



Washington State Department of
Labor & Industries

Work-Related Immediate Inpatient Hospitalizations in Washington State

2021 Annual Report to the Legislature

September 2021

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Executive Summary

In 2019, the Washington State Legislature first provided funding to the Safety and Health Assessment and Research for Prevention (SHARP) program at the Department of Labor & Industries (L&I) to develop a tracking system for work-related immediate inpatient hospitalizations and their likely causes. Each year, L&I prepares a report updating SHARP's progress on this program to the governor and appropriate legislative committees. This is the second annual report.

The work-related immediate inpatient hospitalization surveillance system identifies workplace injuries and illnesses that result in inpatient hospital admission within one day of the incident by linking hospital discharge data from the Comprehensive Hospital Abstract Reporting System (CHARS) from the Washington State Department of Health with workers' compensation claim information from L&I.

Analysis of recent surveillance system data found that 646 Washington workers suffered work-related immediate inpatient hospitalizations in 2019, and 600 in 2020.¹

In both 2019 and 2020, construction industry workers suffered the highest number of work-related immediate inpatient hospitalizations—more than double that of any other industry. Construction workers also experienced the highest rate of immediate hospitalization in both years. Falls from elevation were the leading cause.

Prevention activities included publication of safety training material, delivered via email and posted online, addressing injury hazards from:

- Falls from mobile scaffolds
- Grading and site preparation equipment
- Falling object hazards in construction
- Orchard tractor rollover
- Orchard ladder falls
- Cannabis processing equipment

L&I's priorities for the coming year will be to publish technical reports detailing work-related immediate inpatient hospitalizations for 2019 and 2020, and in-depth analysis of manufacturing machinery hospitalizations. L&I continues to improve and evaluate the tracking system as this data informs other efforts to further identify hazards and prioritize prevention activities.

¹ Based on date of hospital discharge.

Introduction

A work-related immediate inpatient hospitalization is defined as a workplace injury or illness that results in inpatient hospital admission within one day of the incident. Work-related injuries that require immediate hospitalization are severe, costly, and can cause permanent disability.

These injuries are preventable.

The work-related immediate inpatient hospitalization surveillance system links hospital discharge data from the Comprehensive Hospital Abstract Reporting System (CHARS) to Washington workers' compensation State Fund and Self-Insured² claim information to identify work-related injuries resulting in immediate hospital admission. These records provide valuable insight into a range of helpful data, from worker demographics, to industry, occupation, and injury/illness classification codes.

CHARS hospitalization data for 2019-20 was unavailable until late summer 2021. Preliminary immediate inpatient hospitalization counts and rates are included in this report, and technical reports with more detailed analysis will be published in the coming year.

Prevention activities for 2021 focused on hospitalization hazards identified through the work-related immediate inpatient hospitalization surveillance system, including injuries in construction caused by falls from elevation and being struck by equipment and objects, and hospitalization risks in orchard work.

² Most Washington employers are required to obtain workers' compensation insurance through L&I's State Fund, unless they meet requirements to self-insure or are covered by an alternative system. Approximately seventy percent of Washington workers are covered through the State Fund. L&I administrative data collected for Self Insured claims is limited, including hospital admission and discharge information.

2021 Progress

WORK-RELATED IMMEDIATE INPATIENT HOSPITALIZATIONS, 2019 AND 2020

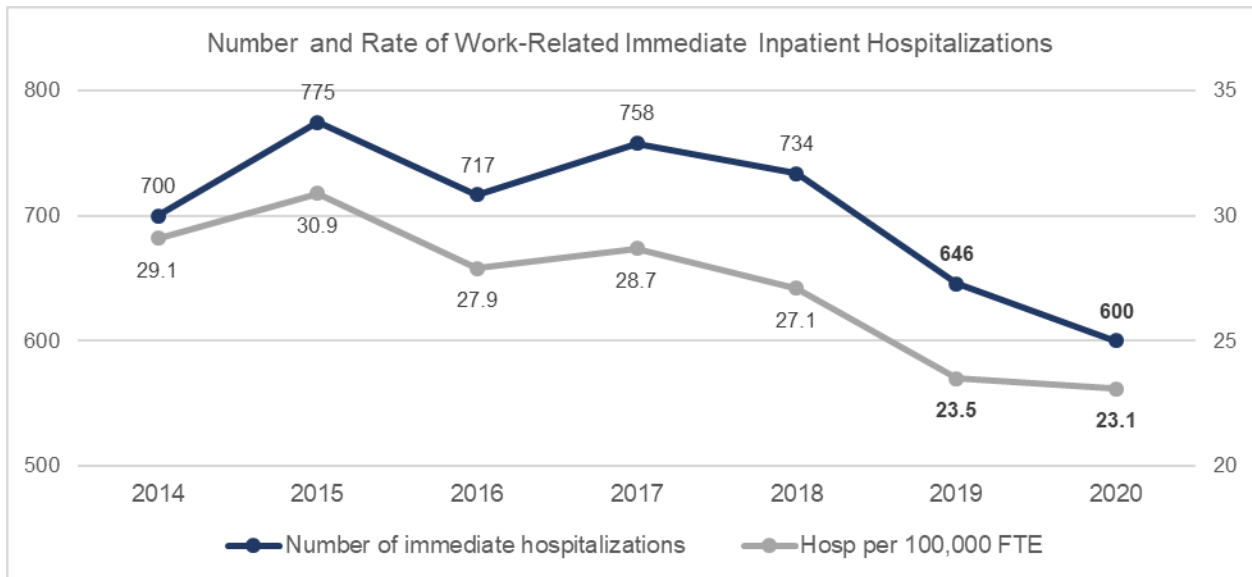
In 2019, 646 Washington workers suffered work-related injuries or illnesses that required immediate hospitalization, a rate of 23.5 per 100,000 FTE.³ In 2020, there were 600 work-related immediate inpatient hospitalizations, 23.1 per 100,000 FTE (Figure 1).

Overall, the number and rate of work-related immediate inpatient hospitalizations were lower in 2019 and 2020 than in any of the previous five years (Figure 2).

Figure 1. Work-Related Immediate Inpatient Hospitalizations and Rate per 100,000 FTE, 2019 and 2020.

Year	Total Hospitalizations	Hospitalizations per 100,000 FTE
2019	646	23.5
2020	600	23.1

Figure 2. Number and Rate of Work-Related Immediate Inpatient Hospitalizations, Washington State, 2014–2020.



³ Hospitalization rates are calculated using payroll hours reported to L&I by employers and converted to FTE. One FTE = 2000 hours worked in a year.

Workers

Men experienced more work-related immediate inpatient hospitalizations than women. In 2019, 75.2% of hospitalizations were among men (n=486). In 2020, 83.0% of hospitalizations were among men (n=498).

In both years, workers in the 55-64 year old age group experienced the highest number of hospitalizations (Figure 3).

Figure 3. Work-Related Immediate Inpatient Hospitalizations by Age Group and Year, 2019 and 2020.

Age Group	2019		2020	
	Number	%	Number	%
18 and under	6	0.9%	5	0.8%
19-24	63	9.8%	59	9.8%
25-34	113	17.5%	107	17.8%
35-44	99	15.3%	107	17.8%
45-54	114	17.6%	124	20.7%
55-64	160	24.8%	137	22.8%
65 and above	91	14.1%	61	10.2%
Grand Total	646	100.0%	600	100.0%

Industry

In both 2019 and 2020, Washington's Construction industry sector (NAICS Sector 23)⁴ experienced the highest number and industry sector rate of immediate inpatient hospitalizations (Figures 4 and 5). In both years, nearly a quarter of all work-related immediate inpatient hospitalizations were in the construction industry.

In 2019, 145 immediate inpatient hospitalizations occurred in the construction industry (22.4% of all hospitalizations), a rate of 78.3 per 100,000 construction FTE.

In 2020, 141 immediate inpatient hospitalizations occurred in the construction industry (23.5% of all hospitalizations), a rate of 80.7 per 100,000 construction FTE.

Falls from elevation were the leading cause of hospitalization in construction in both years. Falls from ladders and falls from roofs were the two most frequent incident types.

⁴ Industries were designated using the North American Industry Classification System (NAICS) code assigned to the employer account. <https://www.census.gov/naics/>

In both years, the Agriculture, Forestry, Fishing, and Hunting industry sector (NAICS Sector 11) experienced the second highest industry sector rate of immediate inpatient hospitalizations; 54.3 per 100,000 FTE in 2019 and 57.0 per 100,000 FTE in 2020.

Figure 4. Work-Related Immediate Inpatient Hospitalizations by NAICS Industry Sector, 2019.

NAICS Industry Sector Code and Description	2019 Hospitalizations	Hosp per 100K FTE
23: Construction	145	78.3
31-33: Manufacturing	58	22.5
44-45: Retail Trade	55	17.1
56: Administrative and Support and Waste Management and Remediation Services	55	37.9
11: Agriculture, Forestry, Fishing and Hunting	53	54.3
51-55: Information; Finance and Insurance; Real Estate and Rental and Leasing; Professional, Scientific, and Technical Services; Management of Companies and Enterprises	49	10.1
48-49: Transportation and Warehousing	45	53.4
62: Health Care and Social Assistance	38	9.6
92: Public Administration	36	24.7
42: Wholesale Trade	31	23.6
72: Accommodation and Food Services	27	14.1
61: Educational Services	24	14.4
81: Other Services (except Public Administration)	15	15.5
71: Arts, Entertainment, and Recreation	NR	NR
21: Mining, Quarrying, and Oil and Gas Extraction	NR	NR
22: Utilities	NR	NR

NR= Numbers not reported due to fewer than ten hospitalizations.

Figure 5. Work-Related Immediate Inpatient Hospitalizations by NAICS Industry Sector, 2020.

NAICS Industry Sector Code and Description	2020 Hospitalizations	Hosp per 100K FTE
23: Construction	141	80.7
56: Administrative and Support and Waste Management and Remediation Services	58	42.5
31-33: Manufacturing	56	24.1
11: Agriculture, Forestry, Fishing and Hunting	54	57.0
44-45: Retail Trade	51	16.0
62: Health Care and Social Assistance	44	11.4
92: Public Administration	35	24.9
48-49: Transportation and Warehousing	34	42.3
42: Wholesale Trade	33	26.4

NAICS Industry Sector Code and Description	2020 Hospitalizations	Hosp per 100K FTE
51-55: Information; Finance and Insurance; Real Estate and Rental and Leasing; Professional, Scientific, and Technical Services; Management of Companies and Enterprises	28	5.7
81: Other Services (except Public Administration)	21	24.7
61: Educational Services	18	11.7
72: Accommodation and Food Services	16	11.8
71: Arts, Entertainment, and Recreation	NR	NR
21: Mining, Quarrying, and Oil and Gas Extraction	NR	NR

NR= Numbers not reported due to fewer than ten hospitalizations.

Employers

In both 2019 and 2020, smaller employers, those with ten or fewer FTE, experienced the highest number and rate of hospitalizations (Figure 6).

Figure 6. Work-Related Immediate Inpatient Hospitalizations by Employer Size, 2019 and 2020.

Employer Size	2019			2020		
	Hospitalizations	% of Hosp	Rate per 100K FTE	Hospitalizations	% of Hosp	Rate per 100K FTE
<=10 FTE	164	25.4%	46.9	173	28.8%	51.0
11-49 FTE	145	22.4%	31.8	119	19.8%	28.6
50-249 FTE	151	23.4%	27.0	134	22.3%	26.3
250 - 999 FTE	69	10.7%	15.7	64	10.7%	15.8
1000+ FTE	117	18.1%	12.4	109	18.2%	11.8

Employer size was not available for one 2020 hospitalization.

PREVENTION PROGRAMS

To fulfill our mission of keeping workers and the public safe, L&I uses this information to focus workplace injury prevention. Immediate inpatient hospitalization data is used to identify high-hazard industries, equipment, and tasks that frequently lead to hospitalization.

From this information, L&I created industry-focused injury prevention alerts—Worker Hazard Alerts and Hospitalization Hazards. Each alert is developed by a Certified Safety Professional,⁵ and is offered for free. The alerts tell the stories of real-life on-the-job injuries, and offer both safety requirements and recommendations for injury prevention.

⁵ <https://www.bccsp.org/CSP>

The following industry alerts were made available online,⁶ as well as distributed to a growing list of email subscribers. SHARP's Safety and Health Specialist also regularly presents this information and reference materials to a regional meeting of construction safety professionals.

Moreover, we've learned that English is not the preferred language of many Washington State workers in high-hazard industries. Immediate inpatient hospitalization surveillance data from 2014 through 2018 showed that nearly half of hospitalized workers in the Agriculture, Forestry, Fishing, and Hunting industry sector preferred to receive workers' compensation claim information in Spanish (49.3%). In the Construction industry sector, 22.6% preferred Spanish. As a result, construction and agriculture alerts are also published in Spanish.

Construction Alerts

Since 2014, the highest annual number and rate of worker hospitalizations has consistently occurred in the construction industry, and nearly half of those were due to falls from elevation—ladders, roofs, and scaffolds. As a result, SHARP's initial alerts focused on construction falls from roofs and ladders. The following construction alerts were issued during the 2020-21 reporting period.

Worker Hospitalized After Fall from Mobile Scaffold

SHARP developed a Worker Hospitalization Alert about preventing falls from mobile scaffolds.⁷ The narrative described an experienced carpenter who stood on a mobile scaffold with unlocked caster wheels to seal insulation around a vent pipe in the ceiling. While still atop the platform, the carpenter pushed on the wall to move the scaffold to another area. As the scaffold moved, its wheels pushed an unsecured plywood cover off a floor hole and rolled into the hole, causing the scaffold to tip over. The carpenter jumped off of the scaffold as it fell, landing on the concrete floor. He broke several ribs, suffered a collapsed lung, and sprained his neck.

Three major factors contributed to this incident. First, the open hole was not covered and secured with sturdy material so the hole cover could not be pushed off. Second, mobile scaffold wheels must be locked to prevent movement when in use. Lastly, the worker was moving the scaffold while on it and did not notice the scaffold wheel was pushing the unsecured hole cover off. Employers should ensure that workers get off the scaffold and reposition when necessary.

Grading and Site Preparation Equipment

After falls from elevation, being struck by equipment or objects was the second leading cause of worker hospitalizations in construction.

⁶ <https://lni.wa.gov/safety-health/safety-research/ongoing-projects/immediate-inpatient-hospitalizations#prevention-resources>

⁷ Worker Hospitalized After Fall from Mobile Scaffold: https://lni.wa.gov/safety-health/safety-research/files/2021/100_08_2021_MobileScaffoldFall.pdf

During grading and site preparation operations, moving equipment and vehicles pose a hazard to workers on the jobsite. SHARP developed a Hospitalization Hazard Alert which cited several incidents where workers were hospitalized after being struck by grading or site preparation equipment—including a pipelayer whose left leg was crushed by an excavator track, and two grade checkers struck by graders while working with hub stakes.⁸

Temporary Worker Struck by Falling Scaffold Plank

Falling objects or tools is another severe injury hazard for workers on construction sites and so another Worker Hospitalization Alert described an incident where an inexperienced temporary worker was hospitalized after being struck by a plank that fell from a scaffold he was working beneath. A masonry crew from a different employer was working on scaffolding above and did not know the injured worker was below them. The worker suffered a concussion and loss of consciousness even though he wore a hardhat.⁹

Lack of communication is often a key contributing factor in these incidents. The alerts prompt employers to emphasize good communication between equipment operators and ground workers to prevent injuries from moving equipment. Equipment operators and ground crew should plan for safety by discussing each day's work activities before the shift and create a plan for how they will communicate throughout the day. Employers could also create a policy to separate workers on foot from operating equipment to reduce the risk of workers being struck by moving equipment.

Restricting access around scaffolds can help prevent worker injuries from falling objects. It is necessary to train new and temporary workers to identify and mitigate potential work area falling object hazards. Holding joint pre-shift safety meetings with all crews working in the area to communicate possible hazards was also recommended.

Orchard Alerts

Orchard workers¹⁰ experienced the largest portion of immediate inpatient hospitalizations in Washington's agriculture industry. Ladder falls and tractor-involved incidents were two leading causes of orchard hospitalizations.

Orchard Tractor Rollover

Tractors are necessary and commonplace in orchards, but pose a hazard to workers. The Washington Fatality Assessment and Control Evaluation program¹¹ found that orchard workers died from tractor rollover incidents in each year from 2015-2020 in Washington.

⁸ Grading and Site Preparation Equipment: https://lni.wa.gov/safety-health/safety-research/files/2021/100_07_2021_SitePrepStruckBy.pdf

⁹ Temporary Worker Struck by Falling Scaffold Plank: https://lni.wa.gov/safety-health/safety-research/files/2021/100_09_2021_StruckByDroppedObject.pdf

¹⁰ Based on L&I risk class associated with claim: Orchards (4803).

¹¹ WA FACE: <https://lni.wa.gov/safety-health/safety-research/ongoing-projects/work-related-fatalities-face>

SHARP's Hospitalization Hazard Alert focused on preventing tractor rollovers in orchards.¹² It described two incidents involving tractors pulling sprayer tanks. Both workers suffered severe injuries when their tractors rolled downhill without the protection of rollover protective structures (ROPS). Prevention recommendations included planning for safety by organizing spraying to maximize the use of rollover protective structures (ROPS).

Orchard Ladder Falls

Tripod orchard ladders are essential for workers while pruning, thinning, and harvesting. Use of these ladders has led to severe injuries and worker hospitalizations. From 2014 through 2018, forty-three Washington orchard workers were hospitalized due to ladder falls—with over half unable to work for a year or more after their injury.

A second Hospitalization Hazard Alert focused on preventing these falls.¹³ The narratives describe training for set up, correct use, and inspection of orchard ladders to keep workers safe. Employers must train workers before they use ladders, and review each year. Supervisors should also do spot checks to make sure ladders are being used correctly, and conduct retraining as needed.

Cannabis Processing Alert

In Washington State, cannabis was legalized for medical use in 1998 and for recreational use in 2012. In this developing industry, workers can be exposed to hazards similar to those in related industries, such as agriculture, retail, and manufacturing.

Worker Amputates Finger Tip on Bud Trimmer Blade

SHARP researchers found that between 2015 and 2018, five Washington workers suffered amputations while using an electric table top bud trimming machine while processing cannabis.¹⁴ This machine creates suction to pull large leaves into the fan to remove them using a rotating fan blade beneath a grate with approximately one-half inch gaps.

A SHARP publication alerted workers and employers to this industry-specific hazard,¹⁵ describing an incident that occurred when an employee using a trimmer contacted the rotating blade, amputating her finger. Safety recommendations included purchasing equipment manufactured with guarding, holding safe use training for workers, and safety training reviews at the start of each harvest season to reduce amputation and hospitalization risks.

¹² Orchard Tractor Rollover: https://lni.wa.gov/safety-health/safety-research/files/2021/100_06_2021_OrchardTractorRoll.pdf

¹³ Orchard Ladder Falls: https://lni.wa.gov/safety-health/safety-research/files/2021/100_05_2021_OrchardLadderFalls_Update.pdf

¹⁴ SHARP Stats: Cannabis 2020 Update: https://lni.wa.gov/safety-health/safety-research/files/2020/76_21_2020_Cannabis_2020Update3.pdf

¹⁵ Worker Amputates Finger Tip on Bud Trimmer Blade: https://lni.wa.gov/safety-health/safety-research/files/2020/100_04_2020_BudTrimmerAmputation.pdf

Next Steps: Priorities for 2022 and beyond

L&I's priorities for the coming years include using surveillance system data to identify hazards and produce industry-specific hazard alerts to keep workers and the public safe. This includes capturing appropriate case data, continued evaluation for common causes of hospitalized injuries, and further data analysis to better inform injury prevention messages and safety education.

Our goal is to influence a downward trend in both the number and rate of work-related immediate inpatient hospitalizations.

SHARP identified three key priorities for 2022 and beyond. These include improvements and refinements to the hospitalized injury surveillance systems, data analysis, and prevention activities. Through each of these activities, SHARP will address actions to further reduce immediate hospitalizations due to workplace injury.

SURVEILLANCE SYSTEMS

Priorities for surveillance evaluation and improvement include:

- **Integrate unique cases from the Washington State Fund into the work-related immediate inpatient hospitalization surveillance system.** Initial evaluations suggest that a small portion of Washington workers' compensation State Fund claims for immediate inpatient hospitalizations are those hospitalized out-of-state and ineligible for reporting in Washington State CHARS. SHARP will publish the results of this evaluation in 2021-2023 biennium and modify the data collection system to incorporate these claims into the surveillance system.
- **Evaluate employer reporting of immediate inpatient hospitalization cases.** Evaluation of the completeness of mandatory employer reporting of worker hospitalizations was deferred as a result of the pandemic as well as internal staff leadership changes. SHARP will use two calendar months in 2021 of employer reports to the Division of Occupational Safety and Health (DOSH) of immediate inpatient hospitalizations and compare those reports to CHARS data and L&I workers' compensation data. From this comparison, SHARP will develop recommendations for DOSH to consider to improve employer reporting of immediate inpatient hospitalizations and track their actions with employers.

DATA ANALYSIS

Data from the Immediate Inpatient Hospitalization Surveillance System will be used to:

- **Develop worker immediate inpatient hospitalization rates by race and ethnicity by using the Bayesian Improved Surname Geocoding method.** Understanding racial and ethnic disparities in occupational health is integral to delivering targeted prevention guidance. Using SHARP’s validated method to identify race and ethnicity with worker’s comp claim data, the program will determine if there is a difference in work-related immediate inpatient hospitalization rates by race and ethnicity.
- **Analyze “caught-in” injuries¹⁶ in manufacturing. (In process)** Determining which events lead to hospitalized injuries in manufacturing that occur when workers are caught in or compressed by equipment or objects—specifically, identifying the machinery or equipment in which the worker was caught in, under, or between—will aid in developing prevention strategies.

PREVENTION PRIORITIES

Our ongoing injury prevention activities include using work-related hospitalization data to:

- **Review falls from elevation in construction.** SHARP continues reviewing claim records for common causes of falls and identifying fall restraint system use, specifically for roofers and other exterior building construction contractors. This work helps L&I create or modify existing prevention training publications and partner with specific trade associations to distribute safety guidance.
- **Summarize data.** Surveillance system data will be used to develop short, one-page data summaries for working populations of high interest in Washington, which can help increase awareness and aid in prevention.

¹⁶ Coded in Washington workers’ compensation claim data using the Occupational Injury and Illness Classification System, v1.01, U.S. Department of Labor, Bureau of Labor Statistics:
<https://wwwn.cdc.gov/Wisards/oiics/default.aspx>

Conclusion

The work-related immediate inpatient hospitalization surveillance system is a valuable tool to identify industries, tasks, and worker populations at risk for severe occupational injuries. L&I continues to monitor and report on trends in work-related immediate hospitalizations. SHARP's research continues to inform injury prevention priorities and messaging to *keep Washington safe and working*.

List of Publications

Published August 2020 through July 2021

Agriculture

- **Orchard Tractor Rollover:** https://lni.wa.gov/safety-health/safety-research/files/2021/100_06_2021_OrchardTractorRoll.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2021/100_06_2021SP_OrchardTractorRoll_Spanish.pdf
- **Orchard Ladder Falls:** https://lni.wa.gov/safety-health/safety-research/files/2021/100_05_2021_OrchardLadderFalls_Update.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2021/100_05_2021SP_OrchardLadderFalls_Spanish.pdf

Construction

- **Worker Hospitalized After Fall from Mobile Scaffold:** https://lni.wa.gov/safety-health/safety-research/files/2021/100_08_2021_MobileScaffoldFall.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2021/100_08_2021SP_MobileScaffoldFall_Spanish.pdf
- **Grading and Site Preparation Equipment:** https://lni.wa.gov/safety-health/safety-research/files/2021/100_07_2021_SitePrepStruckBy.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2021/100_07_2021SP_SitePrepStruckBy_Spanish.pdf
- **Temporary Worker Struck by Falling Scaffold Plank:** https://lni.wa.gov/safety-health/safety-research/files/2021/100_09_2021_StruckByDroppedObject.pdf
 - Spanish: https://lni.wa.gov/safety-health/safety-research/files/2021/100_09_2021SP_StruckByDroppedObject_Spanish.pdf

Cannabis Processing

- **Worker Amputates Finger Tip on Bud Trimmer Blade:** https://lni.wa.gov/safety-health/safety-research/files/2020/100_04_2020_BudTrimmerAmputation.pdf