury Prevention” and “Transportation”. The counting method used to generate the desired diagram was “Full counting” (Fig. 5).



**Fig. 5.** Co-authorship cluster map

The parameters used to obtain the Co-authorship analysis are:

1. Maximum number of authors per document: 5
2. Minimum number of documents of an author: 3
3. Minimum number of citations of an author: 0
4. Out of 912 authors, 13 meet the threshold (Table 4).

**Table 4.** Results of co-authorship analysis from VOSviewer

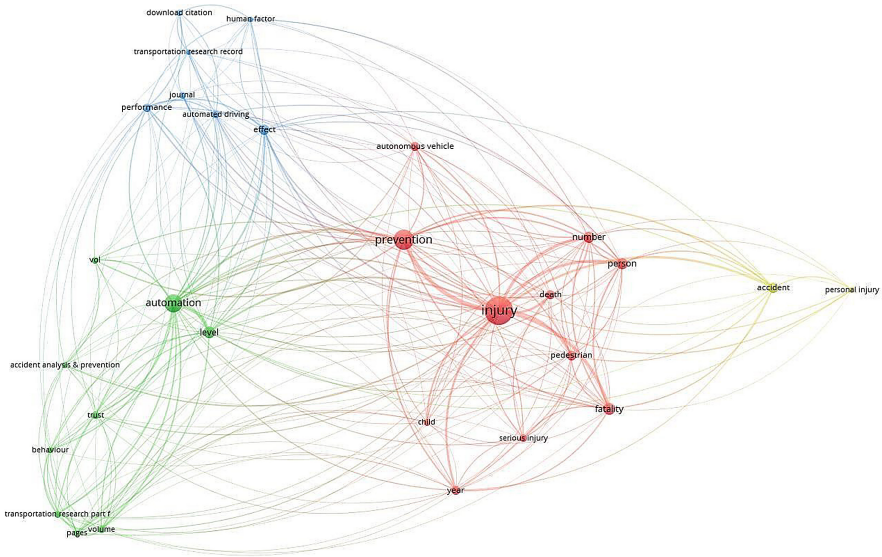
Type	Number of them available
Items	13
Clusters	9
Links	4
Total Link Strength	10

#### 4.4 Co-occurrence Keyword Analysis Using VOSviewer

The next step in the analysis is to use the bibliometric data to generate Co-occurrence keyword analysis cluster diagrams from VOSviewer. The Co-occurrence analysis operates by searching for words that are commonly used in the selected articles (Krishnan 2015). A co-occurrence keyword analysis would help us capture the relationships between words that “co-occur” together in articles (Martínez-Ruiz et al. 2015). The bibliometric data from 560 articles that were generated via Harzing’s Publish or Perish using keywords like “injury prevention”, “automation” and “transportation”. The extracted data



was exported to VOSviewer in RIS file format and this metadata is to generate a visualized bibliometric network or a cluster diagram that displays the most frequently used words. The counting method used to generate the desired diagram was “Full counting”. The title and abstract fields were used to extract the keywords (Fig. 6).



**Fig. 6.** Co-occurrence keyword analysis cluster map

As we can see, “injury” is the most occurred word in our articles. The second most occurred word is “prevention”. They are accompanied by the word “automation” in the third place. The parameters used to obtain co-occurrence keyword analysis are:

1. Maximum number of occurrences of a term: 5.
2. Out of the 2714 terms, 49 meet the threshold.
3. Number of terms to be selected: 29 (29 keywords were selected as 60% most relevant items) (Table 5).

**Table 5.** Results of Co-occurrence keyword analysis from VOSviewer

Type	Number of them available
Items	29
Clusters	4
Links	249
Total Link Strength	1299



**Table 6.** Frequency of the words and word lengths for the words present in the above word cloud

Word	Word length	Frequency	Rank	Documents	Documents %
Injury	6	564	1	8	57.14
Injuries	8	319	2	9	64.29
More	4	229	3	12	85.71
Crashes	7	223	4	6	42.86
Analysis	8	221	5	12	85.71
Research	8	205	6	11	78.57
Data	4	204	7	12	85.71
Study	5	203	8	12	85.71
Model	5	191	9	6	42.86
Crash	5	181	10	6	42.86
Severity	8	172	11	7	50.00

**Extended Lexical Search.** Based on the analyses as mentioned earlier and the created word cloud, multiple key terms were selected for an extended lexical search using MAXQDA software over the nine selected articles and two chapters from *The Handbook of Human Factors and Ergonomics*. Some of the key terms are “injury”, “injuries”, “prevention”, “road” and “traffic”.

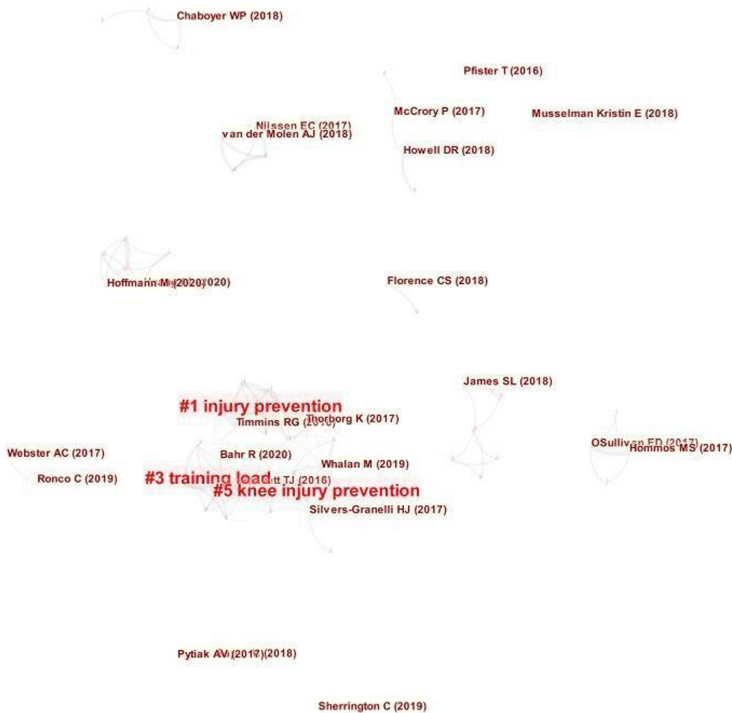
As we can see, “injury” is the most frequently occurred word adhering to our subject of interest – “Injury Prevention”. The words “Injuries” and “prevention” are the adhering to our topic as well. Since our theme is in the transportation sector, we can also see that the words “road”, “traffic”, “motorcycle,” and “bicycle” are also occurred, adhering to our theme of interest.

There are many research articles in our chosen nine, that speak significantly about risk factors for severe injury in cyclists involved in traffic crashes (Boufous et al. 2012). There is also another research article that mainly focused on the severity and the injuries and crashes caused by cyclists running through the red-light at the junctions (Pai and Jou 2014). There is another research article that solely focused on the enormity of bicycle crashes and injuries in which the author tries to emphasize the need to account for bicycle crashes as they are always neglected (Juhra et al. 2012; Heesch et al. 2011; Dettori and Norvell 2006). There are a couple of articles that focused on motorcycle crashes as injuries in motorcycle crashes are quite severe and more than 30% of crashes result in death casualties. The articles also focus on the effectiveness of protective clothing to prevent injuries to riders (Vanlaar et al. 2016; de Rome et al. 2012).

#### 4.6 Keyword Cluster Analysis Using CiteSpace

The keyword cluster analysis using CiteSpace is quite similar to using VOSviewer as shown above. The current cluster analysis performed is more oriented towards the articles

corresponding to injury prevention and transportation sector chosen from the Web of Science database. The primary purpose of this analysis is to figure out which type of injuries are most common in the transportation sector and where the research is being focused. The following figure shows the topic of focus in the form of a cluster using CiteSpace software (Fig. 8).



**Fig. 8.** Cluster Analysis using CiteSpace

From the above-displayed figure, we can see the focused areas which are being calculated based on the highest frequency of occurrence in various sources. “Injury Prevention” is the most frequently occurred topic. The “Knee injury prevention” is the 5th most frequently occurred word. This can be observed even in the chosen articles where the author speaks about the severity of knee injuries and how the injuries can be averted. One other topic of focus is the “training load”.

#### 4.7 Leading Tables in BibExcel and Visualization of Pivot Charts

BibExcel was used to further analyze the bibliographic metadata. The input data to the BibExcel was obtained from Harzing’s Publish or Perish (“Harzing’s Publish or Perish” n.d.). Metadata of around 600 articles were extracted into an ISI format file and then imported into BibExcel. BibExcel is a software tool designed to assist a user in analyzing

bibliographic data, or any data of a text natured file. The idea is to generate data files that can be imported onto Excel later or any other software which can consume tabbed data records to analyze further.

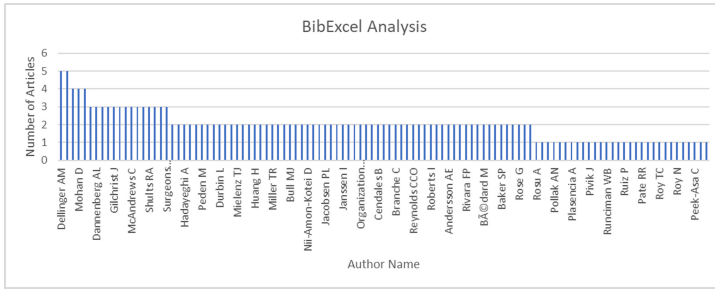
All the 600 results were thoroughly scrutinized for bibliographic information once the input file was imported in BibExcel. This resulted in finding information about the number of articles related to our specific topic. The results were arranged in descending order and are copied into Microsoft Excel, where we create a pivot table and obtain the pivot chart shown below. The top 20 results are displayed in the following table (Table 7 and Fig. 9).

**Table 7.** The results obtained from the BibExcel

Author name	Number of articles
Litman T	5
Dellinger AM	5
Mohan D	4
Morency P	4
Ferguson SA	4
Mock C	3
Dannenberg AL	3
Dickerson AE	3
Braver ER	3
McAndrews C	3
Shults RA	3
Anderson C	3
Sleet DA	3
Lee J	3
Sleet D	3
Gilchrist J	3

## 5 Discussion

Humanity has excelled a lot since the industrial revolution. Some fantastic discoveries happened along the path and the motorization of vehicles is one of those. Motorized vehicles have become a part of day-to-day human life. Humanity has a direct dependency on vehicles so much that the world cannot sustain without using motor vehicles for even a single day (Lehto et al. 2012). Motorized vehicles have become an essential part of life as the school bus, vanpool to go to an office, the post mail van, shipping of raw materials and finished goods to and fro from a company. Hence, one should maintain healthy



**Fig. 9.** Results of BibExcel on leading authors are organized in descending order in a Pivot Chart

conscience while using motor vehicles or even bicycles in public. Our findings indicate that many high school students riding with a driver who had been drinking alcohol self-reported that drinking was the cause of the accidents resulting in injuries. One should also consider the job design of seats associated with children in motor vehicles, as discussed in one of the articles that we focused on (Reddell et al. 1992; Rice and Cosby 2009).

The article (Kim et al. 2021) emphasizes the point that men were more likely than women to present to the ED with severe head injuries and men in the head injury group were also more likely than women to have suffered significant injuries. The overall incidence of fall-related injuries is higher in the older adults in women than in men. However, the mortality rate associated with such injuries was much lower in women than in men. The article (de Rome et al. 2012) emphasized the significant impact of nonfatal motorcycle crashes on the physical, emotional, and social wellbeing of riders. This article focused on how well protective clothing helps a rider during a motor vehicle crash.

By this review, we can get a sense of how important it is to consider injury prevention in motor vehicle crashes based on the mortality rate and the severity of injuries as discussed in the set of articles. This report provides a systematic literature review on injury prevention in the transportation sector. Firstly, a trend analysis was carried out to understand the importance of this topic. The trends show that this topic is no longer in primitive stages and that significant research has been made and continues further to prevent injuries in motorized vehicle crashes. Secondly, a co-citation analysis was performed to understand how many people are working on this topic and how many articles have been influential in shaping the research and raising a voice about the topic in this domain. This analysis was performed in the VOSviewer (“VOSviewer” n.d.) software after extracting bibliometric information from various databases like Google Scholar (“Google Scholar” n.d.), SpringerLink, Scopus, and Web of Science. Co-authorship analysis is performed with the same metadata that was extracted from the previously mentioned databases. Content analyses were carried out during the subsequent steps. Next, a keyword co-occurrence cluster was generated in VOSviewer after extracting content information from Google Scholar using the Harzing Publish or Perish software. Since the keyword search used for this stage in the analysis was a generic topic, this analysis helped identify the area this report would address. A content analysis in the form of a word cloud was done in MAXQDA once the topic was identified and

a select number of research articles were collected from different sources. Results from the previous analysis shows that topics such as “injury”, “prevention”, “transportation” and “automation” are highly referenced in all these articles and occurred multiple times in the articles. After that, a cluster analysis of the content on CiteSpace gave more insight into the fact that “injury” was highly used in many research articles. Lastly, BibExcel was used to find the leading authors who are actively participating and conducting research in this domain.

## 6 Conclusion

Firstly, we discussed the issue of rollovers and the severity of the injuries. The major factors for rollover are related to driver-specific attributes (e.g., age, gender, etc.), the surrounding environment (e.g., land use, weather condition, access point), vehicle features (e.g., vehicle type, vehicle age), roadway conditions (e.g., shoulder width, horizontal curvature, terrain), crash-specific characteristics (e.g., time of the crash, injury severity), and traffic conditions (e.g., light-vehicle traffic, heavy-vehicle) (Anarkooli et al. 2017).

We also discussed the exponentially growing issue of injuries while driving standing motorized scooters. Through the analyses mentioned in the article, we can understand the significance of injury prevention in transportation sector. We also identified some of the key factors that cause injuries in the transportation sector and can focus the research on how to sustain these incidents. National Science Foundation (NSF) has shown keen interest in funding projects like “Programming safety into self-driving cars” which can improve the safety by implementing optimized artificial intelligence algorithms. Innovations in optimizing the human-computer interactions have shown significant promise in mitigating injuries caused in accidents of transportation sector.

## 7 Recommendation for Future Work

Although this report addresses the importance of injury prevention in motorized vehicle crashes and provides a systematic literature review on the same, there still is a lot of research that could be pursued in some of the specific topics. A lot of future research has been funded in Malaysia on studying the factors mentioned above to come up with creative solutions to reduce or even stop the rollovers of motorized vehicles. Future research work can focus on how to prevent the riders to drive these scooters when they are intoxicated as this one of the main reasons why riders prefer to drive these scooters. There are no laws implemented to restrict the riders to drive them when they are intoxicated in the current world (Kim and Campbell 2021).

Fatalities in traffic accidents reduced notably due to recent advancements in safety technologies. To reach greater heights in advancements in safety, the automobile industry has invested in developing autonomous vehicles and minimize human intervention which is one of the most significant causes of accidents (Choi and Ji 2015). Autonomous vehicles could improve safety by increasing the human-computer interaction. Autonomous vehicles can help elderly people by having computers do the major tasks (Bimbraw 2015). One other domain to focus future research is training in virtual safety. Training

children in immersive virtual reality to teach the necessary pedestrian skills is emphasized in (Dixon et al. 2020). Training in virtual reality could really help young drivers to gain sufficient knowledge and might reduce traffic accidents. Research to develop driver assistance and intuitive driver-car communication can improve driving safety (Eyben et al. 2010).

## References

1. Anarkooli, A.J., Hosseinpour, M., Kardar, A.: Investigation of factors affecting the injury severity of single-vehicle rollover crashes: a random-effects generalized ordered probit model. *Accid. Anal. Prev.* **106**(September), 399–410 (2017). <https://doi.org/10.1016/j.aap.2017.07.008>
2. Boufous, S., de Rome, L., Senserrick, T., Ivers, R.: Risk factors for severe injury in cyclists involved in traffic crashes in Victoria, Australia. *Accid. Anal. Prev.* **49**(November), 404–409 (2012). <https://doi.org/10.1016/j.aap.2012.03.011>
3. Dettori, N.J., Norvell, D.C.: Non-traumatic bicycle injuries a review of the literature. *Sports Med.* **36**, 7–18 (2006)
4. Differences in Transportation-Related Injury (n.d.)
5. Duffy, G.A., Duffy, V.G.: Systematic literature review on the effect of human error in environmental pollution. In: Duffy, V.G. (ed.) HCII 2020. LNCS, vol. 12199, pp. 228–241. Springer, Cham (2020). [https://doi.org/10.1007/978-3-030-49907-5\\_16](https://doi.org/10.1007/978-3-030-49907-5_16)
6. Fonseca, E., de Paula Fonseca, B., Sampaio, R.B., de Arajo Fonseca, M.V., Zicker, F.: Co-authorship network analysis in health research: method and potential use. *Health Res. Policy Syst.* **14**(1), 1–11 (2016). <https://doi.org/10.1186/s12961-016-0104-5>
7. Fahimnia, B., Sarkis, J., Davarzani, H.: Green supply chain management: a review and bibliometric analysis. *Int. J. Prod. Econ.* **162**, 101–114 (2015). <https://doi.org/10.1016/j.ijpe.2015.01.003>
8. Google Scholar (n.d.). <https://scholar.google.com/>. Accessed 27 Apr 2021
9. Harzing's Publish or Perish (n.d.). <https://harzing.com/resources/publish-or-perish>. Accessed 27 Apr 2021
10. Heesch, K.C., Garrard, J., Sahlqvist, S.: Incidence, severity and correlates of bicycling injuries in a sample of cyclists in Queensland, Australia. *Accid. Anal. Prev.* **43**(6), 2085–2092 (2011). <https://doi.org/10.1016/j.aap.2011.05.031>
11. Juhra, C., et al.: Bicycle accidents - do we only see the tip of the iceberg?: A prospective multi-centre study in a large German City combining medical and police data. *Injury* **43**(12), 2026–2034 (2012). <https://doi.org/10.1016/j.injury.2011.10.016>
12. Kim, S.H., Kim, S., Cho, G.C., Lee, J.H., Park, E.J., Lee, D.H.: Characteristics of fall-related head injury versus non-head injury in the older adults. *BMC Geriatr.* **21**(1), 1–11 (2021). <https://doi.org/10.1186/s12877-021-02139-4>
13. Kim, W.C., Campbell, A.R.: Common injury patterns from standing motorized scooter crashes. *Curr. Surgery Rep.* **9**, 1–5 (2021). <https://doi.org/10.1007/s40137-021-00283-9>
14. Krishnan: How to use words co-occurrence statistics to map words to vectors (2015). <https://iksinc.online/2015/06/23/how-to-use-words-co-occurrence-statistics-to-map-words-to-vectors/>
15. Kurniawan, J., Duffy, V.G.: Systematic review of the importance of human factors in incorporating healthcare automation, pp. 1–18 (n.d.)
16. Lehto, M.R., Lafayette, W., Cook, B.T.: Miller engineering, and ann arbor, Chap. 25. In: Management of Occupational Safety. Handbook of Human Factors and Ergonomics (2012)
17. MAXQDA (n.d). <https://www.maxqda.com/>. Accessed 27 Apr 2021



18. Martínez-Ruiz, V., Jiménez-Mejías, E., Amezcua-Prieto, C., Olmedo-Requena, R., De Dios LunaDel-Castillo, J., Lardelli-Claret, P.: Contribution of exposure, risk of crash and fatality to explain age- and sex-related differences in traffic-related cyclist mortality rates. *Accid. Anal. Prev.* **76**, 152–158 (2015). <https://doi.org/10.1016/j.aap.2015.01.008>
19. Mendeley (n.d.). [https://www.mendeley.com/?interaction\\_required=true](https://www.mendeley.com/?interaction_required=true). Accessed 27 Apr 2021
20. Pai, C.W., Jou, R.C.: Cyclists' red-light running behaviours: an examination of risk-taking, opportunistic, and law-obeying behaviours. *Accid. Anal. Prev.* **62**, 191–198 (2014). <https://doi.org/10.1016/j.aap.2013.09.008>
21. Reddell, C.R., Congleton, J.J., Huchingson, R.D., Montgomery, J.F.: An evaluation of a weightlifting belt and back injury prevention training class for airline baggage handlers. *Appl. Ergon.* **23**(5), 319–329 (1992). [https://doi.org/10.1016/0003-6870\(92\)90293-5](https://doi.org/10.1016/0003-6870(92)90293-5)
22. Rice, V.J.B., Cosby, B.: Introduction: how designing for children is different from 2 principles of designing for children is different from designing, Chap. 53, pp. 1640–1653 (2009)
23. de Rome, L., Ivers, R., Fitzharris, M., Haworth, N., Heritier, S., Richardson, D.: Effectiveness of motorcycle protective clothing: riders' health outcomes in the six months following a crash. *Injury* **43**(12), 2035–2045 (2012). <https://doi.org/10.1016/j.injury.2011.10.025>
24. Scopus (n.d.). <https://www.scopus.com.ezproxy.lib.purdue.edu/search/form.uri?display=basic#basic>. Accessed 27 Apr 2021. SpringerLink (n.d.). <https://link.springer.com/>. Accessed 27 Apr 2021
25. Al Turki, Y.A.: How can Saudi Arabia use the decade of action for road safety to catalyse road traffic injury prevention policy and interventions? *Int. J. Injury Control Saf. Promot.* **21**(4), 397–402 (2014). <https://doi.org/10.1080/17457300.2013.833943>
26. Vanlaar, W., Hing, M.M., Brown, S., McAteer, H., Crain, J., McFaull, S.: Fatal and serious injuries related to vulnerable road users in Canada. *J. Saf. Res.* **58**(September), 67–77 (2016). <https://doi.org/10.1016/j.jsr.2016.07.001>
27. VOSviewer (n.d.). <https://www.vosviewer.com/>. Accessed 27 Apr 2021
28. Web of Science (n.d.). <https://www.webofknowledge.com/>. Accessed 27 Apr 2021
29. Bimbraw, K.: Autonomous cars: past, present and future. In: 2015 12th International Conference on Informatics in Control, Automation and Robotics (ICINCO), pp. 191–198 (2015). <https://www.scitepress.org/Papers/2015/55405/55405.pdf>
30. Choi, J.K., Ji, Y.G.: Investigating the importance of trust on adopting an autonomous vehicle. *Int. J. Hum.-Comput. Interact.* **31**(10), 692–702 (2015). <https://doi.org/10.1080/10447318.2015.1070549>
31. Dixon, D.R., Miyake, C.J., Nohelty, K., Novack, M.N., Granpeesheh, D.: Evaluation of an immersive virtual reality safety training used to teach pedestrian skills to children with autism spectrum disorder. *Behav. Anal. Pract.* **13**(3), 631–640 (2019). <https://doi.org/10.1007/s40617-019-00401-1>
32. Eyben, F., et al.: Emotion on the road-necessity, acceptance, and feasibility of affective computing in the car. *Adv. Hum.-Comput. Interact.* (2010). <https://doi.org/10.1155/2010/263593>
33. van der Laan, J.D., Heino, A., de Waard, D.: A simple procedure for the assessment of acceptance of advanced transport telematics. *Transp. Res. Part C: Emerg. Technol.* **5**(1), 1–10 (1997). [https://doi.org/10.1016/S0968-090X\(96\)00025-3](https://doi.org/10.1016/S0968-090X(96)00025-3)