



*Promoting the safe and effective  
use of powered access*

# IPAF GLOBAL SAFETY REPORT 2021

[www.ipaf.org/accident](http://www.ipaf.org/accident)



Definitions .....	2
Foreword .....	3
Executive summary .....	4
Falls from the platform .....	6
Electrocutions .....	8
Entrapments .....	10
Stability/Overturns .....	12
Hit by vehicle or machine .....	14
Hit by falling objects .....	16
Lessons learned .....	18
Portal upgrade drives better reporting .....	20
IPAF Accident Reporting Portal .....	22
About IPAF .....	23



## No short cuts to safe powered access use

IPAF's accident reporting project began in 2012, as an initiative of the IPAF UK Country Council, which mandated that from 2013 all UK members must report any accidents involving powered access. At that time, I was a member of the IPAF UK Country Council as a representative of an IPAF member firm, so I understand the importance of this initiative to build a valuable database of anonymised reports that we can analyse to help understand the causes of accidents in our industry.

In the intervening nine years, the IPAF accident reporting project has spread around the globe, with users in more than 25 countries logging incidents via a vastly improved online portal. The database has grown accordingly, affording new opportunities to produce detailed analysis that influences the safety campaigns and training programme IPAF offers in no fewer than 75 countries worldwide.

While work at height using powered access is usually perfectly safe, when accidents do occur they often lead to serious injury or death. The most common causes of injuries and deaths remain falls from the platform, electrocutions, entrapment, overturns, MEWPs hit by an object or vehicle, or struck by a falling object. We tailor our safety and technical guidance, including Andy Access posters and Toolbox Talks, and our globally recognised training to address these types of accident, but of course more needs to and is being done.

With the help of all those reporting and the members of the IPAF Accident Work Group of safety experts, IPAF has produced this industry-facing report, now in its second edition. It offers overview and analysis of key data trends, alongside relevant recommendations about how to mitigate the risks inherent in using different categories of powered access for a variety of tasks across a range of sectors.

A common denominator always seems to be flaws in planning, either incorrectly assessing risks, inadequate allocation of trained operators or supervisors, or incorrect machine selection.

**All accidents can be avoided, if the correct steps are taken during a rigorous pre-use planning process. There simply are no short cuts to safe use of powered access.**

While IPAF's database is far more detailed and wide-ranging than it was in the early years of the project, we need to encourage more reporting from all sectors, in all countries, from operators and supervisors, service engineers, hire desk controllers, delivery drivers, health & safety supervisors and senior managers – people from all walks of powered access should feel confident to report even the most minor accidents, quickly, easily and anonymously.

We also need to capture more data on near misses – for every serious accident it can be assumed there are thousands of times when a small mistake was made and acknowledged but did not lead to a serious outcome. We know it is a challenge, but that has to be the goal of the IPAF accident reporting project as it enters its second decade – to foster an industry-wide culture of reporting even the most minor incidents and near misses.

With the recently launched IPAF ePAL mobile app for operators and supervisors able to link directly into the reporting portal, we hope more operatives working across our industry will feel empowered to report all accidents, incidents and near misses.

We hope this report is useful in terms of informing good planning, risk assessment and safety protocols when using powered access. I believe it confirms the importance of the IPAF reporting project in helping to keep our industry as safe as it can be. I thank all those who continue to contribute.

**Peter Douglas**  
CEO & MD of IPAF



Credit: SANTERI KERÄNEN (BLADEFENCE)

## Definitions

### PERSONAL FALL-PROTECTION EQUIPMENT (PFPE)

This includes full-body harnesses and fall-restraint lanyards, recommended for use in all boom-type MEWPs.

### INSULATED AERIAL DEVICE (IAD)

This is a specialist machine designed to work at height in proximity to overhead power lines as an extra precaution against electrocution.

### LOST-TIME INCIDENT

An incident that occurred during the operation, movement, loading, transport or maintenance of a MEWP, which has resulted in harm to a person (operator, occupant, driver, technician or bystander) or damage to the MEWP or other object.

As well as fatal incidents, the following definitions may apply:

### MAJOR INJURY

Injuries that prevent the person working for more than seven days.

### MINOR INJURY

Injuries that prevent the person working from one to seven days.

### INCIDENT CATEGORIES HIGHLIGHTED WITHIN THIS REPORT

#### ELECTROCUTION

Person(s) electrocuted following contact with electrical current.

#### ENTRAPMENT

Person's upper body/head trapped or crushed between the work platform and an external structure, following movement of the MEWP (travel or elevation).

Person's head or body is caught between the machine and an external structure during operation: This occurred during operation of the MEWP. The person was in the platform.

#### FALL FROM WORK PLATFORM

Person(s) have fallen from the work platform.

Person(s) have fallen from another structure (roof, tree) when exiting the work platform.

Person(s) have been ejected from the work platform as a result of the MEWP movement.

This includes a catapult movement after the MEWP platform or extending structure became trapped or caught on an obstruction. This effect can also occur during travel of the MEWP.

#### HIT BY FALLING OBJECT

The MEWP has been struck by an external object, for example a tree branch, sign or a part of the building under construction/destruction.

#### HIT BY VEHICLE OR MACHINE

The MEWP has been struck by another moving machine, for example a truck, car, train, gantry crane or forklift.

#### OVERTURN

Loss of stability of the MEWP, so that the MEWP has overturned or partially overturned. A MEWP classed as partially overturned will be resting on an external structure or not have all the necessary ground points (wheels, stabilisers or outriggers) in contact with the ground.

# Executive summary

**As an overview of the latest data, there were 736 reported incidents in the period from 1 January 2019 to 31 December 2020, which involved 768 people. These included:**

- 168 incidents causing damage to machine or property
- 159 near-misses
- 178 minor injuries
- 72 major injuries
- 172 fatal-injury reports, from 15 different countries, involving 195 people and 174 deaths.
- In total, reports were entered on to the IPAF accident portal from 19 different countries

## Lost time incidents (LTIs)

Overall trends show that reported numbers are going down, but that the proportion of lost-time incidents (LTIs) is increasing. This is encouraging in one sense, as it means that fatal and serious accidents are increasingly being captured, but it does flag up that more can be done to build up a stronger database of minor accidents and near-misses. If as an industry we are going to prevent fatal accidents, we need to start reporting all MEWP-related incidents, even the most minor accidents and near-misses.

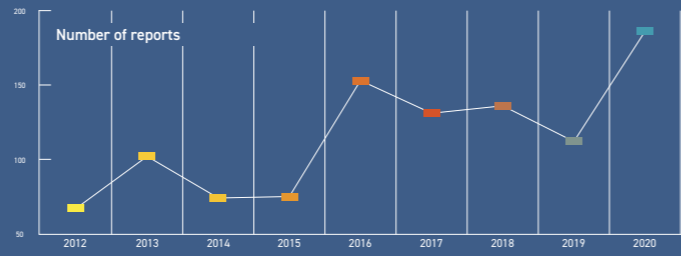
To make this possible, we are committed to continuing worldwide promotion of the reporting portal. In the past year we have worked hard to improve the reporting portal, added extra languages to make reporting more convenient for users around the world, and have made it available directly from the new ePAL app, maximising access for all users and making it easy to quickly and anonymously report everything from near-misses to serious and fatal accidents.

This will allow IPAF experts to deliver better analysis of a stronger database, offering better presentations of data and customisable member dashboards, as well as to use the data gathered to supply individual data analysis for reporting companies.

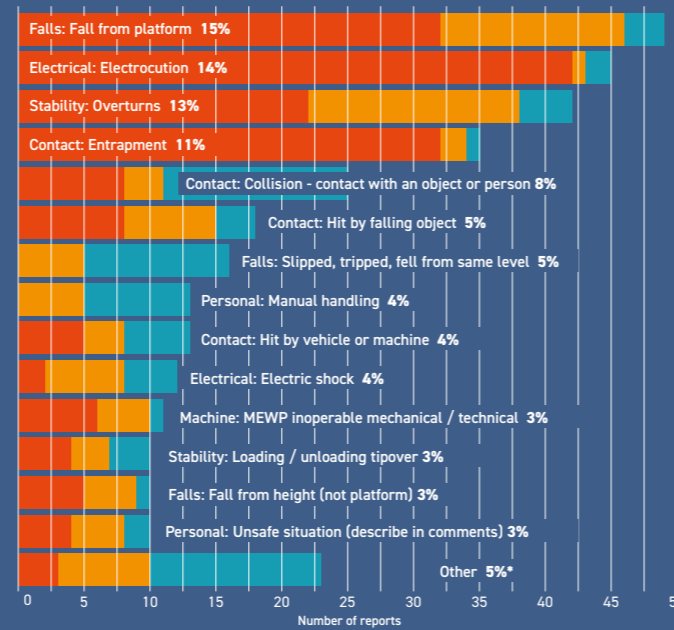
When the portal was launched in 2012, IPAF estimated it would not be until 2017-18 before the database was broad and granular enough to offer meaningful data insights; we have certainly surpassed that threshold but we are still limited by the relatively high capture ratio of fatal accidents and LTIs in relation to other more minor incidents and near-misses.

As in any system, the output is only as good as the data inputted – we must change the culture when it comes to empowering all users, operators and supervisors to report even the most minor incidents and near-misses on a daily basis. That minor scrape or mistake that had you puffing out a sigh of relief can help build a risk profile that will assist IPAF in understanding trends of behaviour and tailoring our training, safety and technical guidance accordingly. It will undoubtedly aid in preventing serious accidents and loss of life in future.

## Lost-time incidents

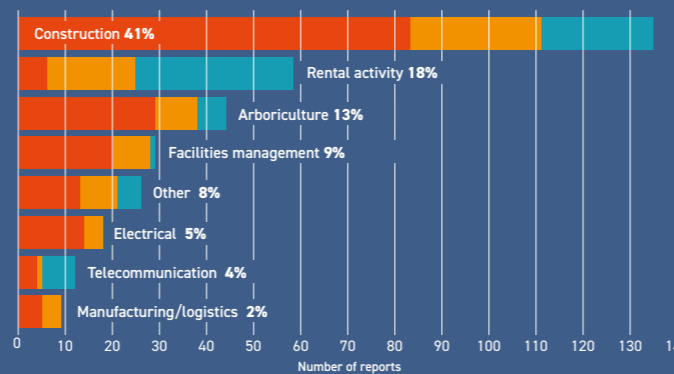


### by Incident type/Classification

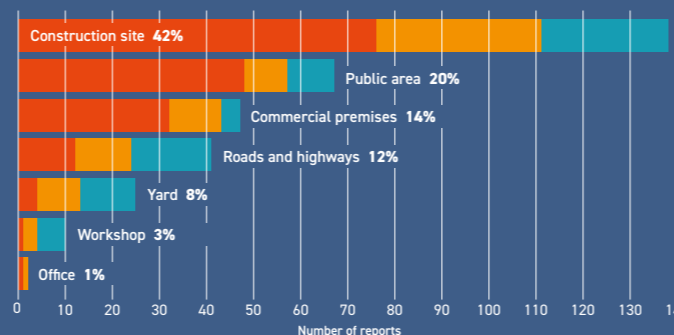


\* Contact: Crushing, trapping, pinching, Contact: RTA vehicle accident, Electrical: Fire / explosion, Machine: Transport Stability: Ground condition instability, Personal: Using hand tools, Contact: Bump - person walks into object / machine

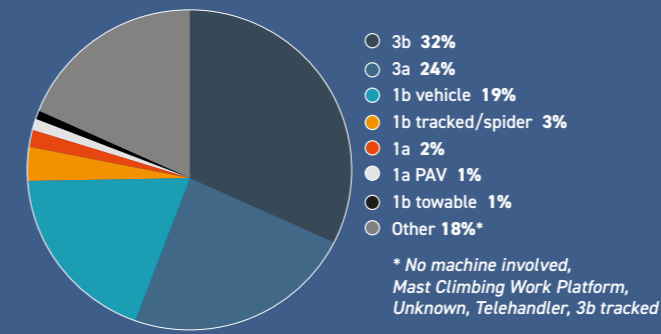
### by Industry sector



### by location

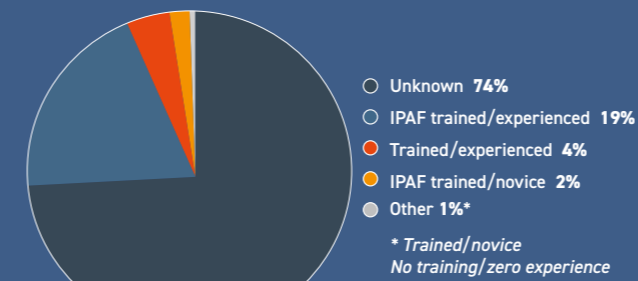


## People involved by machine category



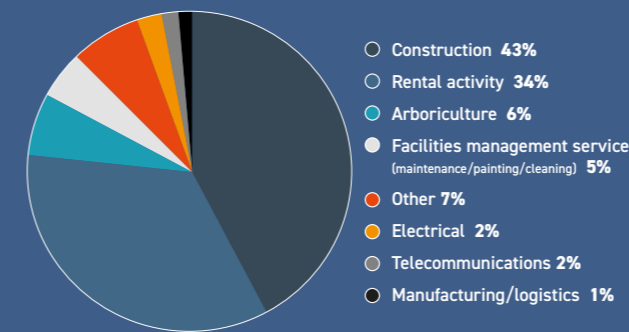
\* No machine involved, Mast Climbing Work Platform, Unknown, Telehandler, 3b tracked

## Persons level of training

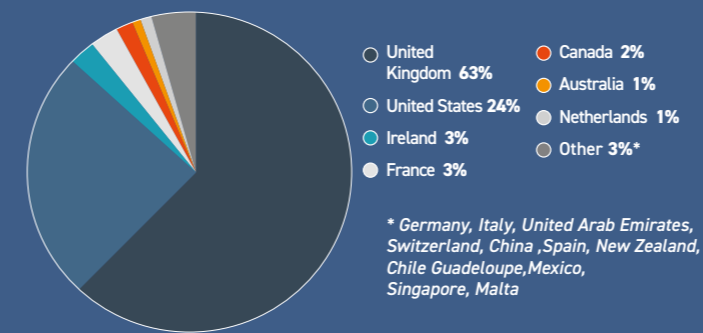


\* Trained/novice No training/zero experience

## People involved by industry sector



## Reports by location



\* Germany, Italy, United Arab Emirates, Switzerland, China, Spain, New Zealand, Chile, Guadeloupe, Mexico, Singapore, Malta

## Machine categories

When the IPAF accident reporting project was initiated in 2012, the focus was very much on gathering data about incidents involving MEWPs. Over the years, as the project has grown in terms of reporting from around the world and from different industry sectors, IPAF is pleased that increasingly we have been capturing reports about incidents involving Mast Climbing Work Platforms (MCWPs), 1b towable, 1a, 3b tracked, 1b tracked or spider, 1a Push Around Vertical (PAV) and telehandler machines.

At this point the data being gathered from each of these additional machine categories is not proving statistically significant in every accident category. IPAF is committed to gathering as much usable data from every sector of powered access use. We will work with our committees and experts and the wider industry to encourage better reporting of incidents involving MCWPs and hoists in order to allow more detailed analysis of trends when it comes to incidents using these types of powered access. As with all the other data we gather, it will be used to inform the work IPAF does to improve safety and prevent accidents leading to injuries and deaths wherever powered access is being used in the world.

## Focus on the MEWP rental industry

The occupation of delivery driver still features highly in the number of incidents reported. We know from data that this is the occupation that is potentially most at risk of an incident occurring and at risk of sustaining an injury. Globally, there were no fewer than 164 delivery drivers injured and sadly six fatalities reported during this reporting period.

From the previous report covering the period 2016-2018, data identified that delivery drivers were at risk in this way. As a result of this the IPAF Load and Unload training course was subject to a major internal and stakeholder review. The course was subsequently updated to include the identified risks and hazards and relaunched towards the end of 2020.

On the other hand we are gathering information about more minor injuries, for instance cuts, scrapes and bruises sustained by maintenance technicians or engineers. The information gathered about near-misses or minor incidents is vitally important, as are incidents that do not actually involve MEWPs, for instance on-site collisions involving delivery vehicles, or incidents involving rental company employees as they move around a hire yard or rental depot or workshop.

## Increasing global reach

In the early years of the IPAF Accident Reporting project, the bulk of the reports received were from the UK, but this was as a direct result of reporting being mandated by the IPAF UK Country Council. Now other countries and regions of IPAF are following their lead, mandating that all members should use the portal to report accidents and near-misses. At time of publication these include Ireland and the Middle East region. The trend continues to reduce as we see more people report incidents from around the globe. All data supplied is anonymised and held in such a way as to be completely confidential.

### Falls from the platform are almost always fatal

Looking at all captured data 2019-2020, falls from the platform remains one of the leading causes of fatal incidents when working from powered access equipment, although it is no longer the single leading cause as it was when analysing IPAF statistics from 2016-2018.

As with most incidents, good planning is key to preventing this type of fall. Adhering to guidance re the wearing of PFPE at all times, not unclipping or exiting the platform at height, not climbing on guardrails or any other artificial means to gain extra height within the platform. Only use manufacturer approved devices such as extending decks, surfaces or integrated steps within the platform. Failure to adhere to these strict rules heightens the risk of serious injury or death considerably.

Again, as with other types of incident, ensuring operators have received appropriate thorough training and familiarisation on the machine type being used and wear the correct full-body harness and fall-restraint lanyard, as recommended for use in both static and mobile booms.

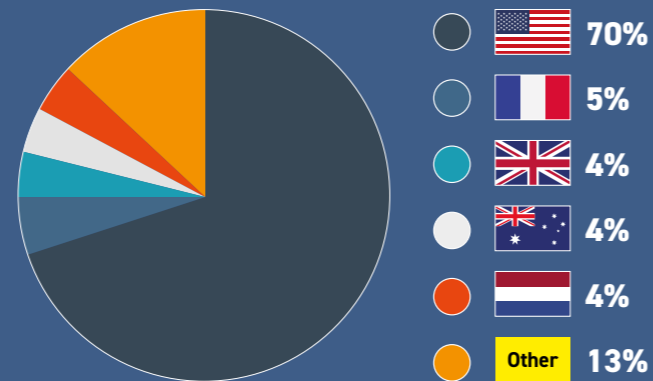


#### People involved by machine category

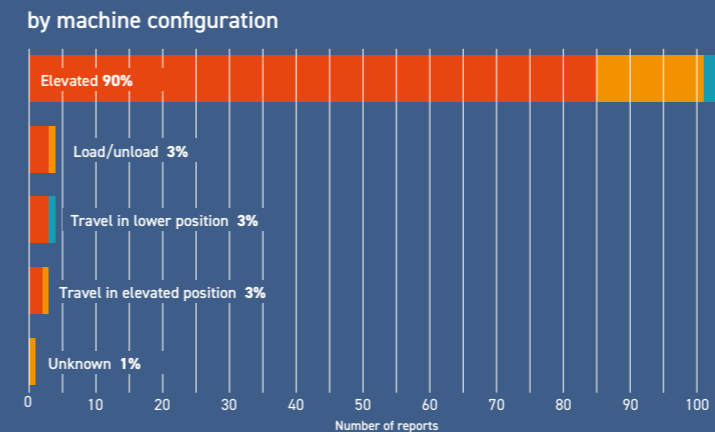
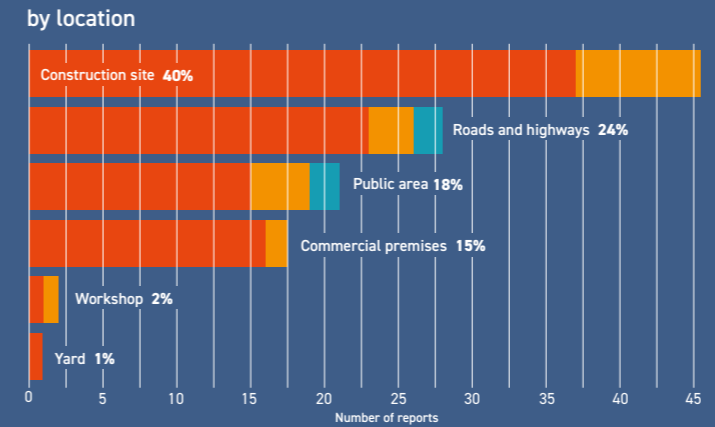
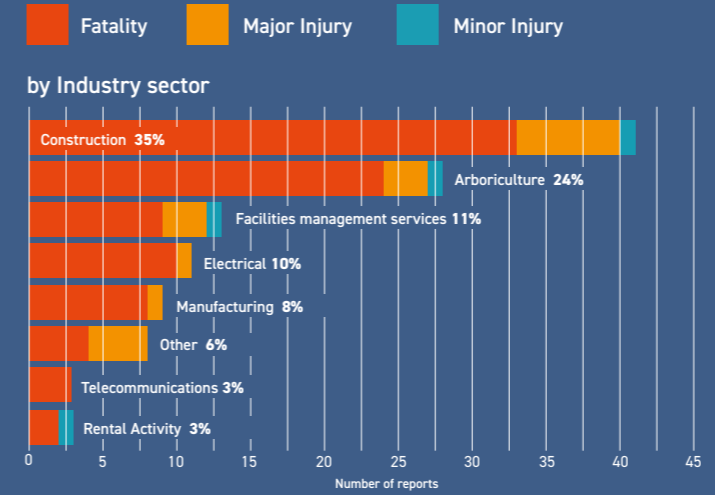


\* Mast Climbing Work Platform, 1b towable, 1a, 3b tracked, 1b tracked/spider, Telehandler, 1a - PAV, 1a PAV

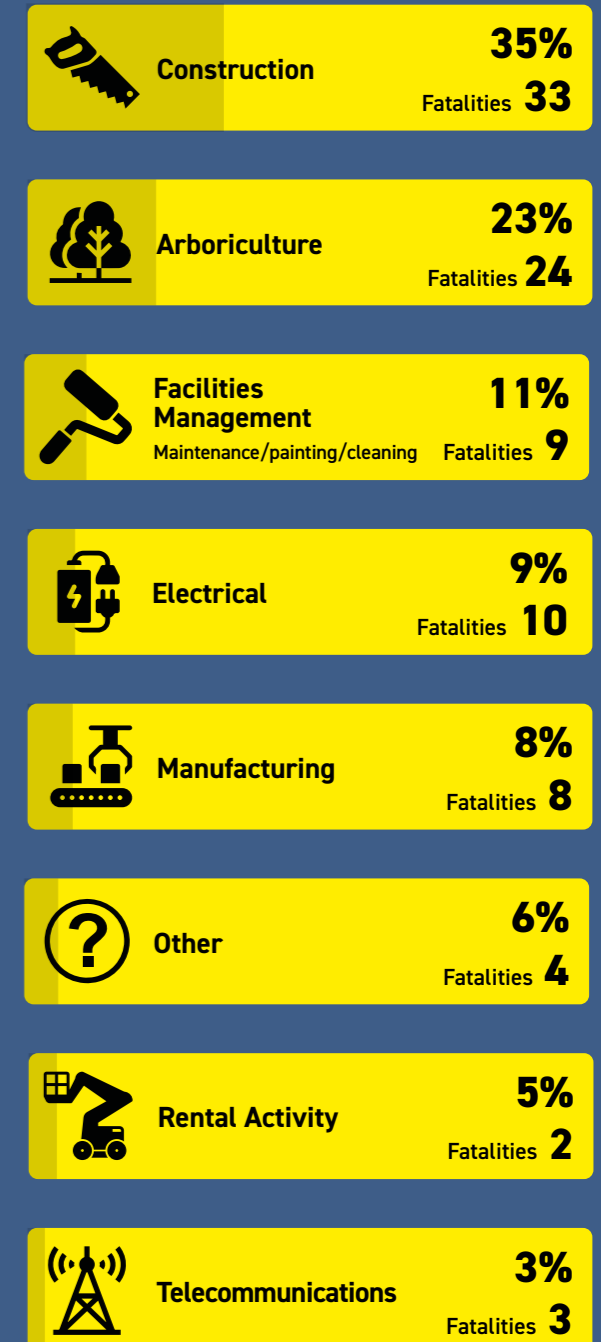
#### Reports by location



#### Lost-time incidents



#### People involved by industry sector



### Analysis

Reported data about falls from the platform shows 117 incidents involving 120 people injured and 93 killed. In terms of countries reporting the highest numbers of falls from the platform, the US was the highest followed by France and Australia. The main sectors were construction and arboriculture, with facilities management and electrical applications third and fourth respectively.

The chart shows 1b static booms being the most common machine type for this type of incident, followed by 3b mobile booms and

3a vertical lifts. Persons ejected or falling from a boom-type platform are likely to not have been using the correct personal fall protection equipment, have not attached their lanyard to the correct anchor point, or used no PFPE at all, against industry guidance.

As PFPE is not usually recommended for use in most 3a MEWPs, it is possible to conclude that the majority of those falling from mobile vertical lifts, such as scissor lifts, are likely to have climbed on the guardrails, leant out of the platform or attempted to exit the platform at height, against recommended guidance.

In terms of the location, the data shows that accidents at construction sites are most common; if roads/highways and public areas are combined the total number of incidents surpass construction. This is consistent with previous years' reports which indicated that controlled work sites, such as construction, commercial premises, warehouses, and other installations are safer than other locations that could be classed as uncontrolled, ie not segregated from non-related activities, vehicular traffic etc. As with other types of incidents, such as electrocution, a fall from the platform almost always results in serious injury or death.

### Planning

Proper planning and ensuring a safe system of work is an essential part in the process to avoid falls from the platform. Data shows us that occupants working from the platform have been fatally killed or seriously injured and subsequently fallen due to: overreaching, standing on guardrails in the platform and falling; being ejected from the platform due to being struck at the base by other equipment; poor or insufficient ground conditions; not operating the equipment smoothly; falling objects have struck the platform/structure,

ejecting the occupants from the MEWP; incorrect use of or not wearing harness and/or lanyard; falling while exiting or re-entering the platform at height.

Ensuring operations are adequately supervised is key to improving safety. Those who supervise MEWP operations should be IPAF MEWPs for Managers-trained and understand the safety rules pertaining to powered access. Safe systems of work must be established to ensure robust procedures when powered access is put into use and regular monitoring to ensure rules are being adhered to.

### References

- Fall protection in MEWPs (H1)
- Back to Basics campaign
- Exiting the platform at height (E2)
- Andy Access posters
- Use Personal Fall Protection Equipment (PFPE) Toolbox Talk
- IPAF management training

### No second chances

Electricity is invisible and can arc or jump to a MEWP or other structure, which then acts as a conductor to ground (earth). Electric cables if not properly isolated can still build a static charge sufficient to cause electrocution, and earthing can occur between differential voltages.

The rate of electrocutions in the past two years has been significant, with data indicating the majority of incidents in the US/North America. Factors could include an increase in usage of MEWPs in the tree-care industry and increased reporting, including better interrogation of public safety data such as OSHA/FATAL and CATastrophic (FATCAT) accident reports.

When we look at the types of work and the locations of these accidents, common underlying causes could be the MEWP operator working away from a controlled work site, not expecting to encounter or be in close proximity to live overhead lines, or lone working, ie unsupervised and with no-one to spot hidden dangers or to raise the alarm from the ground.

The infrastructure involved in supplying electricity differ from one country to another. Typically, overhead lines are not insulated. It is not uncommon to see power lines alongside roads, buildings and public areas, as well as traversing open countryside or running along the edges of woods and forests.

Given the relatively low incidence of electrocutions among telecommunications workers, it is to be supposed that these operatives are typically trained to work close to overhead powerlines, including proper planning, identifying and managing risk, working with the correct equipment and procedures in place to manage risk. It is likely workers in other sectors are not always so well prepared or equipped.



### Analysis

From the data received through IPAF's reporting portal, statistics focusing purely on electrocutions, show this type of accident almost always results in a fatality. Of the 97 reported incidents, 91 resulted in fatalities. In total 101 people were injured or killed by electrocution while using MEWPs in the period 2016-2020. An electrocution incident is likely to have a very serious outcome with few second chances.

The majority of electrocution incidents are reported from in the US, accounting for 84% of all recorded fatal electrocutions

reported, 2016-2020. In terms of industry end-use, arboriculture and electrical make up 60% of all fatal incidents. Construction and facilities management together make up just under 30% of fatalities, with telecommunications accounting for 6% of deaths by electrocution.

Electrocutions are more likely to occur away from controlled work sites such as construction, commercial, rental etc. This type of incident is most likely to occur in a public area, including near to roads, or in the management of trees and most commonly involve boom-type platforms, either vehicle or trailer-mounted or self-propelled.

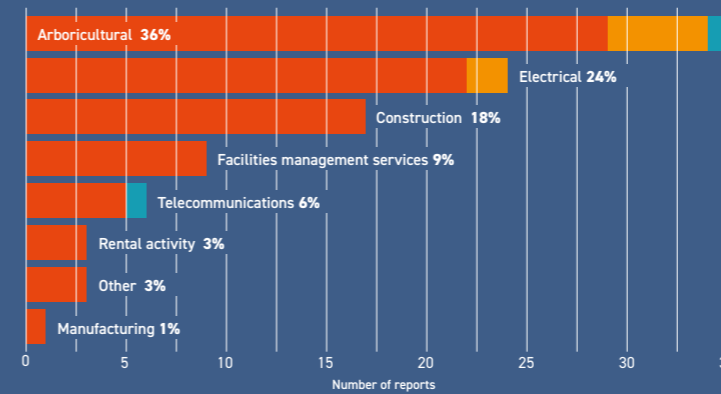
### Planning

Anyone planning work using MEWPs where there is a potential hazard of this type should refer to the hierarchy and principles of avoiding risk with electrocutions contained in BS 8460:2017 Safe Use of MEWPs – which include avoiding overhead power lines wherever possible, and always observing minimum safe distances. Where this is not possible, ensure overhead wires are properly isolated and grounded to prevent static charge build-up. Use of an Insulated Aerial Device (IAD) is recommended,

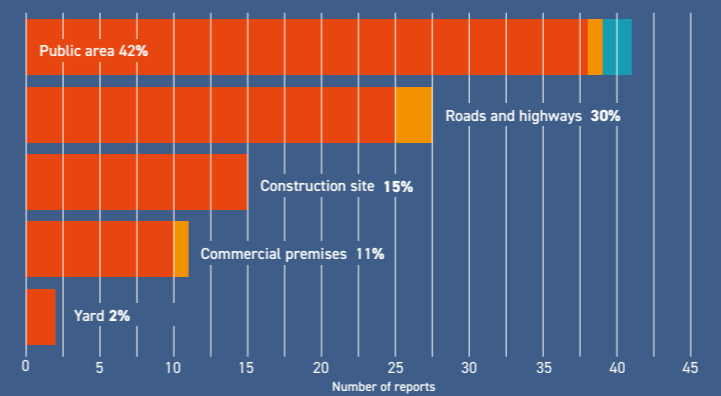
### Lost-time incidents

Fatality Major Injury Minor Injury

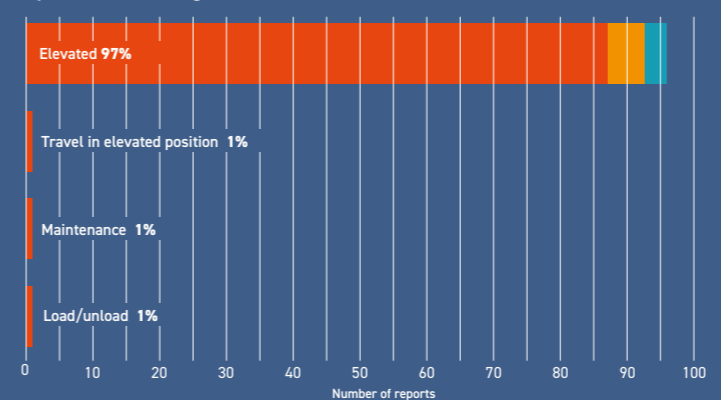
by Industry sector



by location



by machine configuration



which requires additional consideration during the planning, risk assessment, training and familiarisation processes before work commences. If an IAD is deemed the correct MEWP selection, operators should be trained and familiarised accordingly. It is advisable to work well outside the minimum recommended safe distance; these vary in regulations and guidance depending on country. Always err on the side of caution. A safe work plan should identify power sources and where possible highlight the need to safely isolate and de-energise these before any work begins.

A site assessment for MEWP selection must include a thorough walk through of the area. A 'look out, look up' procedure for identifying electrical overhead power lines must be adopted.

Operators must know the recommended safe working distance of electrical sources and not exceed these. Simply leaning out of the platform, moving conductive materials, pointing or gesturing with an outstretched arm could breach safe distances and cause electricity to arc. Weather conditions including humidity ie moisture content of the atmosphere, should also be considered during the risk assessment.

### People involved by industry sector

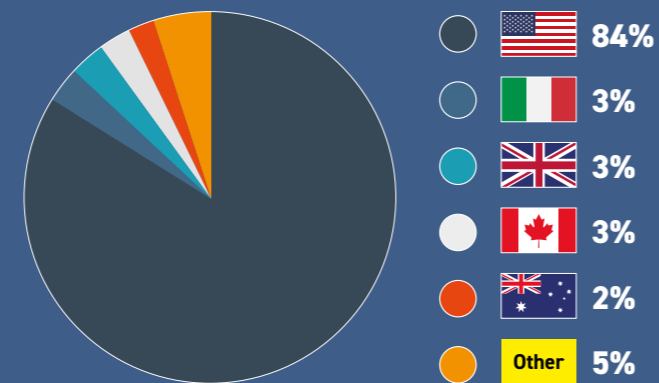


### People involved by machine category



\* 3a, 1b tracked/spider

### Reports by location



### References

- British Standard BS 8460:2017
- IPAF Site Assessment Course
- Street Smart campaign
- Tree worker guidance
- Andy Access posters
- Rescue procedure Toolbox Talk

### Why the outcome is usually so serious

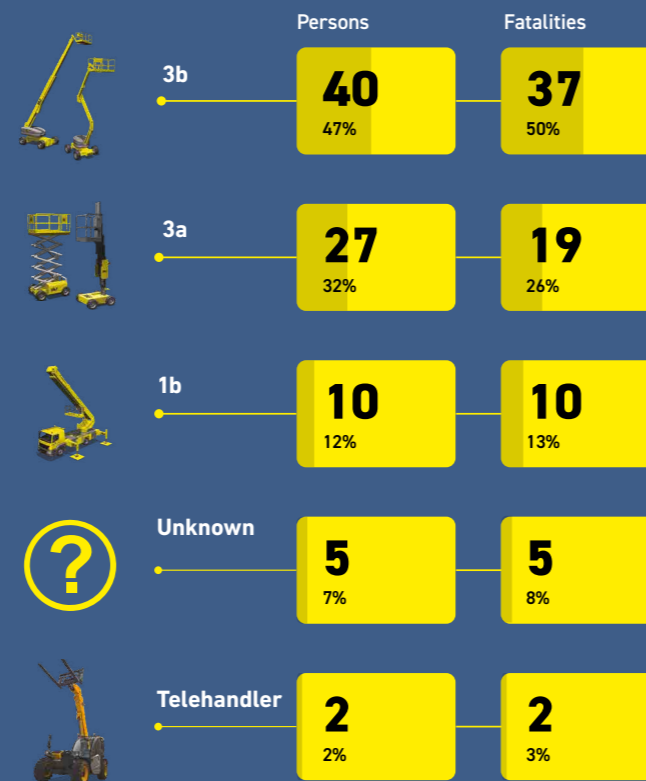
Entrapments are situations in which the operator or occupant of a MEWP becomes trapped between the MEWP controls or platform guardrails and an immovable object or external structure.

If an operator becomes entrapped, it often prevents them from lowering or moving the MEWP safely away from the object, leading to crushing injuries to all persons entrapped. Operators will often be unable to rectify the situation and may find that actuation of the controls can actually make the situation worse. If panic sets in or in case of an occupant being forced on to the control panel, the situation is likely to be exacerbated. Most entrapment situations reported via the IPAF Accident Reporting project lead to serious injuries or death.

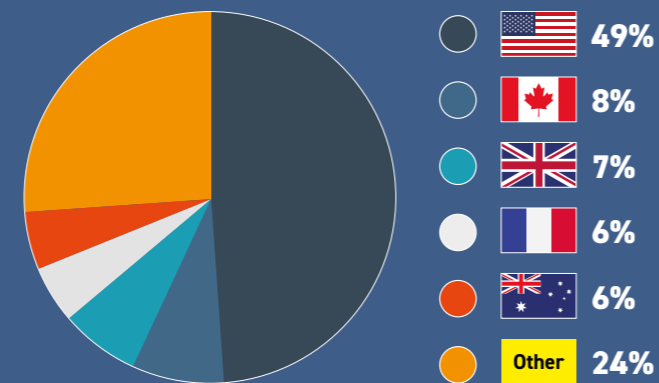
It would be useful, if as an industry operators and supervisors know how to recognise an entrapment near miss, and to report it as a matter of course. More near-miss data, for instance, about an operator that moved the MEWP or activated the controls in a way contrary to what was intended, could be used to help prevent more serious outcomes in future.



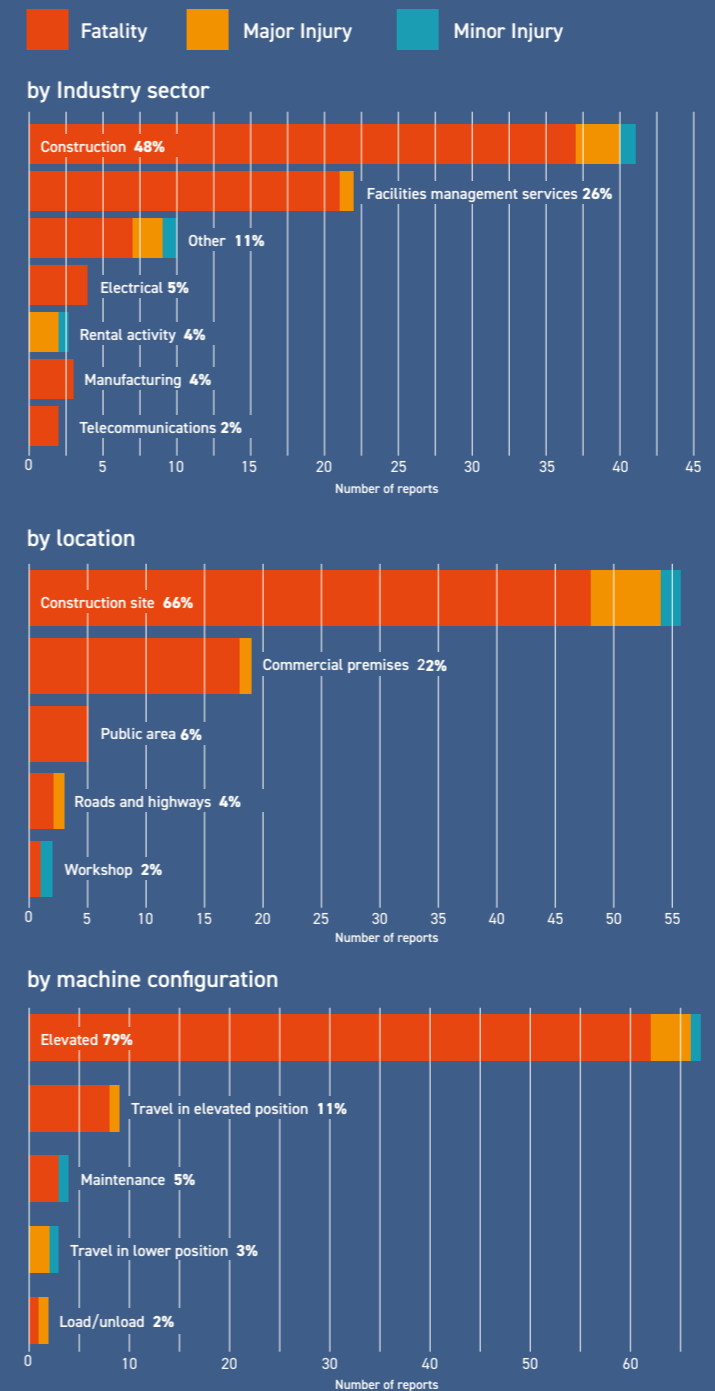
### People involved by machine category



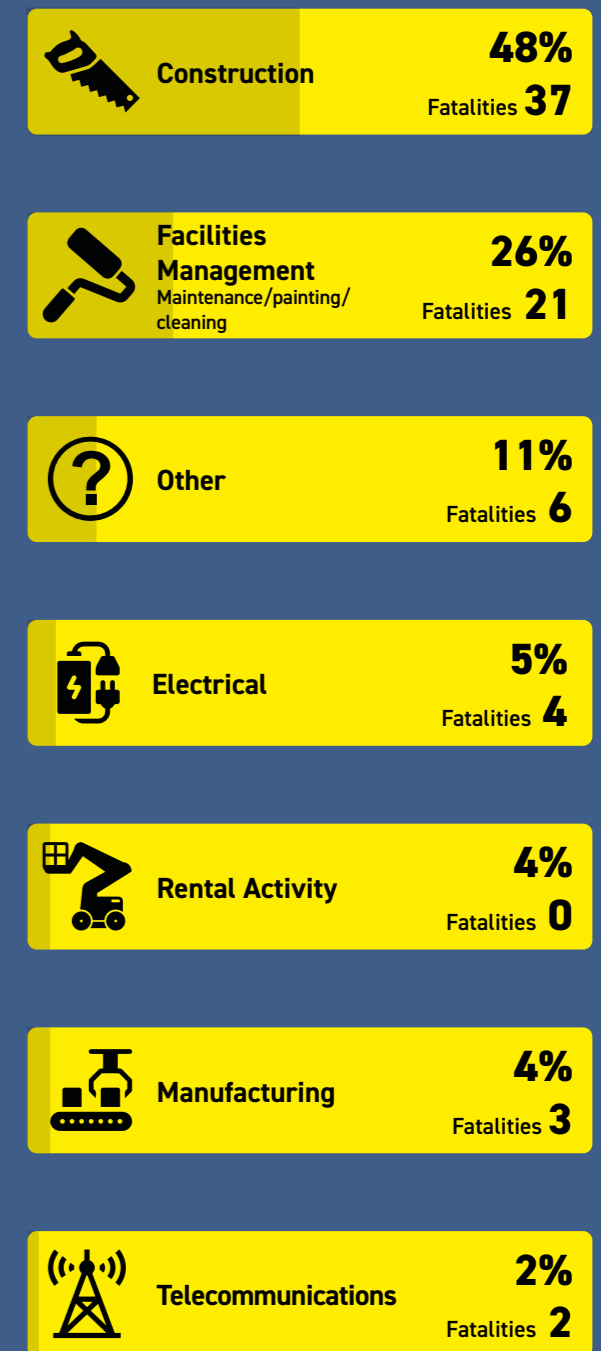
### Reports by location



### Lost-time incidents



### People involved by industry sector



### Analysis

In the 2016-20 data from 15 countries, 84 people were injured of which there were 73 people killed in entrapment incidents. As with other accident types, entrapment injuries tend to be either serious or fatal. The US and Canada are the two countries where entrapments were most prevalent. In terms of sectors, entrapments mainly occurred in construction and then facilities management. Most entrapments occur on construction sites and commercial premises. These sites are likely to involve temporary work at height, either indoors or within structures during the erection process.

This means that MEWP operations tend to be complex and the presence of overhead hazards, such as roofs and ceilings, supporting joists, girders or steelwork that present an elevated risk of entrapments. When it comes to entrapment incidents leading to fatalities, lost-time incidents (LTIs) and minor injuries, construction tops the list of industry sectors where this most commonly occurs, and this is consistent with previous years' reports.

### Planning

Adequate planning will reduce the risk of entrapment, but on occasion there will be

areas where risk still exists. It is important to carry out a site assessment prior to using any MEWP, consider the route the MEWP will travel, and identify any potential crushing areas where the platform and controls may be positioned or required to carry out the work.

A fundamental part of the site assessment requires the selection of the appropriate MEWP considering the size of the platform and manoeuvrability of the jib and platform. Depending on what MEWP is selected for the task, there may be secondary-guarding options that can assist in helping avoid entrapment situation. These will vary from

one manufacturer to the next and can be a very useful aid, but please note that secondary guarding should not be relied upon in lieu of proper planning, risk assessment, constant observation of the operator and all other related good practice guidance.

Working in a MEWP often involves positioning the MEWP platform near to structures against which the occupants can become trapped or crushed. Once all potential crushing or trapping hazards are identified, selecting an appropriate MEWP with appropriate secondary guarding should be considered – the correct secondary-guarding system is an

important part of managing the risks from entrapment or crushing incidents.

Secondary guarding is not a mandatory requirement for safe use of a MEWP, but users are required to take all reasonably practicable steps to reduce risks to as low as possible. MEWPs are designed and manufactured with primary safety devices and systems that help reduce the risk of trapping and crushing. Supplementary secondary guarding devices and systems can be fitted to a MEWP in addition to the primary guarding systems, to further reduce this risk of and/or provide an alert that such a situation has occurred.

### References

- Back to Basics campaign
- Plan Ahead campaign
- Walking the MEWP Toolbox Talk
- Secondary guarding guidance
- Overhead obstructions Toolbox Talk
- Rescue procedure Toolbox Talk

### Where is the tipping point?

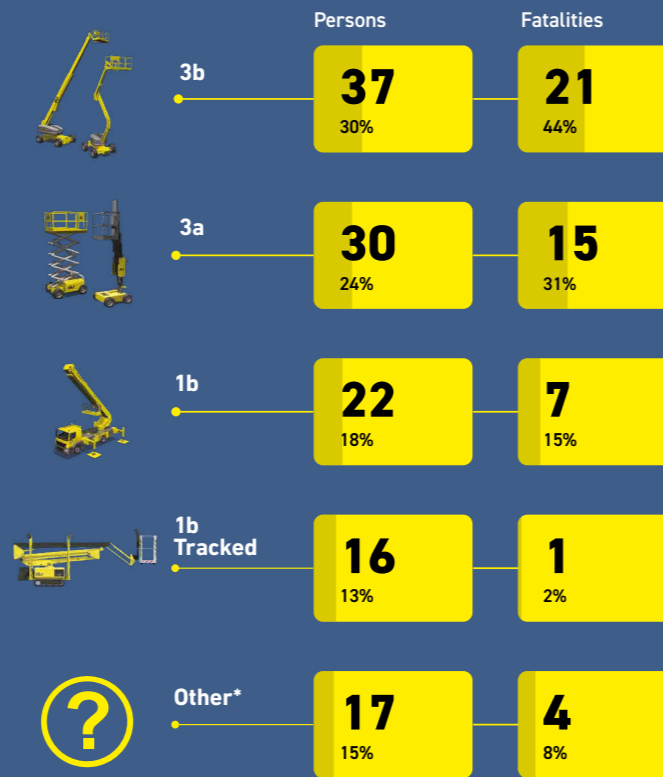
All MEWPs rely on the strength of the ground and the structure directly beneath them to support the weight, movement and any changes to the load in the platform and associated counteractive forces.

Where the MEWP touches the ground is often referred to as the 'point of contact,' which can vary – it could be wheels, tracks, stabilisers or outriggers, and this may differ again if the MEWP is mounted to another vehicle or trailer. It is clear from analysis of this type of incident that emphasis also needs to be placed on issues including overloading, shock loading of the MEWP platform or any sudden change or collapse of the ground on which the machine is being operated.

Accident data indicates that the overturning of a MEWP when elevated will, in the majority of cases result in serious injury or death for the platform occupants, the 2019-2020 data identified 43 reports, which resulted in 22 fatalities and 16 major injuries. If you are in an MEWP and it overturns, there is a high likelihood those involved will be seriously injured or killed. As with other categories of incident, more needs to be done to foster a culture of reporting near misses causing instability of a MEWP that could have led to an overturn, ie incorrect assessment of ground conditions or overloading a platform.

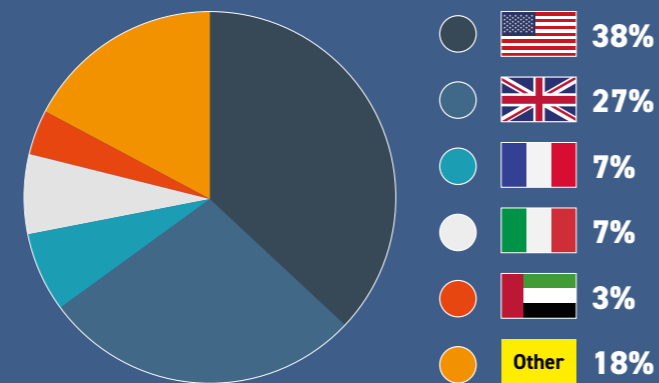


### People involved by machine category

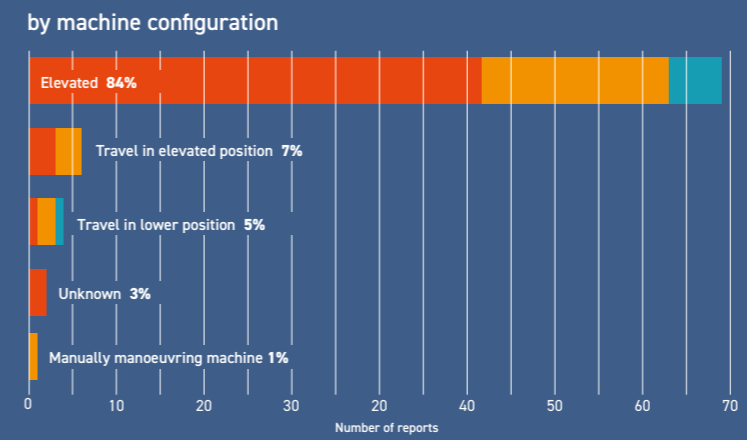
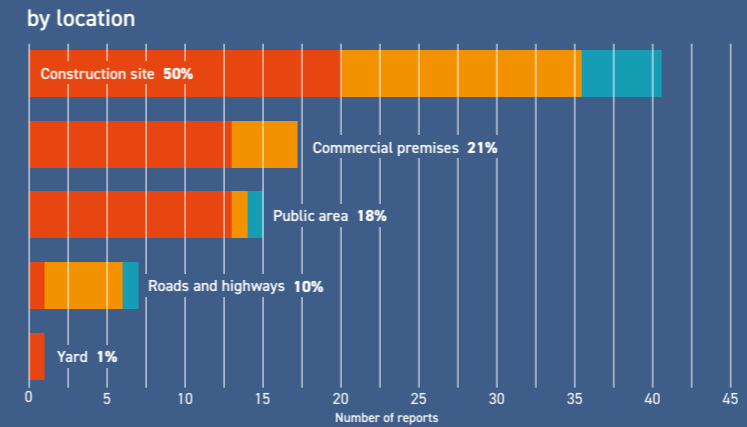
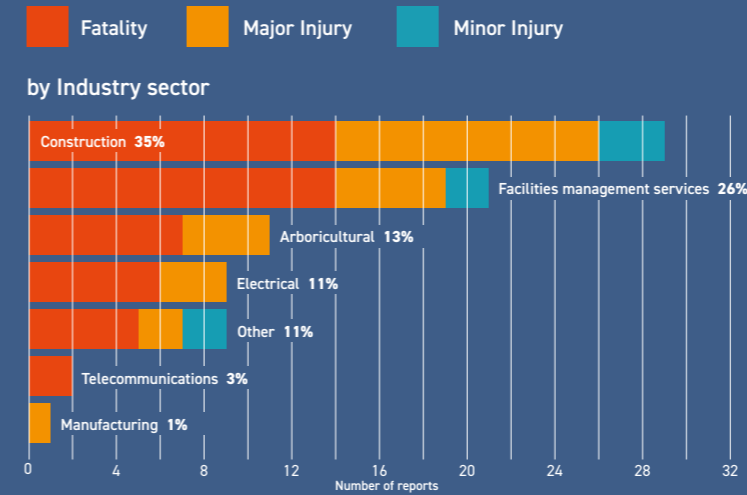


\* Telehandler, 2b, No machine involved, Mast Climbing Work Platform, 3b tracked, 1b towable

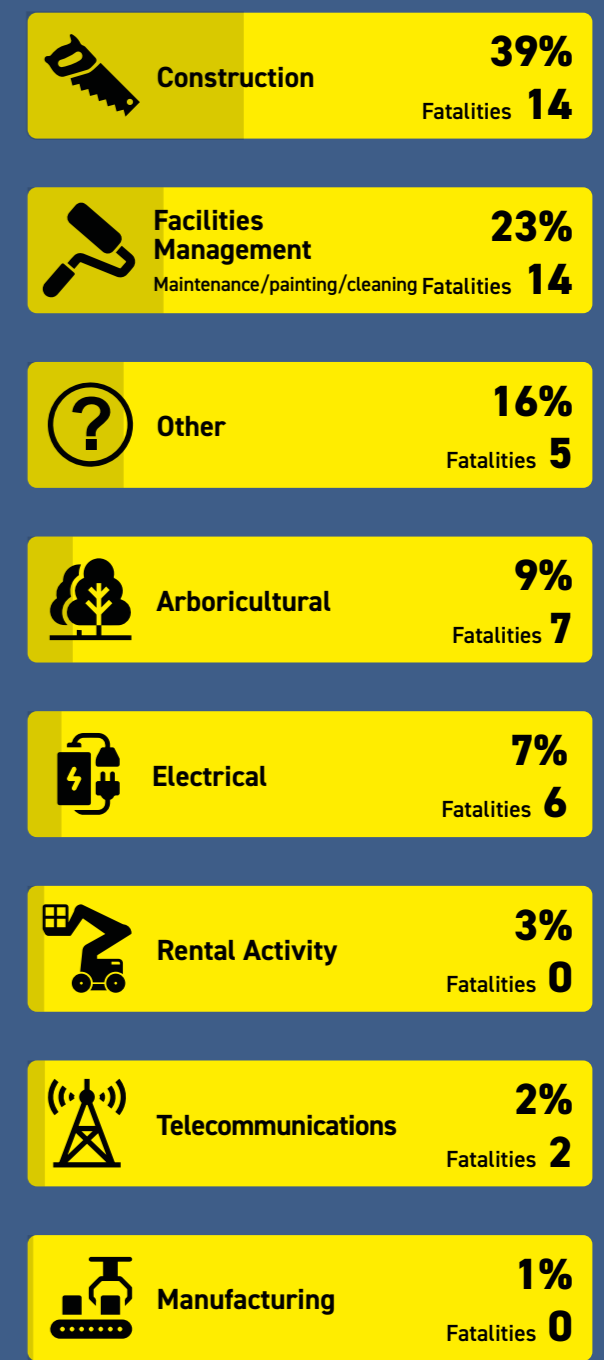
### Reports by location



### Lost-time incidents



### People involved by industry sector



### Analysis

The data shows that in terms of countries reporting, the US reported the most incidents of this type, followed by the UK and then France. Sector analysis shows that construction was the most common end use, followed by facilities management. Common underlying causes in construction will likely include poor/unsuitable ground conditions, slopes and gradients, hidden ground hazards or collapsing ground. Facilities management could be due to inadequate site risk assessment, underestimating load-bearing capabilities

of the ground conditions or incorrect assumption that the ground will take the weight of the MEWP. In all cases MEWPs could overturn if overloaded, especially if removing materials and fittings into an extended platform at height.

Fatalities were predominantly sustained in the construction and facilities management sectors, the data shows it is mobile-type MEWPs that are most commonly involved in overturns, which in turn indicates that poor ground, unseen ground hazards or machines becoming unstable during operation while elevated are common factors in the majority

of overturns. MEWPs that cannot be moved or driven while elevated are, for the most part, more stable provided they have been set up correctly.

### Planning

Rigorous planning is essential when selecting the appropriate MEWP for any temporary work at height, but planning must always consider the ground or foundations, to ensure the supporting structure that the MEWP is going to be positioned or travel on is capable of taking the machine's weight when loaded.

The whole area in which a MEWP will be operated must be thoroughly assessed, not just a part of it. Visual checks and confirmation where MEWPs will be positioned, and the route for the MEWP should be walked first by the operator. Plans of the area and/or further inquiries should be made as to the likelihood of hazards, such as culverts, ducting or other cavities or structures hidden beneath the surface, and wherever possible any hazards should be moved or cordoned off to avoid being missed while operating the machine at height. Never risk moving the machine at height to a new work area that has not been competently assessed.

Users and operators should know the rated load capacity of any machine being used and not attempt to exceed this, likewise they should also be aware of the effects from shock-loading, and always wear a full body harness and a short restraint lanyard in a boom-type platform, as occupants can be catapulted from the MEWP, as well as the MEWP becoming unstable and/or overturning.

In addition to operator training, IPAF's Site Assessment (for MEWP Selection) and MEWPs for Managers courses both provide useful information that can help guard against machines becoming unstable leading to an overturn.

### References

- Back to Basics campaign
- Ground conditions Toolbox Talk
- IPAF Site Assessment Course
- Andy Access posters
- Never Attach a Banner Toolbox Talk
- IPAF management training

### Risk is heightened away from controlled work sites

MEWPs globally are used in a variety of locations and, on the whole, these tasks happen without incident or issue. However, there are occasions where positioning of the MEWP renders the machine, or parts of it, particularly susceptible to impact from other equipment, vehicles or falling materials.

When positioning a MEWP for carrying out temporary work at height, it is important to always consider 'what if?' If the operator just assumes, they will do the job and return home safely, they are likely to be overlooking this 'what if' factor.

Positioning and setting up any powered access machine correctly involves skill, judgment and observation, underpinned as ever by good planning. Always carry out a full site assessment and choose a suitable machine for the task. Factor in the ground conditions and ensure the MEWP can reach the intended work at height carrying the platform occupants, tools and materials needed. The location of where the MEWP is to be set up is paramount.

It is also vital to remember that, when elevated in a MEWP, the machine can be affected by external factors such as weather, sources of electricity or RF radiation, and the movement of other plant and equipment, roadgoing vehicles, trains and even aeroplanes.

The accident data gathered via IPAF's reporting portal indicates that incidents involving a MEWP being struck by another vehicle or piece of plant equipment often result in ejection from the platform, in what is known as the catapult effect, or full or partial overturn of the MEWP. If the occupants are not wearing appropriate PFPE the outcome is almost always serious injury or death.

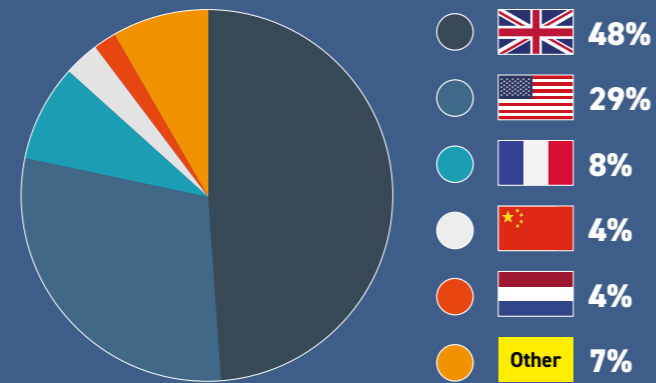


### People involved by machine category

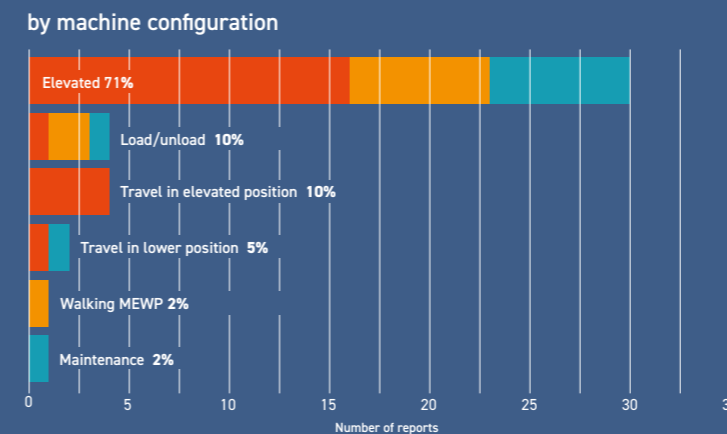
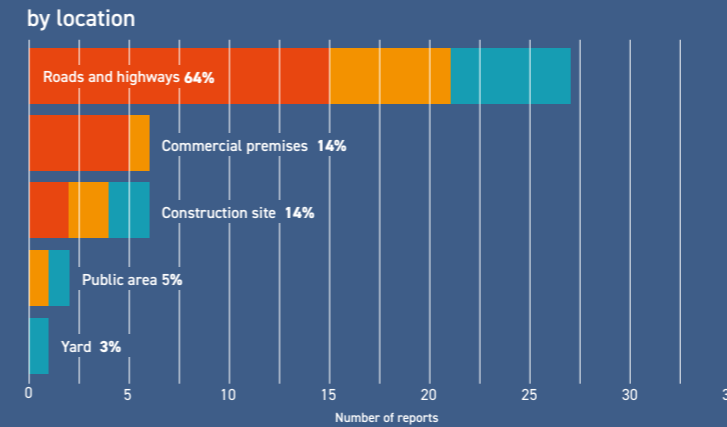
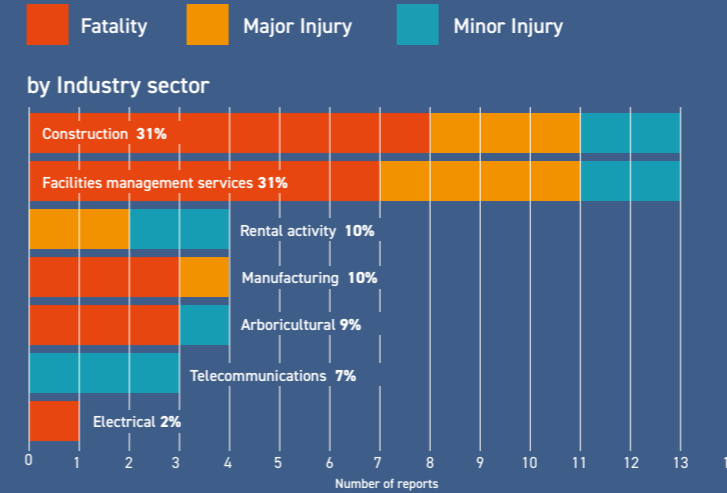


\* No machine involved, Telehandler, 1b tracked/spider

### Reports by location



### Lost-time incidents



### People involved by industry sector



### Analysis

There were 85 reports from 10 countries for this category of incident, in which 89 people were injured, 22 fatally, according to the 2016-2020 data. Most of these incidents were reported from the UK. It is possible that this is, in part down to reporting behaviours – the UK is currently one of the few countries worldwide that mandates IPAF members must report all accidents. The US is the country where MEWPs are most often hit on roads or in public areas.

In terms of fatalities, construction is the leading sector followed closely by facilities

management. With multiple plant machines being operated on construction sites, it follows that there is heightened risk of being struck by another vehicle or machine. In the facilities management sector, a fatality may be more likely caused by working alongside a road or in a public area and being struck by another vehicle such as a bus or HGV. Hanging or changing advertising banners, cleaning windows, installing or repairing external air conditioning units, sign writing, fixing or inspecting external lighting etc are all common facilities management tasks and will often be conducted in a public area and/or alongside roads.

The three main categories in descending order are 3b, 1b and 3a. This is consistent with the types of MEWP most commonly used alongside roads being boom-type platforms, either mobile or vehicle-mounted.

These are therefore most likely to come into contact with passing traffic, and owing to the design of these types of MEWP they are vulnerable to the catapult effect if struck by another vehicle. It is most likely that the majority of 3a mobile vertical type MEWPs are being struck by other plant machines on a construction site.

### Planning

Planning is essential in minimising the risk that MEWPs are not hit or struck by another vehicle or plant machine. Consider the proposed set up area and if during the manoeuvring phase, set up or working phase will the MEWP (or part of it) extend or swing into potential traffic or other equipment routes.

A higher-than-average proportion of fatal and serious incidents occur alongside roads and/or in public areas, which indicates that specific actions need to be

taken. Not only must the user and operator consider the safety of the MEWP occupants, but also members of the public either travelling in a vehicle or as a pedestrian adjacent to where work is being conducted.

Adequate segregation from other vehicles and pedestrians is always paramount. Alongside roads, traffic-management procedures and appropriate closures, diversions, signage, lighting and lane management must be deployed. Also MEWPs must be loaded and unloaded in a secure and segregated location and not adjacent to or on a live carriageway.

### References

- Street Smart campaign
- IPAF Site Assessment Course
- Ground conditions Toolbox Talk
- Back to Basics campaign
- Plan Ahead campaign
- IPAF management training



### Beware falling objects or materials striking the MEWP

MEWPs are often used in a variety of tasks to maintain, install, remove or inspect materials from another structure, for instance cladding on a block of apartments or air-conditioning units mounted on the exterior of a building.

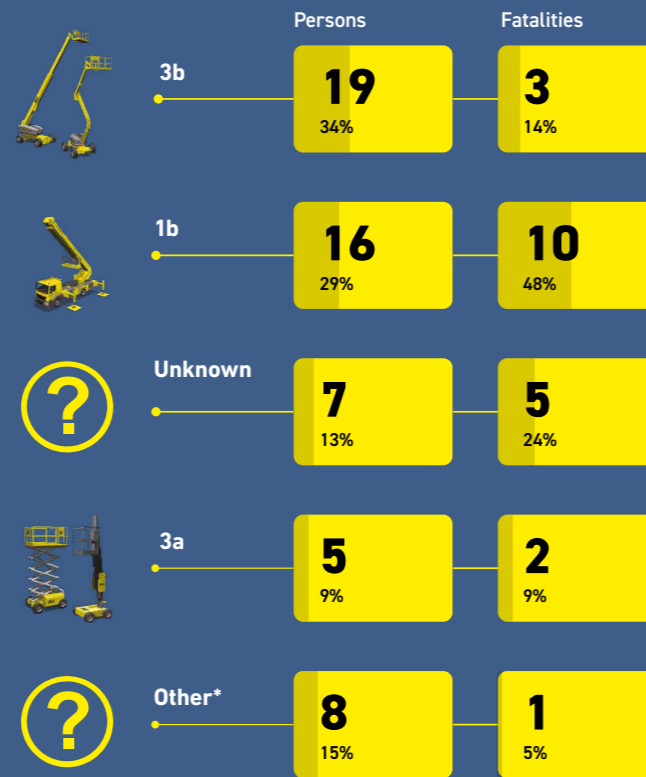
As with other tasks using MEWPs these usually happen without incident or issue. However, there are occasions where positioning or use of the MEWP renders the machine, or parts of it, susceptible to impact from other falling material.

As with other tasks, proper planning and correct positioning of the MEWP for carrying out temporary work at height is key. Where materials are to be handled from within the platform, how will these be secured against the possibility of them falling to the ground, striking operatives or the MEWP itself? If materials are to be added to the platform, will they exceed the maximum rated load?

Can any object or material being installed or removed at height – for example a large sign or banner – be blown by the wind, creating a sail effect, destabilising the MEWPs and/or being blown out of the grasp of the platform occupants? If working to inspect an unstable structure such as a damaged building, or if cutting back vegetation and tree branches, how will loose material be prevented from falling and striking the platform, its occupants, or machines and personnel on the ground?

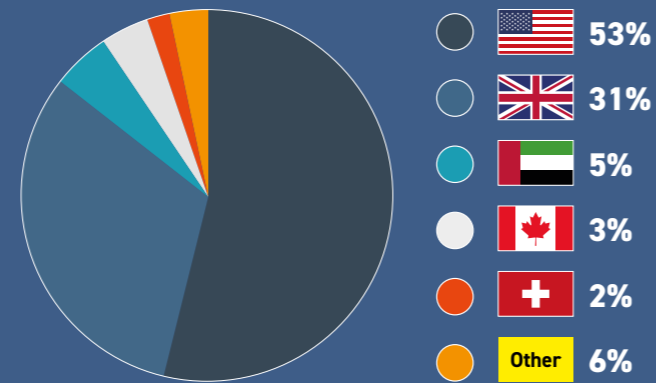
The accident data gathered via IPAF's reporting portal indicates that incidents involving a MEWP being struck by falling objects or materials can destabilise and/or damage the machine, can injure or kill operatives in the platform or on the ground, and can also lead to ejection from the working platform, in what is known as the catapult effect, or a full or partial overturn of the MEWP.

#### People involved by machine category

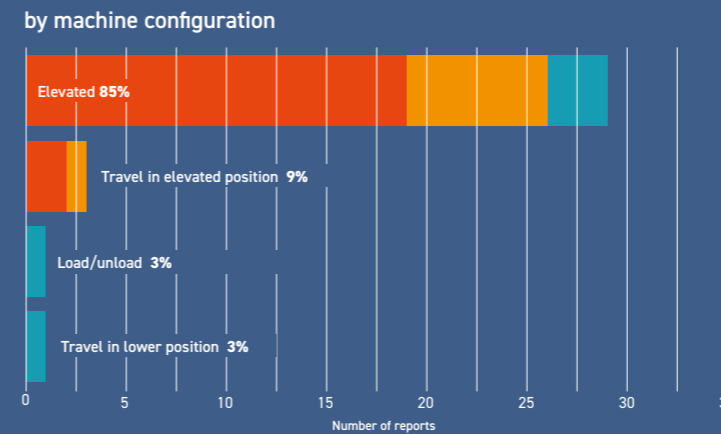
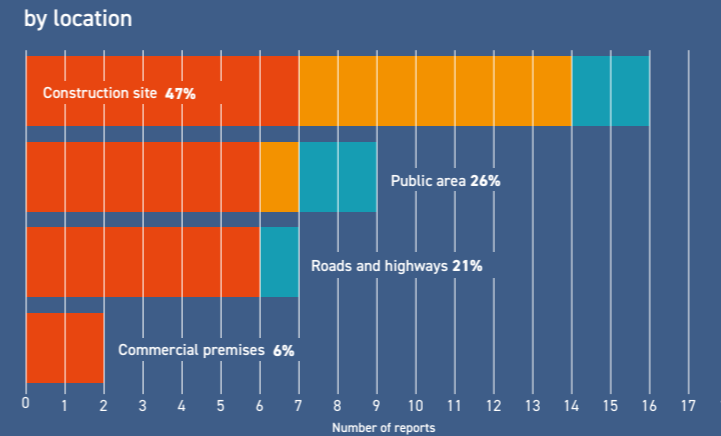
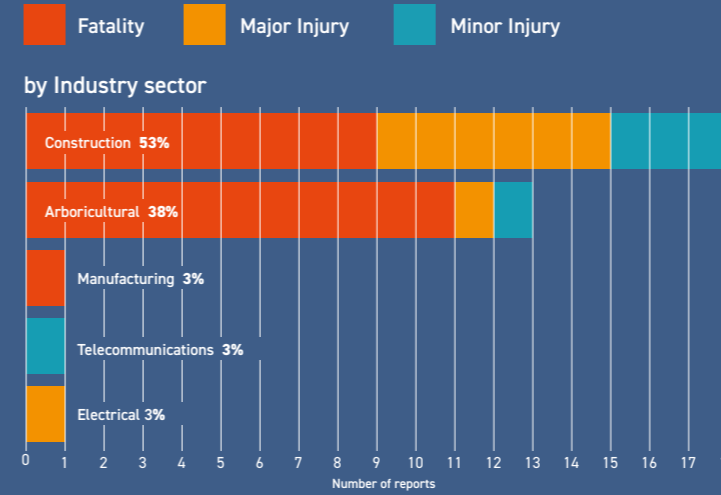


\* No machine involved, 1b towable, 1a - PAV, Telehandler

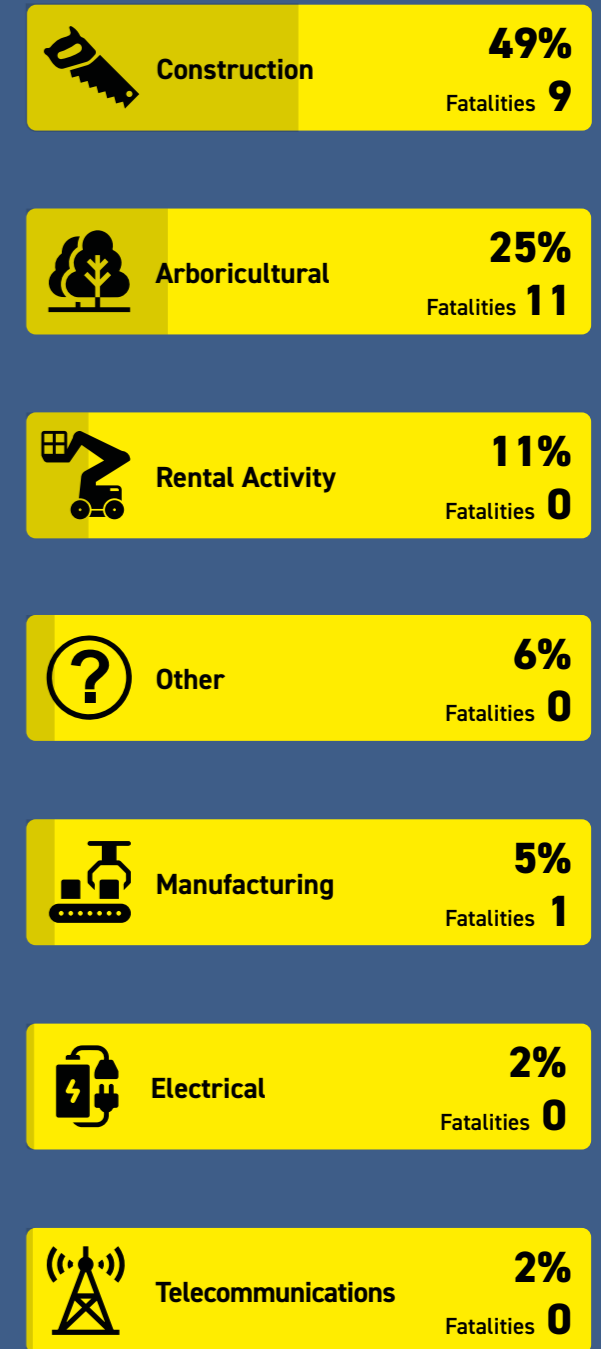
#### Reports by location



#### Lost-time incidents



#### People involved by industry sector



### Analysis

The 2016-2020 data shows, 52 reports from eight countries for this category of incident, in which 55 people were injured, 21 fatally. The charts show that most of this type of incident occurred in construction or arboriculture, either on construction sites or in a public area, and when the machine is elevated.

A typical accident would be material from a structure being installed or repaired, falling to hit the platform, ie ducting, air-conditioning or building cladding. Likewise, material can become unstable as a result of

the task ie masonry can be dislodged during a building renovation or tree branches fall when arboriculture or tree surgery tasks are performed. What will happen if this occurs, and how will materials be prevented from falling to strike the structure of the MEWP, its occupants, or anything on the ground?

Looking at the data, outcomes from this type of injury are not necessarily always fatal, but usually involve at least, serious injury. As with other categories of incidents, it would be helpful if the wider industry was encouraged and empowered to routinely report all near misses. Any object or

material that falls in an uncontrolled way or not as intended should be classified as a near miss and logged via the IPAF portal.

### Planning

Many of the factors underlying this specific category of incident are common to those in the MEWP being struck by another machine or vehicle category. When positioning the MEWP, consider what work or activities are going on above, or in the vicinity of the MEWP and its platform as it will be when elevated. In the period 2016-2020 there have been 21 occasions where occupants in

the platform were killed by falling objects. Consider if there is to be carriage of material above the MEWP, or if the MEWP is being used to work on or with materials that could fall on to the MEWP or its occupants.

Falling objects and impact from the load falling on to the platform or landing on parts of the MEWP can result in crushing injuries and can also create the catapult effect leading to ejection from the platform of any occupant not wearing the correct full-body harness and fall-restraint lanyard. These types of incident might also cause instability leading to machine turn over, electrocutions,

or cause fire, explosions or damage to other machines and plant, such as power or petrochemical installations.

Looking at the statistics, such outcomes are much less likely to occur than crushing or entrapment of occupants or occupants being knocked from the platform. As with specialist devices insulated to guard against electrocution risk or secondary guarding devices to help prevent entrapments, it might be possible to utilise specialist and manufacturer-approved devices to help prevent materials from falling from the platform, for example tool tethers or platform netting.

### References

- Back to Basics campaign
- Plan Ahead campaign
- IPAF Site Assessment Course
- Andy Access posters
- IPAF Toolbox Talks

# Lessons learned

## Accidents result from failure to plan properly

**Powered access is widely considered one of the safest methods of conducting temporary work at height, but unfortunately accidents do occasionally still happen.**

A work at height risk assessment is about more than just selecting the correct machine: It also involves a rigorous site assessment, including ground conditions and weather, proximity to roads, traffic, hazards on the ground and overhead, ensuring the operator is adequately trained and familiarised on the equipment, and that operations are conducted and supervised according to recognised safe-work procedures.

According to the 2016-2020 data collected and analysed by IPAF, the most common causes of fatal incidents were from falls from the platform (23%), electrocutions (23%), entrapments (19%), MEWP overturns (12%), MEWPs being struck by either a machine or vehicle (6%) or hit by falling object(s) (5%).

To inform and assist everything IPAF does to improve work at height safety, we need to gather as much data as possible, especially about minor accidents and near-miss incidents, to understand in detail the underlying causes of all accident types. We already know that in many cases the accident starts with a failure to plan properly. As the adage has it: "Fail to prepare... prepare to fail."

From analysis of the six main types of incident, it is clear many of these fatalities could have been prevented if the use of powered access had been better planned. Planning for any work at height task is key to a safer working environment.

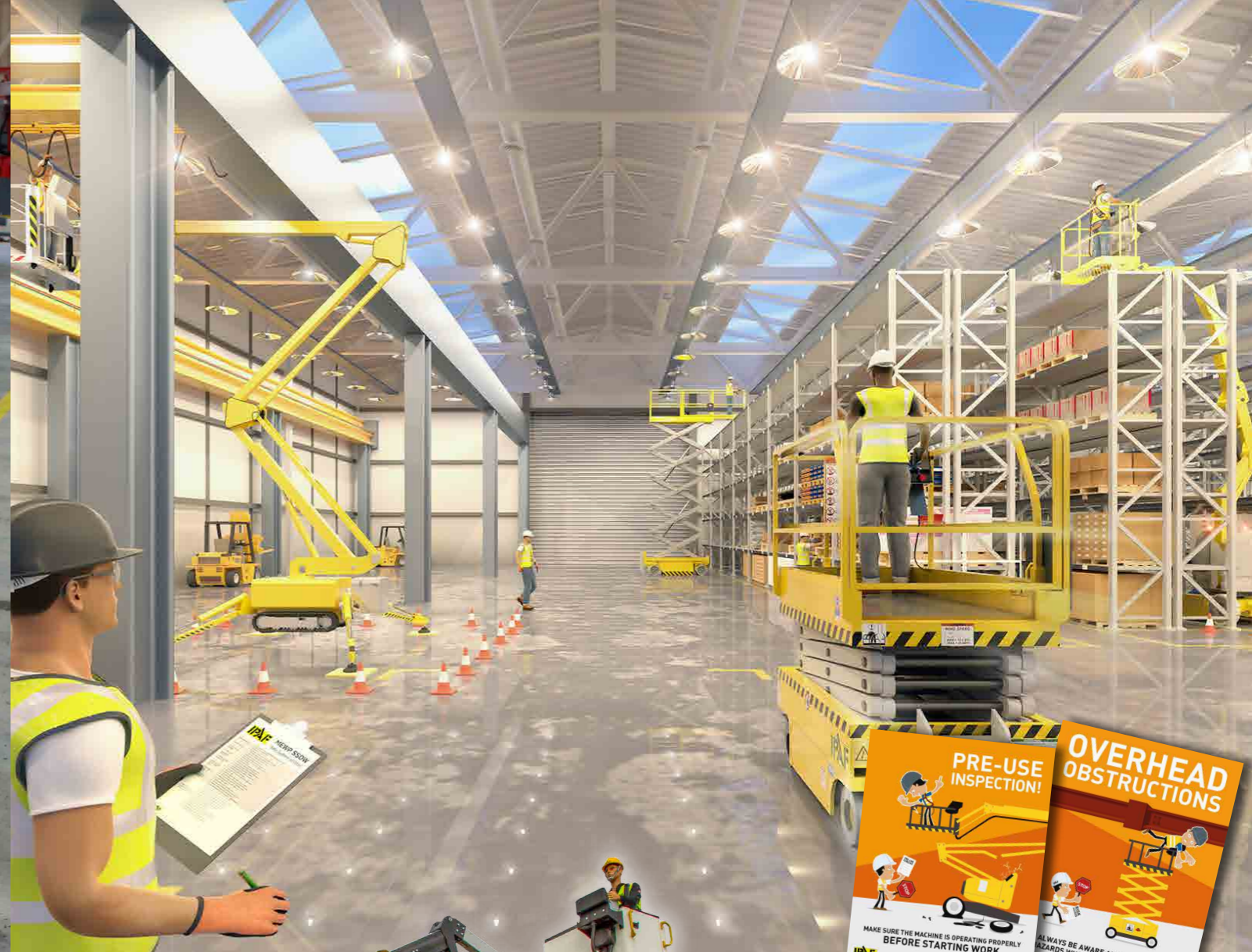
Having a competent site assessment carried out or indeed carrying out your own site assessment could identify many potential hazards not easily identifiable at first glance, this would be necessary for anyone elevated in a powered access machine. Consideration must be given to the changing conditions during ongoing work, and these may need to be reassessed periodically.

**Adequate planning by a competent person should always be carried out prior to work starting. Considerations should include but not be limited to:**

- Selecting the correct machine for the job;
- Appointing a suitably trained and certified operator;
- Correct selection and use of personal fall protection equipment (PFPE) in boom-type platforms;
- Confirmation of both working height and platform height to prevent platform occupant overreaching or having to gain additional height, for instance by standing on guardrails;
- Ensuring ground obstructions are moved so that operators do not need to compromise safe working practices and overreach from the platform, if any obstructions cannot be moved this must be factored into machine selection;
- Selection and use where appropriate of secondary guarding and/or measures to prevent falling objects or materials from the platform;
- Maintaining constant observations prior to and during operation, including identifying any overhead power lines and being aware of safe working distances, and isolation of live lines when these must be exceeded;
- Checking ground conditions, identifying underground services;



- Ensuring MEWPs are segregated from pedestrians, all other vehicles and plant equipment;
- Identification of potential trapping and crushing areas to reduce the risk of entrapment;
- Selection of and familiarisation with appropriate secondary guarding to mitigate the trapping/crushing risk;
- Operator awareness of and communication with platform occupants at all times;
- Preparing, practising and communicating adequate rescue plans and procedures;
- Familiarising ground rescue personnel;
- Ensuring work at height is supervised at all times, ideally by trained personnel.



In addition to its certified and globally recognised operator training, IPAF recommends two courses specifically designed to aid better management and planning of temporary work at height using powered access: The MEWPs for Managers course is aimed at anyone required to plan, deliver and supervise work at height using MEWPs, while a new course launched in 2021 is the Site Assessment (for MEWP selection), which is ready-made for rental companies and contractors and shows how to conduct a full pre-use assessment and how to select the correct machine for the job. Anyone completing these courses will be well equipped to plan in such a way as to mitigate against some of the common causes of incidents being reported.

A notable benefit of the IPAF reporting portal is that data can be categorised and compared across a whole range of classifications. This is of specific interest to MEWP rental companies, which can use the new reporting portal dashboards to look at relevant data to specific industry sectors, machine type, location, operative job role etc. One of the main reasons for collecting data about all types of accidents and near-misses is to identify trends over time, to inform all the work we do and specific to our areas of usual operation. IPAF is committed to using the anonymised data collected through the reporting portal to the benefit of safety of the industry as a whole; the more granular data we collect, the more specific it allows our analysis to be.

**In September 2020, IPAF relaunched its worldwide accident reporting portal as part of a major drive to gather the best quality data from around the world, in order to analyse the data and uncover what it can teach us about improving safety in powered access.**

The new IPAF reporting portal makes it easier to report an accident or near miss – near-miss information being particularly useful in preventing more serious accidents. The portal works on multiple devices. It can also be accessed directly from the new IPAF ePAL mobile app for operators and supervisors of powered access.

The updated portal also allows multiple users per company and has a feature for users to register subsidiary companies. This allows access, reporting and analysis across a group of companies in one or more countries, linked to one parent company, enabling firms to compile their own company or group safety analysis, while creating an anonymised, up-to-the minute database for real-time analysis by our experts.

As of 2021, the IPAF accident reporting portal is available in multiple languages and now offers an interactive dashboard to allow members limited access to the latest available anonymised accident data, to assist in setting their own company's safety protocols and to inform their strategy.

The portal is now available in all main IPAF languages – Dutch, English, French, German, Italian, Korean, Portuguese, Spanish and simplified Chinese – to maximise convenience for users across the world.

At the same time, IPAF also added a dashboard feature for members to view and compare data sets from the latest available anonymised accident data, to brief and inform health and safety managers or those in charge of setting safety and training policy in powered access operations.

To produce this report, Brian Parker, IPAF's Head of Safety & Technical, worked with IPAF's Accident Work Group to look in depth at anonymised and previously unpublished data including the latest statistics for 2020.

While slightly over 60% of all the data gathered via the reporting project is from the UK, this proportion is decreasing all the time as members in other countries commit to using the portal and updating the project with detailed information about incidents.

Data received via the IPAF portal tends to be more detailed and useful than those gleaned from national databases such as OSHA accident reports in the US. In fact, much of this third-party data is laboriously reviewed and cleansed to make it suitable for use in IPAF's analysis.

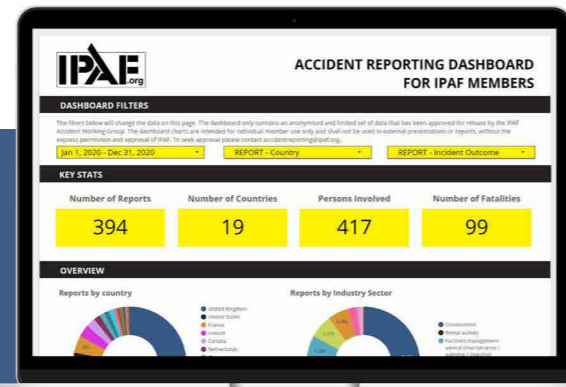
All IPAF members and the wider powered access industry are urged to engage with the newly redesigned reporting portal, in order for IPAF to gather the best quality data and produce the most usable, industry-facing reports possible.

Brian Parker, IPAF's Head of Safety & Technical, says: "We are pushing the new portal to demonstrate the enhanced user experience and also the benefits of gathering reliable data from all around the world. Having the portal now fully functioning in all the main IPAF languages is a great step forwards in this regard; giving all reporting members access to the data to share internally and to inform their own company safety strategy is just another of the ways IPAF is determined to build and make this vital data available to our members for the wider benefit of safety in the industry."

The new ePAL mobile app for operators should also encourage more people to report even more minor incidents and near misses, providing as it does easy hand-held access to the portal to make a report as either a logged-in user or anonymously.

Peter Douglas, CEO of IPAF, says: "The IPAF Accident Reporting project, which I am proud to have been involved with since it began in 2012, is only as good as the data it can gather, and the usability of the analysis and statistics it generates. Having the portal available in all our core languages and also offering reporting members this new dashboard facility will help convince people of the underlying value of the project, to help keep our industry safe.

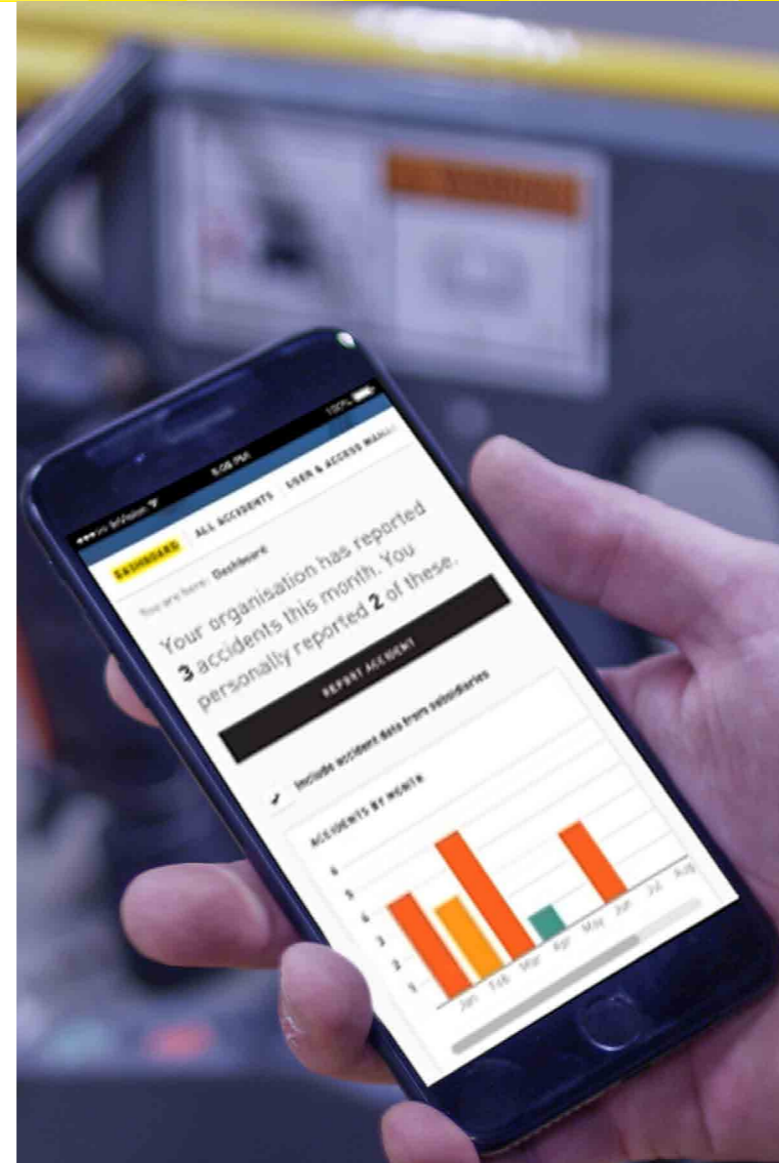
**"IPAF uses this data to underpin nearly all of the things we do, from developing safety and technical guidance, awareness campaigns such as Andy Access posters to evolving or adding new courses into our global training programme."**



## New dashboard functionality

The new dashboard is available via the members' area of the IPAF website at [www.ipaf.org/accident-dashboard](http://www.ipaf.org/accident-dashboard). Members can log in to view data charts and access configurable graphs covering accidents sorted by date range, country, incident outcome and more.

Users are reminded the dashboard charts are intended for individual member use and are not to be used in external presentations or reports without express prior permission and approval; email [accidentreporting@ipaf.org](mailto:accidentreporting@ipaf.org) to request this.



## Accident analysis prompts revamp of load/unload training

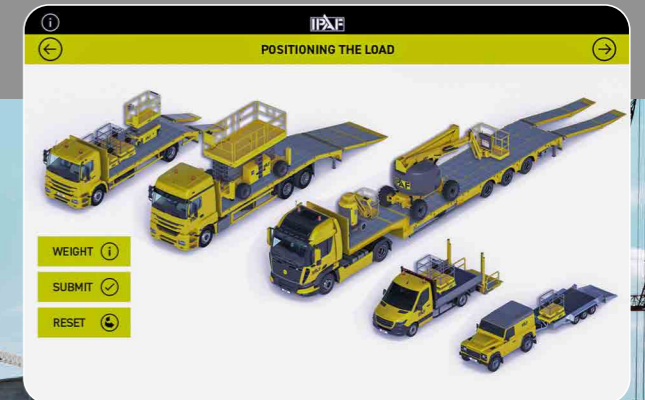
Information gathered in the IPAF reporting project has informed a major update to a comprehensive training course on how to load and unload MEWPs and other plant equipment safely from trucks or trailers.

Analysis of global data gathered by IPAF showed most accidents resulting in injuries and fatalities during delivery of MEWPs occur during loading or unloading. As a result, IPAF decided to overhaul its existing Load/Unload course, with the new course being launched in November 2020. The updated training course directly addresses those issues that affect people loading or unloading and provides knowledge to help prevent accidents before they happen.

Paul Roddis, IPAF's Training Manager, says: "The IPAF Load/Unload course has been reviewed off the back of the accident statistics showing that the people most likely to be harmed in a MEWP-related incident are delivery drivers. We believed that there was more the course could offer in terms of equipping and protecting operatives loading and unloading MEWPs, and we wanted to do more to help protect them. This updated training course does exactly that.

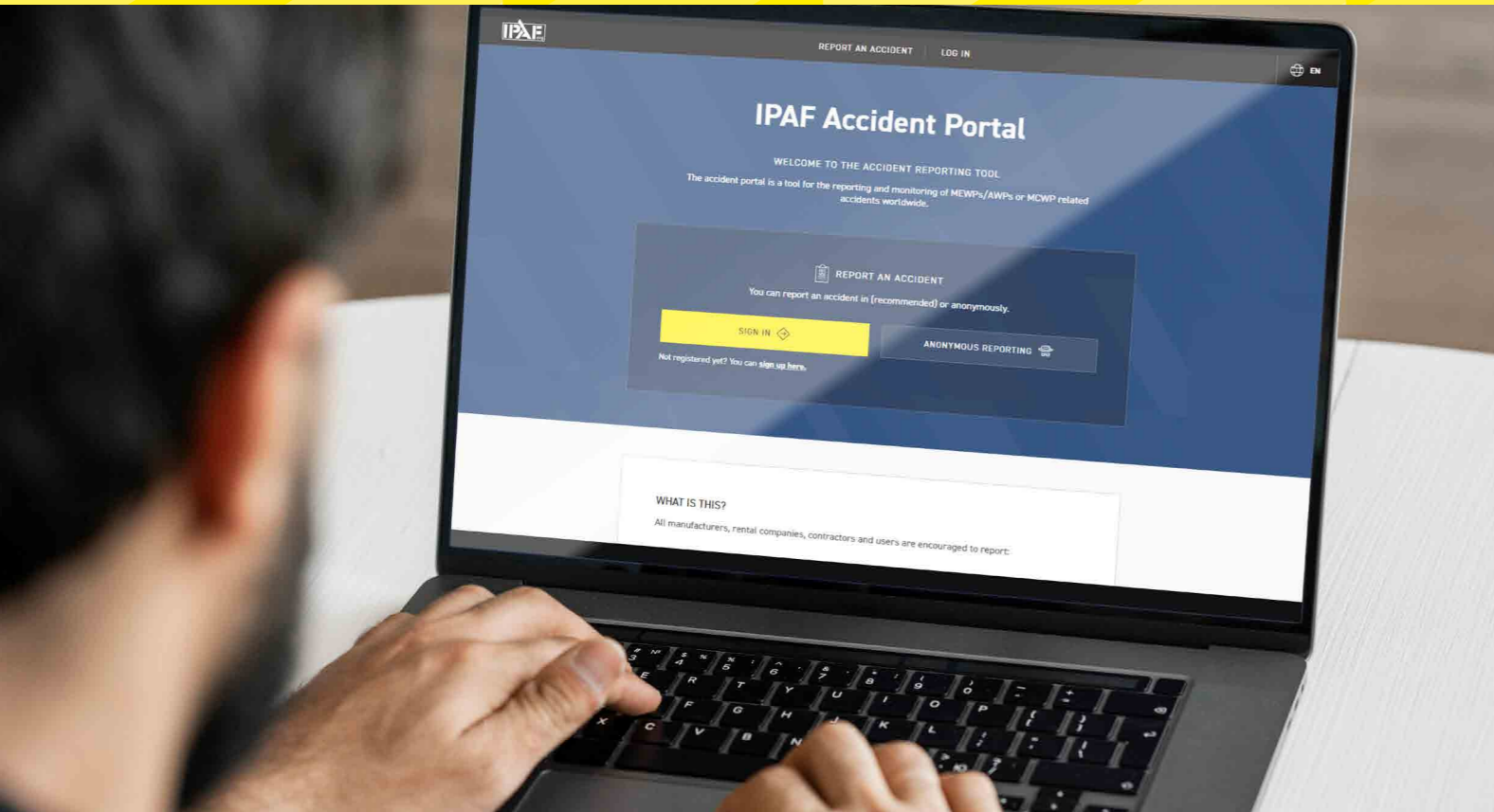
"We were able to incorporate information directly from the incident-reporting portal, to fine-tune the training so that it addresses the most common problems and risk scenarios anyone loading or unloading machines might face."

All information covered in the course content conforms to EN 12195 Load-restraining on road vehicles — Safety and references both the IPAF best practice guidance Load and Unload and Loading And Unloading MEWPs on the Public Highway.



# IPAF Accident Reporting Portal

# About IPAF



**The International Powered Access Federation (IPAF) promotes the safe and effective use of powered access equipment worldwide in the widest sense – through providing technical advice and information; through influencing and interpreting legislation and standards; and through its safety initiatives and training programmes.**

IPAF is a not-for-profit organisation owned by its members, which include manufacturers, rental companies, distributors, contractors and users. IPAF has members in more than 70 countries, who represent the majority of the MEWP rental fleet and manufacturers worldwide.

Visit [www.ipaf.org](http://www.ipaf.org) for local office information

## Acknowledgements

IPAF would like to thank the members of the IPAF Accident Work Group for their ongoing efforts to understand and interpret the data gathered via the IPAF portal, without which this report would not have been possible:

**James Clare** (Principle Product Designer) Niftylift

**Mark Keily** (QHSE Director) Sunbelt Rentals Ltd UK

**Alana Paterson** (Head of HSE) Nationwide Platforms

**Chris Wraith** (Director) Access Safety Management Ltd

## Become an IPAF member

By joining IPAF you are joining a global movement to ensure a safer powered access industry. Membership also brings a host of special services and benefits including access to the members' safety analysis dashboard.

For more information about becoming a member of IPAF visit [www.ipaf.org/join](http://www.ipaf.org/join)

**Report an accident or near miss: [www.ipafaccidentreporting.org](http://www.ipafaccidentreporting.org)**

## [www.ipafaccidentreporting.org](http://www.ipafaccidentreporting.org)

**IPAF and its members share data on incidents involving powered access to identify areas of risk and common trends which informs guidance, training, and safety campaigns. We aim to increase our understanding of working practices and reduce incidents in every country. Reporting is not restricted to IPAF members, and any person or organisation can report an incident.**

### How to report

All accidents, incidents and near-misses can be reported quickly and easily at [www.ipafaccidentreporting.org](http://www.ipafaccidentreporting.org) via desktop or laptop PCs, most web-enabled mobile devices, or through the new IPAF ePAL app ([www.ipaf.org/ePAL](http://www.ipaf.org/ePAL)) for operators and supervisors. Please register first to report accidents on the database. Reports can also be made anonymously via the portal.

Companies wishing to have multiple persons reporting accidents should appoint a nominated person (a senior person who will manage reporting). This nominated person should register first in the company name. Once registered, the nominated person will be able to give others access to report accidents and be able to track their accidents and manage their incident records.

Information entered into the database will be kept confidential and will be used strictly for the purposes of analysis and improving safety.

### What is reported

All reported incidents involving powered access are collated by IPAF. This includes incidents that result in death, injury or a person requiring first aid. It also includes near-miss incidents that didn't result in injury or damage to machines or structures, yet still represented a potentially dangerous situation for machine occupants or bystanders.

### The machines

The report analyses incidents that occurred when using, delivering and maintaining Mobile Elevating Work Platforms (MEWPs). IPAF also collates incidents involving other machinery including Mast Climbing Work Platforms (MCWPs), all types of construction hoists and telehandlers.

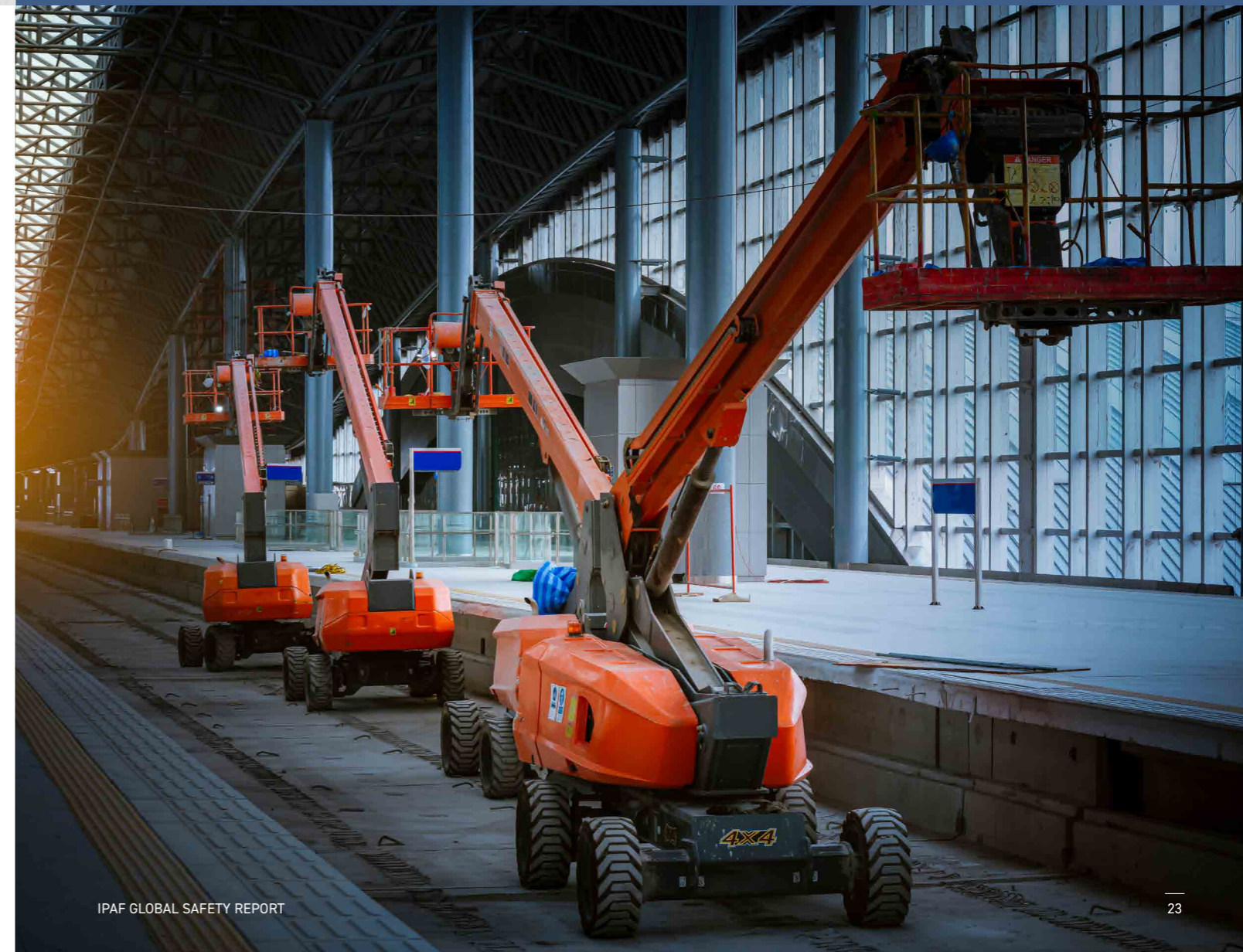
### Who can report?

Anyone involved in working at height can report an incident to the IPAF portal. The data presented in this report is based on information collected either directly reported via the IPAF portal; obtained by IPAF staff worldwide; using data from regulatory bodies; and through information collated from media reports.

### Confidentiality of data

The information provided to IPAF is confidential and private. Information that can identify a person or company involved in a reported incident is removed prior to analysis by IPAF and its committees, and thereafter remains redacted.

IPAF is GDPR-compliant and has a privacy policy that can help you understand what information we collect, why we collect it, and how you can update, manage, export and delete your information. The full IPAF privacy policy can be found at [www.ipaf.org/privacy](http://www.ipaf.org/privacy)





***Promoting the safe and effective  
use of powered access***

**[www.ipafaccidentreporting.org](http://www.ipafaccidentreporting.org)**

