THE UL SAFETY INDEX™

QUANTIFYING THE GLOBAL STATE OF SAFETY

2017 EDITION

Publication date: December 15, 2017

PLEASE CITE THIS PAPER AS:
Underwriters Laboratories Inc. (2017), "The UL Safety Index: Quantifying the Global State of Safety 2017 Edition", ULSafetyIndex.org.

TABLE OF CONTENTS

Overview - Changes to the 2017 Edition

The UL Safety Index™ was unveiled in September 2016 at the 12th World Conference on Injury Prevention and Safety Promotion. Since then, academic leaders and practitioners in safety have provided input to the UL Safety Index, resulting in improvements to the algorithm, a new indicator, and updated data. The 2017 release of the UL Safety Index includes updated data for many of the indicators, together resulting in a more refined view of relative safety around the world, and, of course, new rankings. Additionally, a new resource library of injury prevention strategies, policies, and research can assist stakeholders around the world to improve safety.

In 2017, The Netherlands remains at the top of the list of relative safety in the UL Safety Index. Australia moves up two positions to number three, right behind Norway, whose ranking is at number two as it was in 2016. Sweden remains at number four, and Canada moves from seventh to number five. At the bottom of the scale, Sub-Saharan Africa continues to have significant challenges, holding all five of the positions with the lowest level of relative safety, as measured by the UL Safety Index. Somalia replaces South Sudan at the bottom of the list, although South Sudan rose only one position. The remaining countries in the bottom five are Guinea-Bissau, The Central African Republic and Djibouti.

	2017 Rank	2016 Rank
1	The Netherlands	The Netherlands
2	Norway	Norway
3	Australia	Denmark
4	Sweden	Sweden
5	Canada	Australia

Table 1 - Countries with the Highest UL Safety Index 2017

	2017 Rank	2016 Rank
183	Djibouti	North Korea
184	Central African Republic	Burundi
185	Guinea-Bissau	Djibouti
186	South Sudan	Somalia
187	Somalia	South Sudan

Table 2- Countries with the Lowest UL Safety Index 2017

Another update for 2017 is the inclusion of a new Safety Frameworks indicator – Road Safety Framework. Based on the Global Status Report on Road Safety 2015 from the World Health Organization (WHO), the indicator measures the adoption of key regulations and best practices to reduce the burden of injuries from traffic crashes. The indicator has 44 sub-measures in the areas of Institutional Framework, Safer Vehicle Standards, Safer Roads and Mobility, Safer Road Users, and Post-Crash Care. Developed countries generally have higher adoption of these practices, with Norway, France, Australia, the Czech Republic, and Luxembourg having the top scores for this indicator. Smaller, developing nations, including many island nations are at the lower end of the indicator. The countries with the lowest value of this indicator are Micronesia, Afghanistan, Liberia, Guinea-Bissau, and Somalia. A detailed description of the indicator and the scoring rubric are contained in **The Methodology of the UL Safety Index™**. Inclusion of the Road Safety Framework in Safety Frameworks reduced the mean value of the Safety Frameworks Driver by 2.86 and the mean value of the UL Safety Index by 0.74. The impact on rankings was an average movement of 4.88 positions with the smallest movement being 0 (several countries) and the largest being Andorra, with a positive movement of 70 positions from 163rd to 93rd due to a strong Road Safety Framework, while other indicators in Safety Frameworks are relatively weak.

Introduction

Safety – the freedom from harm, injury, or loss – is one of the most basic human needs, second only to physical survival in Maslow's Hierarchy of Needs. Unintentional injury, and the pain, disability and death that are associated with it, is a global health issue, and it is estimated that more than 3.25 million people died in 2015 as a result of an unintentional injury.

Improving safety is a complex challenge, incorporating elements of science, behavior, culture, policy, and public health. Injury prevention is well understood at the incident level, with hazard identification and mitigation at its core. However, the resources, policies, and priorities for improving safety become more difficult to discern as we proceed to higher and more abstract levels.

The UL Safety Index is the quantification of the relative state of safety in 187 countries. Based on societal drivers and outcomes related to unintentional injury, the UL Safety Index measures the contributions of national resources and institutions, safety systems and frameworks, and safety outcomes. As such, the UL Safety Index can be used to support efforts by governments, safety professionals, policy makers, the private sector, and non-governmental organizations to understand and prioritize actions to improve safety around the world.

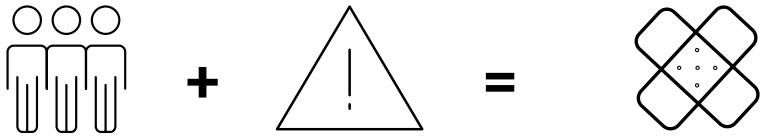
The key benefits linked to the use of the UL Safety Index include:

- Increased awareness of safety and wellbeing, including unintentional injury, as a public health issue;
- More comprehensive dialog among policy makers and stakeholders about safety issues; and,
- Assistance in identifying priorities for investment in programs and policies that can improve safety.

Supported by the use of interactive visualization tools, the UL Safety Index and its components allow interested parties to view a snapshot of a country's relative safety performance, identify key drivers that impact safety, and analyze policy level decisions that can lead to increased safety levels. The indicators and drivers incorporated into the Safety Index include societal forces as well as safety-specific measures. These focal points help to elevate the dialog about safety from specific interventions to a more systemic approach that complements contemporary ecological models of public health.

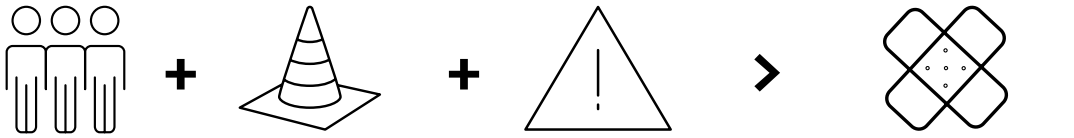
A Conceptual Model of Safety

At the most basic level, unintentional injuries are caused by the interaction of people and hazards in the environment.



People + Hazards = Unintentional Injury

Safety is improved when mitigation strategies are put in place. These strategies may include education, infrastructure improvements, safety regulations and many others.



People + Mitigation Strategies + Hazards > Unintentional Injury

A more complete and general statement of our conceptual view of safety is:

Safety outcomes are a function of the interaction between people and hazards, amplified or mitigated by resources, infrastructure, behavior, safety frameworks and culture.

In their work, **Ecological Approaches for the Prevention of Unintentional Injuries**, John Allegrante and David Sleet provide examples of how the burden of unintentional injuries can be reduced by integrating behavioral sciences and epidemiological approaches. This ecologically-based, multi-level approach to safety recognizes that changes in behavior, societal support, legislation and enforcement, engineering, and environment (infrastructure) are all necessary for effective and sustained improvements in safety levels. These perspectives are incorporated in our conceptual view of safety.

The UL Safety Index

The UL Safety Index represents the quantification of this conceptual model, and calculates a Safety Index number for each country, with scores ranging from 0 (representing the lowest level of safety) to 100 (representing the highest level of safety). The scope of the Safety Index is currently limited to unintentional injuries. The Safety Index specifically excludes from its calculations factors and outcomes associated with crime, suicide or war (all instances of intentional injury), and also excludes disease, economic loss and environmental damage. These aspects of safety may be incorporated into the Safety Index in the future to more accurately reflect UL's holistic approach to safety.

The UL Safety Index is computed as the geometric mean of three measurable Drivers of safety: Institutions & Resources, Safety Frameworks, and Safety Outcomes. The following equation illustrates the relationship between these Drivers:

$$UL\ Safety\ Index = \sqrt[3]{Institutions\ \&\ Resources \times Safety\ Frameworks \times Safety\ Outcomes}$$

Drivers and Indicators

Drivers of safety used in the UL Safety Index are derived from multiple indicators in each area, as illustrated in Table 1. Individual Drivers are computed as the arithmetic mean of the indicators. Use of the arithmetic mean normalizes the results in cases where a country lacks data for a specific indicator.

Index	Driver	Indicator	Data Source
The UL Safety Index	Institutions & Resources	GDP per capita	World Bank
		Education	UN Development Programme
		Government Effectiveness	World Bank
		Technology	World Economic Forum
	Safety Frameworks	Codes & Standards	UL
		Consumer Protections	Consumers International
		Labor Protections	UL
		Road Safety Framework	World Health Organization (WHO)
	Safety Outcomes	Transport Injuries	Institute for Health Metrics and Evaluation
		Falls	
		Drowning	
		Fires, heat and hot substances	
		Poisoning	
		Exposure to mechanical forces	
		Injuries due to foreign bodies	
		Exposure to forces of nature	
		Other unintentional injury	

Table 1- Safety Index Structure

[1]*Allegrante, J. P., Hanson, D. W., Sleet, D. A., & Markes, R. (2010). Ecological approaches to the prevention of unintentional injuries. Italian Journal of Public Health, 7(2), 24-31. http://doi.org/10.2427/5724 (as of 23 May 2016).*

Driver: Institutions & Resources

The Institutions & Resources Driver is calculated as the average of the indicators for Wealth, Education, Government Effectiveness and Technology.

Wealth - GDP per Capita

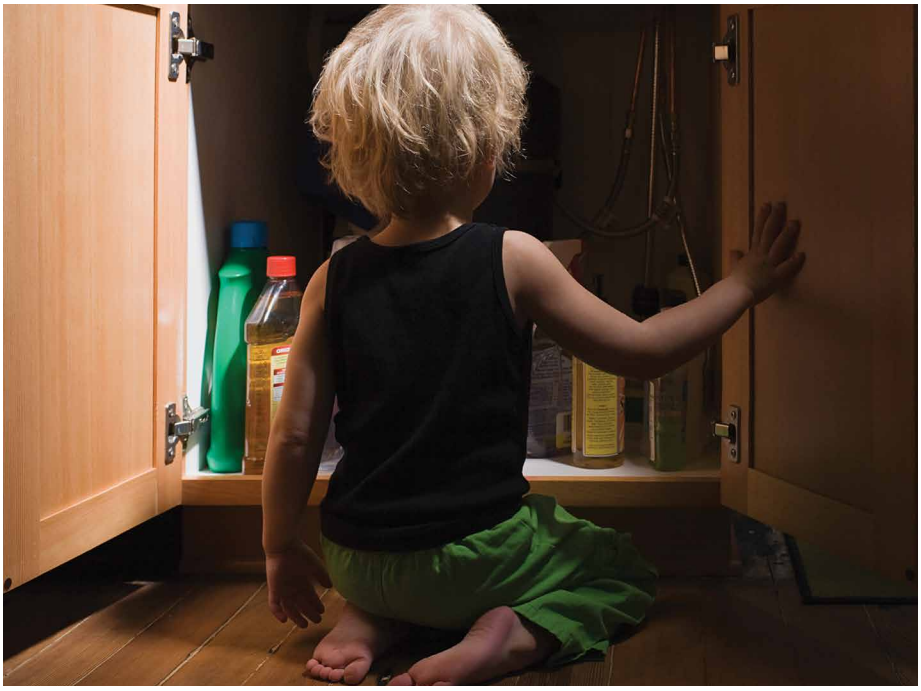
Gross Domestic Product (GDP) per capita is a standard metric used to assess the relative wealth of a country, and is an important indicator of the public and private financial resources that may be available to address safety issues. Further, on an individual level, higher levels of wealth generally provide consumers with the ability to purchase higher quality and, presumably, safer goods. The UL Safety Index uses the World Bank data on GDP per capita, which is defined as:

> *"...gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources."*
>
> (The World Bank, 2015)

Education – The UN Development Programme Education Index

It is widely accepted that educating a population about specific safety risks and alternate behaviors can lead to a reduction in unintentional injuries. Our hypothesis is that societies with stronger educational institutions will experience fewer unintentional injuries. As a measure of the educational institutions of a country, we use the UN Development Programme's Education Index. Listed in the Programme's Human Development Report, the Education Index measures education attainment across the world as follows:

> *"The education component of the Human Development Index is measured by mean of years of schooling for adults aged 25 years and expected years of schooling for children of school entering age. This indicator is produced by United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics. Expected years of schooling is capped at 18 years."*
>
> (UN Development Programme, 2015)



Governance – Worldwide Governance Indicators (WGI): Government Effectiveness

Governments can play a significant role in efforts to achieve reductions in unintentional injuries. Laws, regulations, and standards all help to codify societal norms for risk and safety. A government's effectiveness in promoting safety is directly linked to its ability to recognize the need for interventions, enacting appropriate safety frameworks, and enforcing legal and other societal protections. The World Bank's Worldwide Governance indicators Project measures the level of governance across multiple categories. One of these measures is the Government Effectiveness Index, which:

> *"...draws from a range of indices from sources such as the Economist Intelligence Unit, World Economic Forum, and Gallup World Poll. Indicators from each source measure perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies."* (IPI Global Observatory, 2015)

Technology

Technology plays an increasingly important role in the way societies function worldwide. As it relates to safety, technology impacts the ability of organizations to capture and analyze data, identify and communicate hazards, and assess the effectiveness of safety improvement efforts. Technology can also be influential in increasing general awareness of safety hazards and changing behavior. As an indicator for Technology, the UL Safety Index uses a variant of the World Economic Forum's Network Readiness Index (NRI), which:

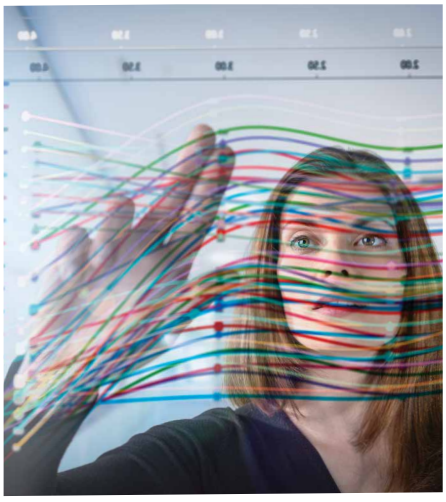
> *"...measures the performance of economies in leveraging information and communications technologies (ICTs) to boost competitiveness and well-being. The index is composed of 54 indicators, grouped into four categories: (1) environment (i.e., business/innovation and political/regulatory), (2) readiness (i.e., affordability, skills, infrastructure and digital content), (3) usage (i.e., individual, business, and government), and (4) impact (i.e., economic and social)."* (IPI Global Observatory, 2015)

The Technology indicator in the UL Safety Index differs from the Networked Readiness Index (NRI) in that 25 of the 53 data points the NRI are excluded. The excluded data are those measurements related to the following topics:

Government effectiveness (including Judicial Independence, Intellectual Property (IP) protections, Contract Law)

Business and innovation environment (including Venture Capital availability, number of days to start a business)

The government effectiveness measurements are covered in the Government Effectiveness indicator from the WGI (para 2.2.3). The other measurements are not substantive to our hypothesis regarding the use of technology to drive safety education, intervention, and policy. A complete list of the excluded measurements from the Networked Readiness indicator is provided in **The Methodology of the UL Safety Index**.



Driver: Safety Frameworks

The Safety Frameworks Driver includes component indicators for Codes & Standards, Consumer Protections, Labor Protections and Road Safety Frameworks.

Codes & Standards

Most countries implement building and life-safety or fire codes to communicate and enforce minimum design and construction standards. Standards provide more detailed requirements for materials, components, products, and systems. There are clear connections between the advancement of individual codes and standards and the increased safety of products, systems, and processes; thus, using codes and standards to advance safety is a logical extension of safety efforts.

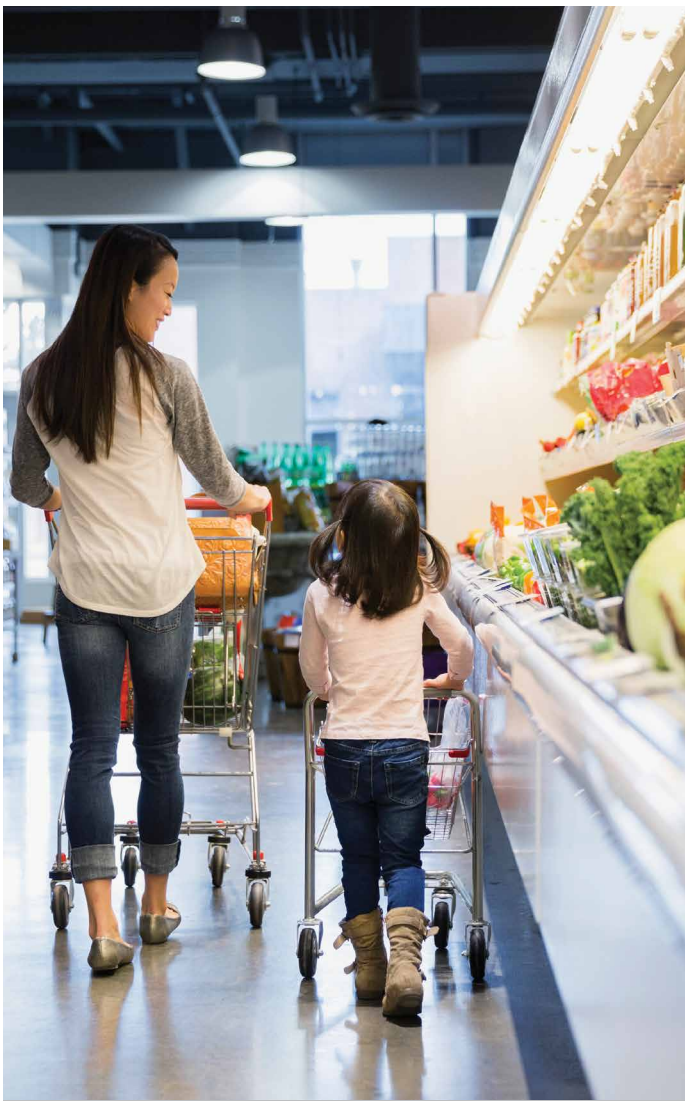
However, as we conducted research on the data available to support the UL Safety Index, we noted a significant gap in codes and standards. In fact, there were no readily identified sources of data on the existence of codes as a driver of safety at the national level.

Based on our own understanding of the fundamental value of Codes & Standards, UL developed a new index that captures the nature of the relationship between the presence of codes and standards and safety outcomes. The Codes & Standards indicator (CSI) measures the level of participation and engagement in national, regional, and global codes and standards development activities. Countries are awarded points based on their membership in regional and international standards development organizations (e.g., International Organization for Standardization, or ISO) and for their participation in standards technical committees. This score also includes points for the adoption of building, life safety, fire, and electrical codes at the national or state level.

Consumer Protections

Another important policy component that impacts safety is the presence of consumer protection measures. These measures include the adoption of product standards, the clear marking and labeling of products, market monitoring and surveillance schemes, recall programs and oversight by regulatory agencies.

Consumers International (CI) is a world federation of consumer groups that represent consumer interests through a variety of organizational models, including non-profit advocacy, political action groups, and government agencies. In partial fulfillment of its mission, CI conducts a regular survey of its members to assess the state of consumer protection measures around the world. UL has analyzed CI Consumer Protection Survey data and has developed a consumer protection indicator (CPI) based on the presence of specific mechanisms that CI deems important in protecting consumers' rights and safety. Under the UL Safety Index, countries are awarded points for implementing the mechanisms identified by CI.



Labor Protections

Unintentional death and injury in the workplace is a significant contributor to overall safety outcomes. Safety outcomes can be partially correlated with the extent to which a society implements measures to protect its workforce from workplace safety hazards.

The UL Labor Rights indicator (LRI) examines the extent to which a country has taken the steps necessary to ensure the proper protection of its workforce. The LRI is derived from the work conducted by Dr. David Kucera of the International Labor Organization and has been expanded to include additional indicators such as the strength of government efforts to enforce labor law provisions and legal consequences for non-compliance with labor laws.

The LRI's categories and its weights are based on 37 core labor rights regularly monitored by three highly-recognized textual sources: the International Trade Union Confederation's (ITUC) Annual Survey of Violations of Trade Union Rights, the International Labour Organization's (ILO) Reports of the Committee on Freedom of Association, and the U.S. State Department's Country Reports on Human Rights Practices (UL Responsible Sourcing, 2014).

Road Safety Framework

This is a new indicator for the 2017 update to the UL Safety Index. Road traffic injuries are the largest category of unintentional injuries. Urbanization and the growth of the middle class in many developing countries have added large numbers of new vehicles to the roads in these countries. The WHO, national governments, and other non-governmental organizations have conducted significant research into regulations, standards, and other interventions that can reduce the number and frequency of road traffic injuries.

UL has developed the Road Safety Framework using data gathered by the WHO as part of the Decade of Action for Road Safety. The Road Safety Framework computes a score by awarding points based on the presence of national laws related to road safety, specific measures of certain road safety values, and the enforcement of road safety laws.

A rubric was developed to analyze 44 sub-measures of road safety legislation, regulation, and best practice. The rubric contains detailed indicators in the following areas:

- Road safety institutional capabilities (5 indicators)
- Safer vehicles (7 indicators)
- Post-crash care (5 indicators)
- Safer roads and improved mobility (5 indicators)
- Safer road users (22 indicators)

A detailed review of the rubric and the scoring model is contained in **The Methodology of the UL Safety Index.**

Driver: Safety Outcomes

Because it is impractical to measure all of the hazards that may result in unintentional death and injury, we have incorporated into the UL Safety Index a measure of safety outcomes to account for the many unknown, subtle and highly sensitive factors that influence hazards.

The Safety Outcomes Driver is based on Disability Adjusted Life Year (DALY) data from the Institute for Health Metrics and Evaluation (IHME). DALY data is a standardized indicator of injury, disability and death, and accounts for lost years of life due to premature death or disability. Individual indicators are derived from the major classifications of unintentional injury used in the IHME. Global Burden of Disease data set. These indicators include transport injuries, falls, drowning, fires, poisoning, exposure to mechanical forces, foreign bodies, forces of nature and other unintentional injury. As part of our methodology, we have normalized DALY data for population by country.

Statistical Basis

Our primary hypotheses relate to the correlation of the Institutions & Resources and the Safety Framework indicators with Safety Outcomes. Specifically, we hypothesized that there would be a negative correlation between all indicators and Safety Outcomes. In other words, as populations are wealthier, better educated, and more connected, and governments are increasingly effective, we would expect injury, disability, and death from unintentional injuries to decrease. Similarly, countries that invest in codes, standards, consumer protections, and labor protections would also evidence decreased rates of death and injury.

Each of the potential indicators were analyzed for correlation with Safety Outcomes. Safety Outcomes were computed using IHME DALY data, normalized by population. DALY data for each individual country was divided by the population of that country, in units of 100,000.

Safety Outcomes (DALY/100K population, 2015 data) were the dependent variable Y in the correlation check. The Pearson product-moment correlation coefficient, r, was computed for continuous data sets (e.g., GDP per capita), and Spearman's rank correlation coefficient, rho, was computed for ordinal data sets.

The results of the correlation analysis are summarized in Table 2:

Y	Indicator	Xi	Method	Correlation r or rho	# of Countries (n)	Interpretation (relationship)	Significance test
DALY per 100,000 population (Unintentional Injury) (n=187)	Wealth	Log of GDP per Capita	Pearson	r = -0.5777	179	Strong negative	Passed
	Technology	Technology	Spearman	rho = -0.6636	141	Strong negative	Passed
	Governance	Government Effectiveness	Spearman	rho = -0.6651	186	Strong negative	Passed
	Education	Education	Spearman	rho = -0.6372	183	Strong negative	Passed
	Codes and Standards	UL Standards Index	Spearman	rho = -0.3419	187	Moderate negative	Passed
	Consumer Protections	Consumer Protection Survey	Spearman	rho = -0.5159	58	Strong negative	Passed
	Labor Protections	UL Labor Rights Index	Spearman	rho=-0.3136	181	Moderate negative	Passed
	Road Safety Laws	Road Safety Frameworks	Spearman	rho=-0.4838	175	Strong Negative	Passed

The analysis shows that all indicators exhibited a negative correlation with Safety Outcomes at a statistically significant level. Codes & Standards and Labor Protections show a weak negative relationship due to the emerging nature of these indicators. Efforts to further refine and research these elements of our model and algorithm are ongoing.

In a similar manner, additional analysis was conducted to understand the relationship between the Drivers and Safety Outcomes. As expected, the Drivers are also correlated with improved outcomes, as measured by IHME DALY data.

Y	Driver	Correlation, rho	Data size (n)	Interpretation (relationship)	Significance Test
Safety Outcomes: DALYs per 100,000 Population (n=187)	Institutions & Resources Score	0.7357	187	Strong Positive	Passed
	Safety Framework Score	0.5075	187	Strong Positive	Passed

A detailed discussion of the statistical methods of analysis, definition of correlation measures, and other interpretations can be found in the companion paper, **The Methodology of the UL Safety Index.**

Limitations

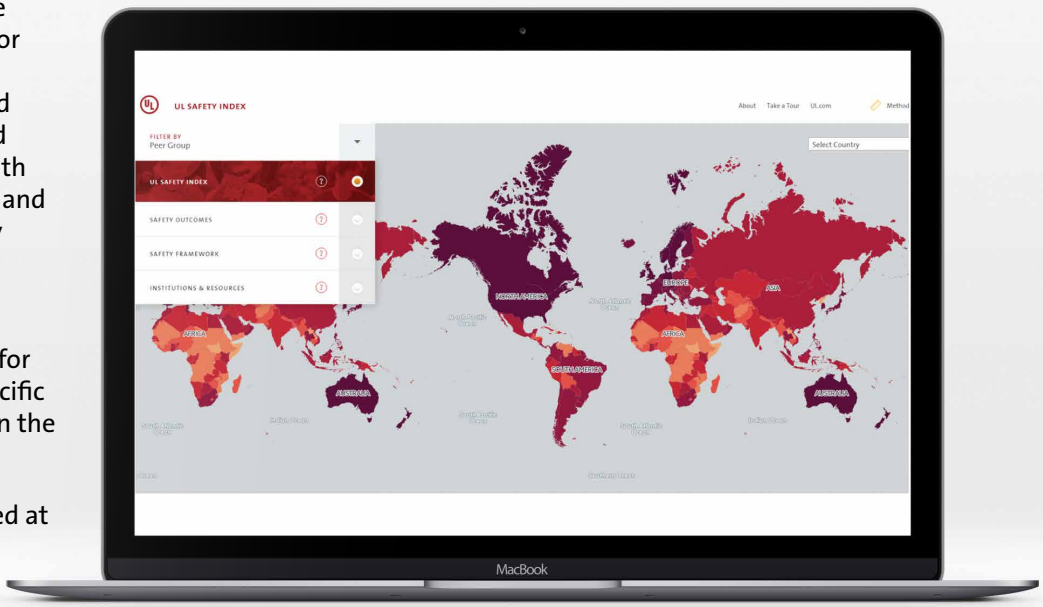
Because the UL Safety Index makes use of publicly available, validated and trusted indicators from multiple sources, values for each indicator were not available for every country. Given these limitations, the quantification of the state of safety for some countries may be less accurate than others. While the Index for a given country may be higher or lower if additional data were available, our methodology helps to ensure that countries are not penalized for the lack of specific data.

The UL Safety Index addresses only unintentional injury. Safety is much broader than unintentional injury and the UL Safety Index is envisioned as a dynamic initiative and will evolve both in scope and depth. Our vision is that the Index will incorporate additional dimensions of safety, including security, sustainability, chronic disease and intentional injury. In this way the Index will become a robust measure of safety around the world.

Results

The UL Safety Index has been computed for 187 countries around the world. The UL Safety Index Values range from 16 for Somalia to 95 for The Netherlands. The statistical analysis conducted confirmed the hypotheses that the indicators used in the UL Safety Index are correlated with improved levels of unintentional death and injury. While correlation does not imply causation, the results show that the UL Safety Index is a construct that reflects societal and population level measures that may be used as an approximation for the relative state of safety within a specific country. The full results are contained in the Appendix.

The UL Safety Index can also be explored at **ULSafetyIndex.org.**



Safety Indices

Highest Safety Index	
Country	**Index**
Netherlands	95
Norway	94
Australia	94
Sweden	93
Canada	92
Luxembourg	92
New Zealand	92
Switzerland	92
Denmark	92
United Kingdom	92

Lowest Safety Index	
Country	**Index**
Somalia	16
South Sudan	19
Guinea-Bissau	21
Central African Republic	27
Djibouti	29
Chad	30
Syria	30
Venezuela	31
Burundi	31
Equatorial Guinea	32

Table 4 - Highest and Lowest Safety Indices

Drivers

Highest Institutions & Resources Driver	
Country	Score
Norway	93
Switzerland	93
Singapore	93
Netherlands	92
Denmark	91
Australia	90
Finland	90
USA	90
Sweden	89
United Kingdom	89

Lowest Institutions & Resources Driver	
Country	Score
Somalia	3
South Sudan	10
Central African Republic	10
Eritrea	11
Chad	12
Niger	13
North Korea	13
Guinea-Bissau	15
Burundi	15
Guinea	15

Table 5 - Highest and Lowest Institutions & Resources Scores

Safety Frameworks

Highest Safety Frameworks Driver	
Country	Score
France	99
Norway	98
Netherlands	98
Sweden	97
Austria	97
Australia	97
Portugal	96
Canada	96
Slovenia	96
Luxembourg	95

Lowest Safety Frameworks Driver	
Country	Score
Venezuela	8
Guinea-Bissau	12
South Sudan	13
Syria	14
Djibouti	14
Micronesia	15
Equatorial Guinea	15
Maldives	19
Tonga	23
Laos	24

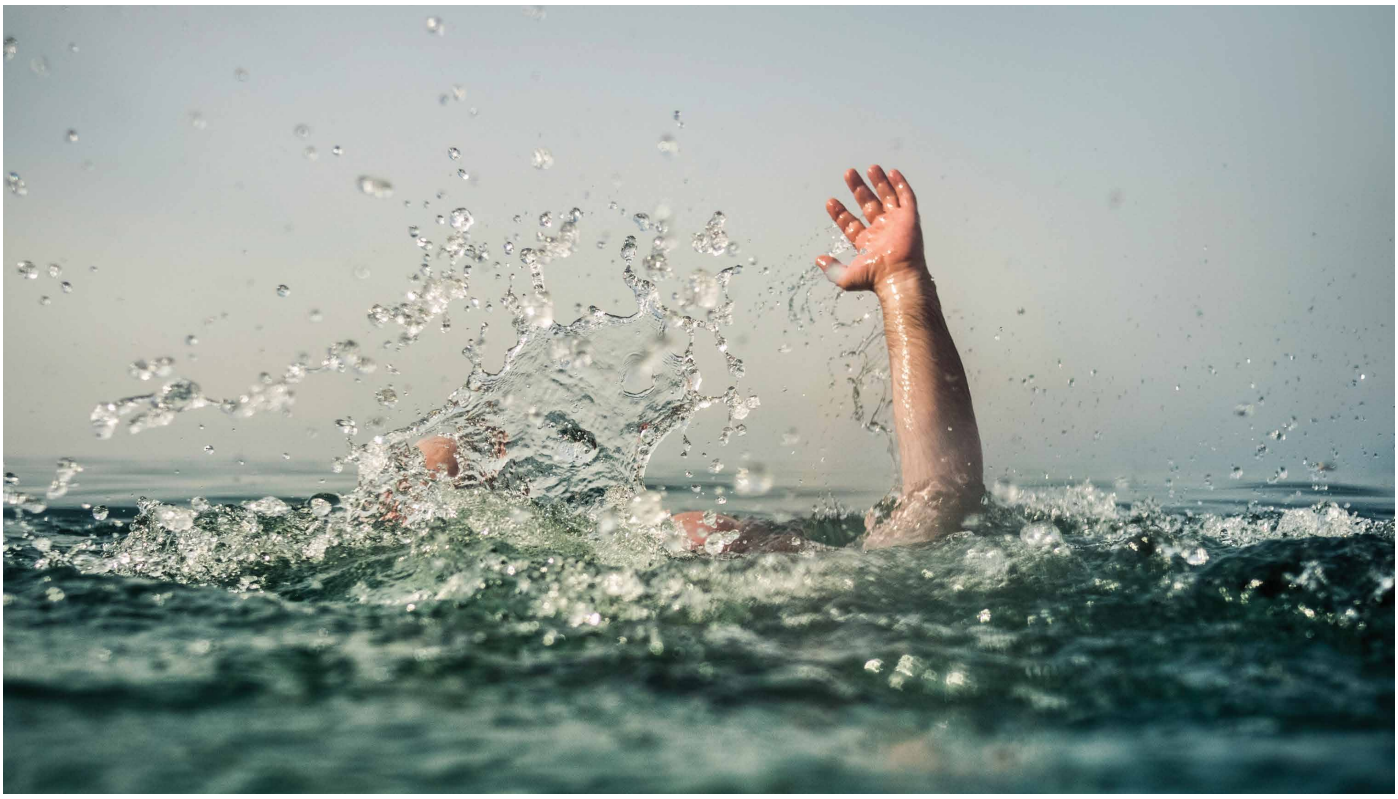
Table 6 - Highest and Lowest Safety Frameworks Scores

Safety Outcomes

Highest Safety Outcomes Driver	
Country	Score
Singapore	97
Israel	95
Bahrain	95
Australia	95
Costa Rica	94
Ireland	94
Macedonia	94
Kuwait	94
Netherlands	94
Honduras	94

Lowest Safety Outcomes Driver	
Country	Score
Afghanistan	37
Angola	45
Central African Republic	46
Somalia	49
Chad	50
Guinea-Bissau	51
Equatorial Guinea	56
South Sudan	59
Mali	61
Lesotho	62

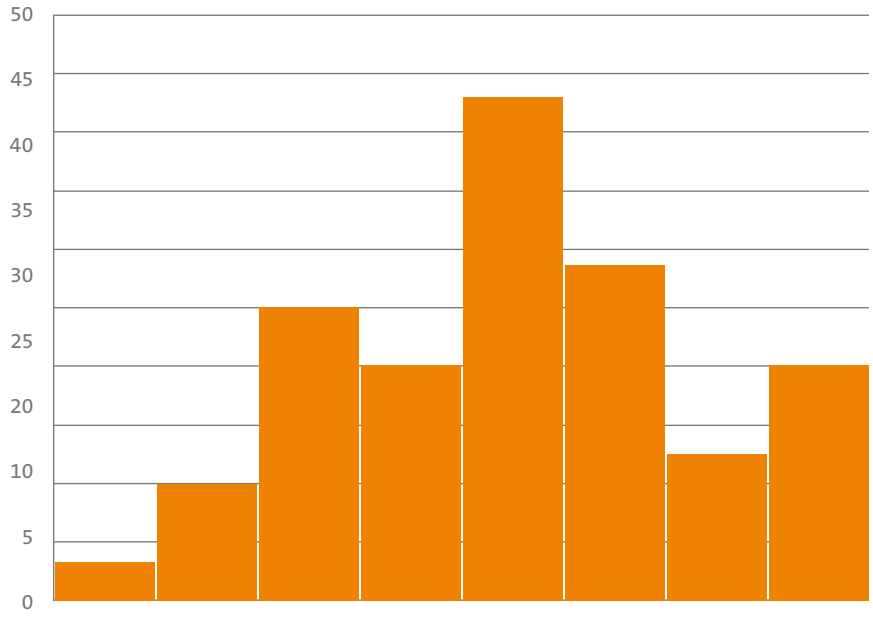
Table 7 - Highest and Lowest Safety Outcomes Scores



Discussion

The 2017 UL Safety Index is not normally distributed. The index has a larger number of occurrences in the upper value cells and fewer in the lower value cells. In other words, more countries received a high index score and fewer countries received a low index score. The 2017 UL Safety Index is a composite measure of three drivers: Safety Outcomes, Safety Frameworks and Institution and Resources. The Safety Outcomes Driver is not normally distributed and highly skewed, which has caused the overall UL Safety Index to be skewed.

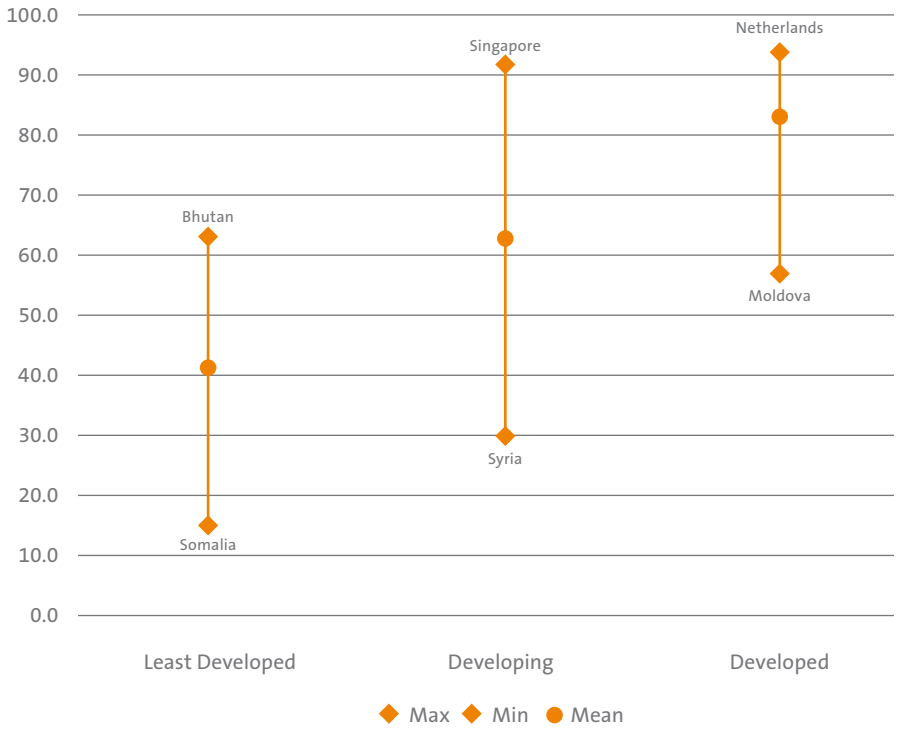
Histogram of UL Safety Index Values



UL Safety Index by UN Development Status

Unfortunately, the UL Safety Index confirms that there are significant inequalities when it comes to the burden of unintentional injuries. Because the UL Safety Index combines factors of wealth, education, and government effectiveness with safety outcomes, long-standing human development and infrastructure issues are clearly reflected in these results. There are clear differences in the range and values of the UL Safety Index when viewed by UN Development Status. The UL Safety Index minimum, mean, and maximum values each increase with development status. In fact, the maximum value of the UL Safety Index for the least developed countries is 61.5 (Bhutan), which is below the mean value for developing countries (62.1) and only slightly above the minimum value for developed countries (58.6 – Moldova).

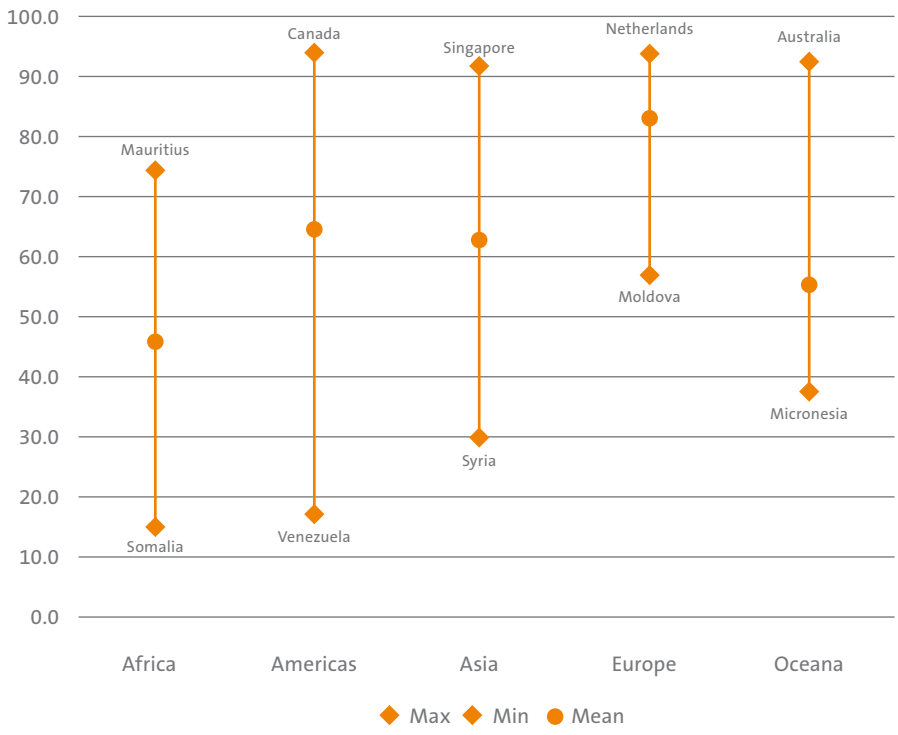
UL Safety Index by Development Status



Regional Results

The UL Safety Index also shows good variation amongst countries within each region of the world, indicating that neighboring countries may be able to assist each other with valuable policies, programs, and practices.

UL Safety Index by Region



Africa

Our analysis shows that Sub-Saharan Africa has the most to gain from investment in safety. Eight of the ten countries with the lowest values of the UL Safety Index are in this region. In fact, the UL Safety Index for these countries may reflect, at least in part, the higher priority being given to efforts that address basic needs – such as poverty and hunger – over safety-related issues. The significant challenges for these countries include financial resources, education, and government effectiveness. However, this prioritization also clearly highlights the potential for holistic solutions that address these basic needs while also simultaneously improving safety outcomes.

Northern Africa and Southern Africa have higher mean UL Safety Index values and tighter ranges of scores. Significant factors influencing the scores in these regions include Institutions & Resources and Safety Outcomes. Eastern, Middle and Western Africa have regional mean scores for the UL Safety Index below 50, indicating significant challenges across most factors included in the UL Safety Index.

Countries that have the highest UL Safety Index values in Africa are Mauritius, South Africa, Tunisia, Morocco, and the Seychelles. These countries have stronger Institutions & Resources scores than others in Africa. South Africa and Morocco have good Safety Frameworks that might be examples for other countries to emulate. Mauritius, Tunisia, and the Seychelles perform well in Safety Outcomes.

The Americas

South America

The countries of South America show wide variation in the UL Safety Index. Argentina has the highest value of the Index at 79 while Venezuela has the lowest value of 31. Safety Outcomes are the best in Colombia and the worst in Bolivia.

Venezuela's low value of the UL Safety Index is strongly influenced by weak Safety Frameworks, across the board. Opportunities for potential improvement in these frameworks are apparent in that Brazil and Colombia, neighboring countries have strong Safety Frameworks in Codes& Standards, Consumer Protections, and Road Safety.

The countries of Chile, Brazil, and Uruguay, while having higher UL Safety Index scores, all are challenged with injuries due to falls, and Brazil's Safety Outcomes are also influenced by significant issues with Transport Injuries.

Each country in South America shows strong performance in at least one indicator, further providing evidence that all have a contribution that could be made to improving safety across the region.

Central America and the Caribbean

The twenty countries of Central America and the Caribbean have a relatively similar pattern of scores across the UL Safety Index and its Drivers. Exceptions to the pattern include Haiti and Nicaragua having higher Safety Framework scores with bottom tier scores in other areas, and Honduras and Nicaragua having higher Safety Outcomes than their peers.

Haiti is particularly challenged across almost all indicators in Institutions & Resources and Safety Outcomes. It has the lowest value in the region for both of these Drivers. This is consistent with its low GDP per Capita, poor Government Effectiveness, and low Education scores. In fact, the results in this region are somewhat correlated with these Institutions & Resources metrics. Where countries have strong indicators in this Driver, their overall UL Safety Index, Safety Frameworks, and Safety Outcomes scores are also much higher.

Mexico, the largest country in the region, both in area and population, scores near the mean for the region in the UL Safety Index. Its challenges are in the areas of Transport Injuries and Safety Frameworks. Road, Labor and Consumer Protections are below norms for the region.

North America

The United States and Canada have UL Safety Index and Driver scores that are among the best in the world. Buoyed by strong Institutions & Resources, they have strong Safety Frameworks and Safety Outcomes, with a few exceptions. These countries are challenged with injuries due to falls, likely caused by an aging population. The United States is also below the norm for wealthy countries in Transport Injuries.

Europe

Europe's Safety Index values have less of a range than other regions, with the difference between the lowest and highest values of only 36 points. This region has the country with the highest value of the UL Safety Index in The Netherlands while the lowest value is for Moldova with a score of 59. Western and Northern Europe have higher mean values than the highest scores for Eastern and Southern Europe, clearly showing the benefits of stronger economies and long-standing Safety Frameworks.

Eastern Europe

Results across the Drivers of the UL Safety Index follow a similar pattern across the countries of Eastern Europe. Poland, Hungary, Slovakia, and the Czech Republic have the highest values for all Drivers in the region while Moldova, Belarus, and the Ukraine are challenged across all fronts measured by the UL Safety Index. Belarus has particularly poor Safety Outcomes across most of the indicators, and Russia has low values for Transport Injuries and injuries due to Fires, Heat and Hot Substances.

Almost all Eastern European countries are very active in international codes and standards activities. However, Labor Protections are generally lower than average, and there is little data on Consumer Protections.

Southern Europe

An analysis of the countries in Southern Europe have some unexpected data points. For example, Albania and Macedonia have the two highest values for Safety Outcomes, yet are in the lower half of this region's countries for Safety Frameworks and Institutions &

Resources. The higher values for Safety Outcomes are driven by very good outcomes in Transport Injuries and Falls, with slightly above average scores in the other injury categories. Both countries have challenges in the areas of Wealth, Government Effectiveness, and Education. Macedonia has stronger Consumer and Labor Protections in place while neither country has strong Road Safety Frameworks.

Spain, Portugal, and Slovenia lead the region in the overall UL Safety Index calculation, with higher than peer scores for Institutions & Resources and Safety Frameworks, although Safety Outcomes are only average for the region. Safety Outcomes for these countries are impacted by Transport Injuries, Falls, and Drownings.

Western / Northern Europe

The countries in these areas have UL Safety Index and Driver scores among the best in the world. Buoyed by strong Institutions & Resources, they have strong Safety Frameworks and Safety Outcomes, with a few exceptions. These countries are challenged with injuries due to falls, likely caused by an aging population. Belgium is also below the norm for these wealthy countries in Transport Injuries.

Asia

The United Nations includes 49 countries in the Asia Region, including the countries most people think of as the Middle East. Given the large number of countries, there is, of course, a wide variation in the scores of the UL Safety Index for the region, ranging from the low of 30 for Syria to the high of 91 for Singapore.

East Asia

The UL Safety Index scores for South Korea and Japan are clearly superior to the other countries in this sub-region. North Korea has the lowest score at 45, roughly half that of its neighbor to the south.

South Korea and Japan have strong Safety Outcomes indicators, with issues only in Falls, Fires, and for Japan, Natural Disasters. Taiwan also has strong Safety Outcomes indicators, while China has a mixed performance across these indicators. Taiwan's overall UL Safety Index value is strongly affected by a poor Safety Frameworks value; however, this is attributed to its unique status in the international community, and lack of independently assessed frameworks data. Our data for Taiwan is missing values for Consumer Protections and Road Safety. Further, ISO and The International Electrotechnical Commission (IEC) do not recognize Taiwan as an independent nation.

South Asia

The countries of South Asia have the lowest mean value of the UL Safety Index for Asia. Institutions & Resources and Safety Frameworks are lower than most countries across the world, with several countries struggling with the combined effects of large, growing populations and regional conflict. Afghanistan, Nepal, and Pakistan are at the low end of these Drivers. Afghanistan has poor Safety Outcomes across the board as well, while most other South Asian countries have high and low values amongst the indicators.

Southeast Asia

The countries of Southeast Asia can be divided into two groups. One group are the countries that have made significant development progress in the past several decades through economic and government reform. This group includes Vietnam, Malaysia, Indonesia, and Thailand. Coupled with Singapore and the Philippines, these countries are significantly safer than the other countries in the region. Laos, Myanmar, Timor-Leste, and Cambodia have lower UL Safety Index scores with below average values for all Drivers. GDP per Capita, Education, and Government Effectiveness are challenges in these countries.

Thailand and Malaysia may need to focus on Road Safety Outcomes, and with strong Road Safety Frameworks now in place, improvements may be close at hand. Vietnam, Indonesia, and Singapore have strong Fire Safety Outcomes: their best practices may be useful in neighboring countries such as Laos, Cambodia, and Myanmar.

West Asia (Middle East)

West Asia also has a wide range of UL Safety Index values, with low and high scores separated by more than 60 points. At the low end of the group, we have countries that have been involved in years of conflict, such as Syria, Yemen, and Iraq; while at the upper end of the range, we have the wealthier, more stable countries of Israel, Turkey, and Cyprus, along with the wealthy oil-rich states.

Transport Injuries are a problem in most countries of the region. However, Israel, Armenia, Lebanon, and Georgia are an exception. Yemen has poor Safety Outcomes across all measures and Saudi Arabia, despite above average performance in Institutions & Resources, scores average in Safety Frameworks and Safety Outcomes.

Oceania

Oceania is a clear case of the difference between larger, more developed countries and smaller, lesser developed countries. Australia and New Zealand, with strong Institutions & Resources and Safety Frameworks, have UL Safety Index values in the top 10% of countries in the world. The developing island nations of Melanesia, Micronesia, and Polynesia have none of these advantages and are in the lower third of countries measured by the UL Safety Index.

Conclusions

The conceptual model behind the UL Safety Index is based on research that links the epidemiological approach to safety with an ecological framework that explains safety behaviors. Using statistical analysis to quantify the societal influences that drive safety at the macro level, the UL Safety Index applies the conceptual model to actual practice.

The UL Safety Index also offers insights into how safety works as a system, with diverse influences such as education and technology coupled with specific approaches such as codes, standards, and enforcement of laws and regulations. This model and the research behind it supports our contention that, to improve safety, we must develop, implement, and sustain a multi-layered, systems-based approach. Investments in good government, education, and economic development all correlate with fewer deaths and injuries from unintentional sources. Indeed, this strategy helps to create a mutually beneficial scenario in which multiple positive outcomes result from investments in key development areas.

Broad investments in economic and social development must be supplemented with targeted approaches that address specific hazards to change behaviors and dramatically improve safety outcomes. Only an ecological, multi-layered approach is sufficient to reduce the global burden of unintentional injury. Our ability to make dramatic reductions in the number of people negatively impacted by unsafe living and working environments is directly connected to a comprehensive solution that addresses economic development, social development, and safety.

Appendix 1 – The UL Safety Index™ and Drivers, Alphabetical by Country

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Afghanistan	19	46	37	32
Albania	53	60	93	67
Algeria	42	60	86	60
Andorra	79	32	92	62
Angola	30	49	45	41
Antigua and Barbuda	62	42	90	62
Argentina	62	92	86	79
Armenia	54	54	85	63
Australia	90	97	95	94
Austria	83	97	90	90
Azerbaijan	55	54	82	62
Bahamas	70	56	87	70
Bahrain	71	50	95	69
Bangladesh	30	41	79	46
Barbados	68	55	93	70
Belarus	59	59	66	61
Belgium	84	92	88	88
Belize	50	51	83	59
Benin	27	75	71	52
Bhutan	42	65	86	61
Bolivia (Plurinational State of)	42	46	74	52
Bosnia and Herzegovina	50	75	90	70
Botswana	53	68	76	65
Brazil	56	91	88	76
Brunei	74	38	88	63
Bulgaria	58	77	89	74
Burkina Faso	20	68	66	45
Burundi	15	33	62	31
Cabo Verde	46	41	84	54
Cambodia	31	45	81	48
Cameroon	31	36	69	43
Canada	89	96	92	92
Central African Republic	10	43	46	27
Chad	12	41	50	30
Chile	73	66	89	76
China	57	76	86	72
Colombia	55	78	93	73

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Comoros	22	53	82	46
Congo	33	38	72	45
Costa Rica	62	71	94	75
Ivory Coast	30	59	68	50
Croatia	65	88	91	81
Cuba	61	49	92	65
Cyprus	72	89	91	83
Czech Republic	73	87	91	83
Democratic People's Republic of Korea	13	88	82	46
Democratic Republic of the Congo	19	47	65	39
Denmark	91	91	93	92
Djibouti	25	14	72	29
Dominica	54	48	88	61
Dominican Republic	49	47	89	59
Ecuador	51	66	85	66
Egypt	41	73	90	65
El Salvador	48	60	90	64
Equatorial Guinea	37	15	56	32
Eritrea	11	50	68	34
Estonia	81	82	86	83
Ethiopia	20	48	77	42
Fiji	56	41	78	57
Finland	90	94	87	90
France	83	99	87	89
Gabon	42	58	74	56
Gambia (Republic of The)	23	49	80	45
Georgia	59	50	78	61
Germany	88	90	92	90
Ghana	39	74	79	61
Greece	68	87	91	82
Grenada	58	42	81	58
Guatemala	40	35	79	48
Guinea	15	34	69	33
Guinea-Bissau	15	12	51	21
Guyana	43	52	80	56
Haiti	17	57	66	40
Honduras	38	26	94	45
Hungary	68	87	92	81

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Iceland	88	88	94	90
India	43	74	78	63
Indonesia	49	60	89	64
Iran, Islamic Republic of	49	57	76	60
Iraq	36	61	73	54
Ireland	87	92	94	91
Israel	84	93	95	91
Italy	70	93	92	84
Jamaica	53	69	93	70
Japan	86	90	91	89
Jordan	57	54	88	65
Kazakhstan	63	61	78	67
Kenya	41	72	81	62
Kiribati	39	40	90	52
Kuwait	56	47	94	63
Kyrgyzstan	39	59	82	58
Lao People's Democratic Republic	35	24	69	39
Latvia	74	85	80	80
Lebanon	48	53	93	62
Lesotho	31	44	62	44
Liberia	18	33	77	36
Libya	24	55	84	48
Lithuania	77	78	78	78
Luxembourg	89	95	92	92
Madagascar	24	53	77	46
Malawi	22	54	71	44
Malaysia	68	73	90	76
Maldives	49	19	88	43
Mali	21	52	61	40
Malta	74	87	92	84
Marshall Islands	28	34	83	43
Mauritania	23	39	79	41
Mauritius	65	70	92	75
Mexico	56	51	90	64
Micronesia (Federated States of)	47	15	87	39
Mongolia	51	71	70	63
Montenegro	62	69	90	73
Morocco	45	79	83	66
Mozambique	21	36	72	38

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Myanmar	18	53	81	43
Namibia	46	60	81	61
Nepal	26	61	75	49
Netherlands	92	98	94	95
New Zealand	89	94	93	92
Nicaragua	35	64	92	59
Niger	13	57	63	36
Nigeria	34	59	74	53
Norway	93	98	92	94
Oman	61	76	87	74
Pakistan	31	48	81	49
Panama	62	57	91	68
Papua New Guinea	32	51	71	49
Paraguay	41	64	88	61
Peru	52	47	85	59
Philippines	51	84	90	73
Poland	69	83	89	80
Portugal	76	96	91	87
Qatar	77	62	85	74
Republic of Korea	83	92	91	88
Republic of Moldova	47	51	83	59
Romania	60	83	86	75
Russian Federation	62	68	73	68
Rwanda	37	44	68	48
Saint Lucia	56	63	90	68
Saint Vincent and the Grenadines	55	49	86	61
Sao Tome and Principe	34	33	83	45
Saudi Arabia	69	53	87	68
Senegal	30	62	74	52
Serbia	56	73	92	73
Seychelles	60	57	84	66
Sierra Leone	19	59	65	41
Singapore	93	83	97	91
Slovakia	69	91	89	83
Slovenia	76	96	92	87
Solomon Islands	30	30	78	41
Somalia	3	27	49	16
South Africa	54	86	80	72
South Sudan	10	13	59	19

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Spain	78	90	93	87
Sri Lanka	55	58	89	66
State of Palestine	50	40	92	57
Sudan	23	44	67	41
Suriname	46	63	85	63
Swaziland	35	43	65	46
Sweden	89	97	93	93
Switzerland	93	91	91	92
Syria	21	14	93	30
Taiwan	84	29	93	61
Tajikistan	33	49	80	51
Thailand	55	73	83	69
The former Yugoslav Republic of Macedonia	55	86	94	77
Timor-Leste	25	43	80	44
Togo	24	42	75	42
Tonga	54	23	76	46
Trinidad and Tobago	61	68	89	72
Tunisia	49	67	91	67
Turkey	60	86	92	78
Turkmenistan	47	47	82	56
Uganda	30	44	66	45
Ukraine	51	75	76	66
United Arab Emirates	79	59	82	73
United Kingdom of Great Britain and Northern Ireland	89	92	93	92
United Republic of Tanzania	29	57	73	50
United States of America	90	88	90	89
Uruguay	65	85	83	77
Uzbekistan	47	49	81	57
Vanuatu	38	41	75	49
Venezuela, Bolivarian Republic of	43	8	85	31
Vietnam	47	72	84	66
Yemen	17	39	72	36
Zambia	37	67	68	55
Zimbabwe	31	52	82	51

Appendix 2 – UL Safety Index by Value (High to Low)

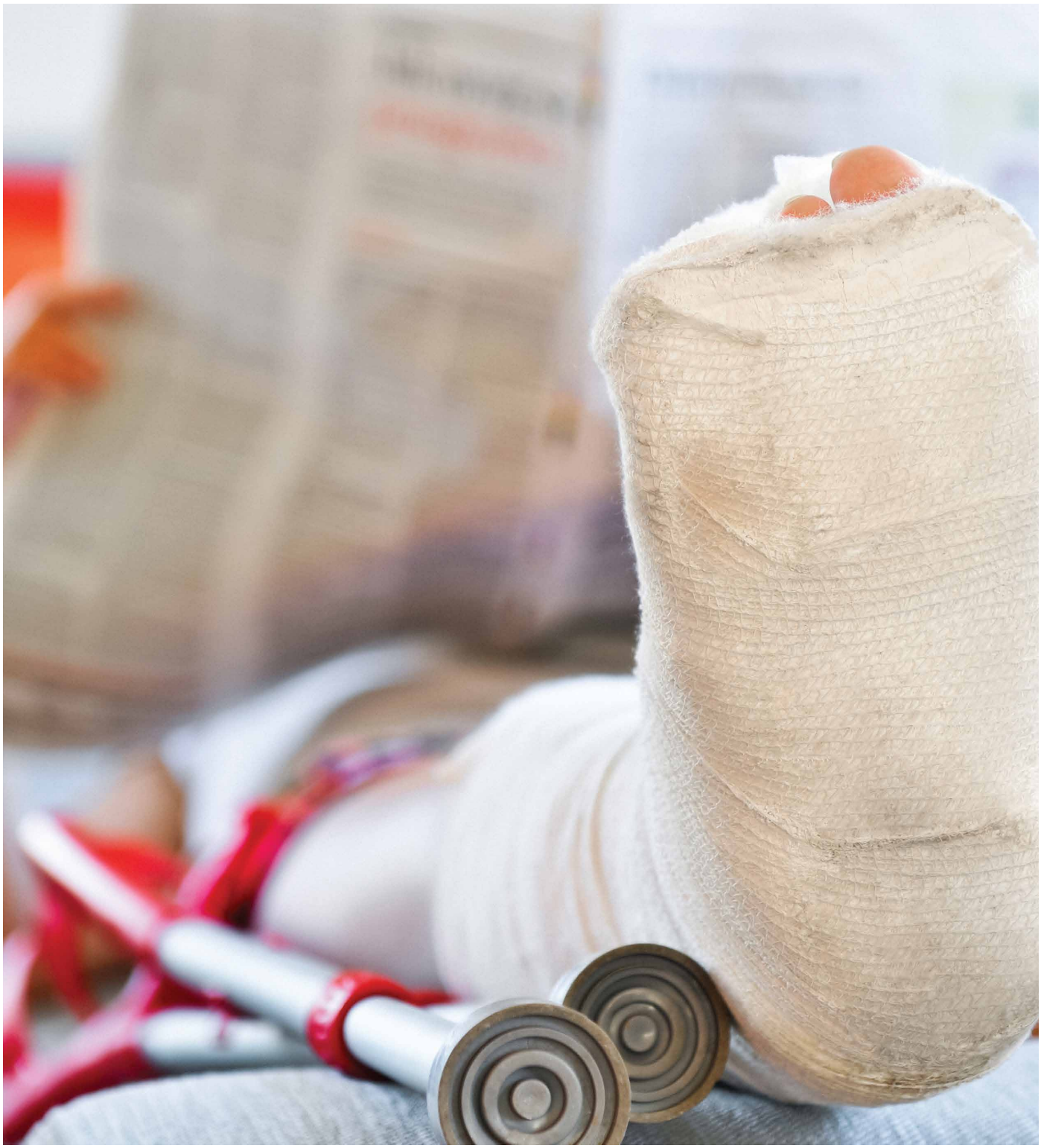
Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Netherlands	92	98	94	95
Norway	93	98	92	94
Australia	90	97	95	94
Sweden	89	97	93	93
Canada	89	96	92	92
Luxembourg	89	95	92	92
New Zealand	89	94	93	92
Switzerland	93	91	91	92
Denmark	91	91	93	92
United Kingdom	89	92	93	92
Ireland	87	92	94	91
Singapore	93	83	97	91
Israel	84	93	95	91
Finland	90	94	87	90
Iceland	88	88	94	90
Germany	88	90	92	90
Austria	83	97	90	90
France	83	99	87	89
Japan	86	90	91	89
United States of America	90	88	90	89
South Korea	83	92	91	88
Belgium	84	92	88	88
Slovenia	76	96	92	87
Portugal	76	96	91	87
Spain	78	90	93	87
Italy	70	93	92	84
Malta	74	87	92	84
Czech Republic	73	87	91	83
Cyprus	72	89	91	83
Slovakia	69	91	89	83
Estonia	81	82	86	83
Greece	68	87	91	82
Hungary	68	87	92	81
Croatia	65	88	91	81
Poland	69	83	89	80
Latvia	74	85	80	80
Argentina	62	92	86	79

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Turkey	60	86	92	78
Lithuania	77	78	78	78
Uruguay	65	85	83	77
Macedonia	55	86	94	77
Malaysia	68	73	90	76
Brazil	56	91	88	76
Chile	73	66	89	76
Romania	60	83	86	75
Mauritius	65	70	92	75
Costa Rica	62	71	94	75
Qatar	77	62	85	74
Oman	61	76	87	74
Bulgaria	58	77	89	74
Colombia	55	78	93	73
Philippines	51	84	90	73
Montenegro	62	69	90	73
United Arab Emirates	79	59	82	73
Serbia	56	73	92	73
China	57	76	86	72
South Africa	54	86	80	72
Trinidad and Tobago	61	68	89	72
Barbados	68	55	93	70
Jamaica	53	69	93	70
Bosnia and Herzegovina	50	75	90	70
Bahamas	70	56	87	70
Bahrain	71	50	95	69
Thailand	55	73	83	69
Saint Lucia	56	63	90	68
Saudi Arabia	69	53	87	68
Panama	62	57	91	68
Russian Federation	62	68	73	68
Kazakhstan	63	61	78	67
Tunisia	49	67	91	67
Albania	53	60	93	67
Morocco	45	79	83	66
Ukraine	51	75	76	66
Ecuador	51	66	85	66

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Seychelles	60	57	84	66
Vietnam	47	72	84	66
Sri Lanka	55	58	89	66
Cuba	61	49	92	65
Botswana	53	68	76	65
Jordan	57	54	88	65
Egypt	41	73	90	65
Indonesia	49	60	89	64
El Salvador	48	60	90	64
Mexico	56	51	90	64
Mongolia	51	71	70	63
Armenia	54	54	85	63
India	43	74	78	63
Suriname	46	63	85	63
Brunei	74	38	88	63
Kuwait	56	47	94	63
Azerbaijan	55	54	82	62
Kenya	41	72	81	62
Andorra	79	32	92	62
Antigua and Barbuda	62	42	90	62
Lebanon	48	53	93	62
Bhutan	42	65	86	61
Georgia	59	50	78	61
Paraguay	41	64	88	61
Saint Vincent and the Grenadines	55	49	86	61
Ghana	39	74	79	61
Belarus	59	59	66	61
Dominica	54	48	88	61
Namibia	46	60	81	61
Taiwan	84	29	93	61
Algeria	42	60	86	60
Iran	49	57	76	60
Belize	50	51	83	59
Peru	52	47	85	59
Dominican Republic	49	47	89	59
Nicaragua	35	64	92	59
Republic of Moldova	47	51	83	59

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Grenada	58	42	81	58
Kyrgyzstan	39	59	82	58
Uzbekistan	47	49	81	57
State of Palestine	50	40	92	57
Fiji	56	41	78	57
Guyana	43	52	80	56
Gabon	42	58	74	56
Turkmenistan	47	47	82	56
Zambia	37	67	68	55
Iraq	36	61	73	54
Cabo Verde	46	41	84	54
Nigeria	34	59	74	53
Bolivia	42	46	74	52
Benin	27	75	71	52
Kiribati	39	40	90	52
Senegal	30	62	74	52
Zimbabwe	31	52	82	51
Tajikistan	33	49	80	51
Ivory Coast	30	59	68	50
Tanzania	29	57	73	50
Nepal	26	61	75	49
Vanuatu	38	41	75	49
Pakistan	31	48	81	49
Papua New Guinea	32	51	71	49
Cambodia	31	45	81	48
Libya	24	55	84	48
Rwanda	37	44	68	48
Guatemala	40	35	79	48
Swaziland	35	43	65	46
Madagascar	24	53	77	46
Bangladesh	30	41	79	46
Tonga	54	23	76	46
Comoros	22	53	82	46
North Korea	13	88	82	46
Sao Tome and Principe	34	33	83	45
Honduras	38	26	94	45
Burkina Faso	20	68	66	45

Country	Institutions & Resources	Safety Frameworks	Safety Outcomes	UL Safety Index
Gambia	23	49	80	45
Congo	33	38	72	45
Uganda	30	44	66	45
Timor-Leste	25	43	80	44
Malawi	22	54	71	44
Lesotho	31	44	62	44
Maldives	49	19	88	43
Myanmar	18	53	81	43
Marshall Islands	28	34	83	43
Cameroon	31	36	69	43
Togo	24	42	75	42
Ethiopia	20	48	77	42
Sierra Leone	19	59	65	41
Solomon Islands	30	30	78	41
Mauritania	23	39	79	41
Angola	30	49	45	41
Sudan	23	44	67	41
Haiti	17	57	66	40
Mali	21	52	61	40
Micronesia	47	15	87	39
Laos	35	24	69	39
Democratic Republic of the Congo	19	47	65	39
Mozambique	21	36	72	38
Niger	13	57	63	36
Yemen	17	39	72	36
Liberia	18	33	77	36
Eritrea	11	50	68	34
Guinea	15	34	69	33
Afghanistan	19	46	37	32
Equatorial Guinea	37	15	56	32
Burundi	15	33	62	31
Venezuela	43	8	85	31
Syria	21	14	93	30
Chad	12	41	50	30
Djibouti	25	14	72	29
Central African Republic	10	43	46	27
Guinea-Bissau	15	12	51	21
South Sudan	10	13	59	19
Somalia	3	27	49	16



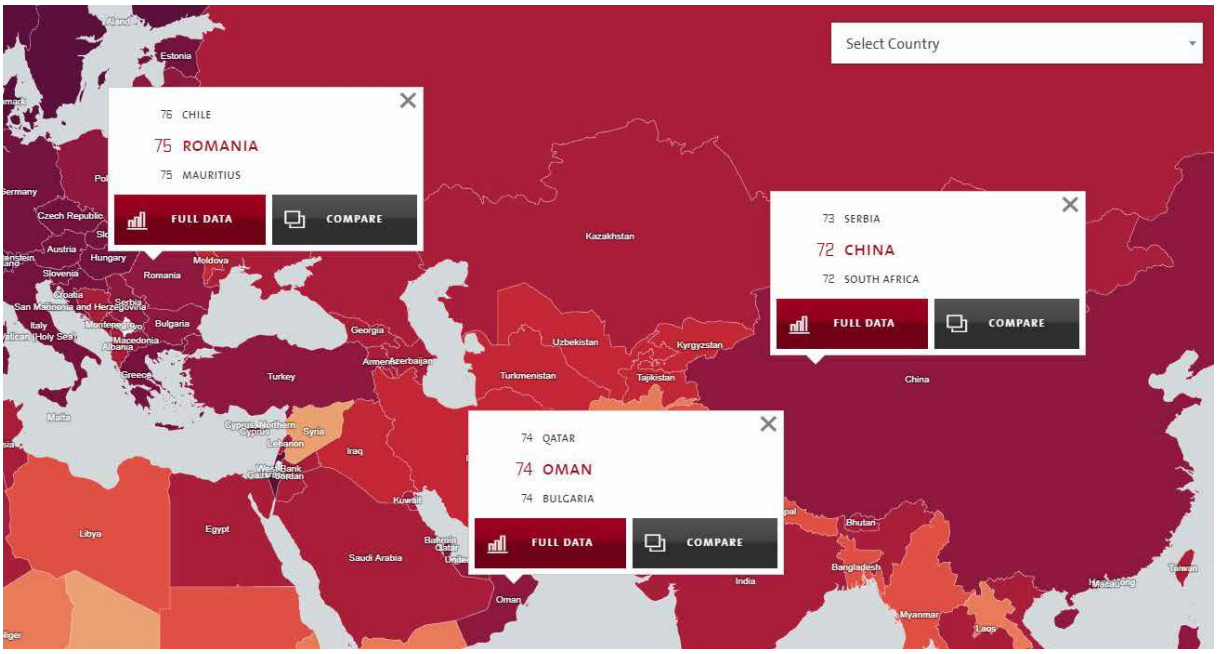
Explore the data and the results at ULSafetyIndex.org.

Comparison of Drivers and Indicators of three countries

UL SAFETY INDEX™ BY COUNTRY BY THEME

COUNTRY	UL SAFETY INDEX	Export Scores / Export Incidents	COUNTRY	UL SAFETY INDEX	CHANGE COUNTRY	COUNTRY	UL SAFETY INDEX	CHANGE COUNTRY
Brazil	76		United-Kingdom	92		Canada	92	
INSTITUTIONS & RESOURCES	**56**		**INSTITUTIONS & RESOURCES**	**89**		**INSTITUTIONS & RESOURCES**	**89**	
Education	65		Education	94		Education	93	
GDP Per Capita	58		GDP Per Capita	86		GDP Per Capita	85	
Government Effectiveness	45		Government Effectiveness	89		Government Effectiveness	89	
Technology	55		Technology	88		Technology	88	
SAFETY FRAMEWORK	**91**		**SAFETY FRAMEWORK**	**92**		**SAFETY FRAMEWORK**	**96**	
Codes & Standards	100		Codes & Standards	100		Codes & Standards	100	
Consumer Protections	100		Consumer Protections	100		Consumer Protections	100	
Labor Protections	71		Labor Protections	83		Labor Protections	89	
Road Safety Framework	91		Road Safety Framework	86		Road Safety Framework	94	
SAFETY OUTCOMES	**88**		**SAFETY OUTCOMES**	**93**		**SAFETY OUTCOMES**	**92**	
Drowning	85		Drowning	99		Drowning	98	
Exposure to Forces of Nature, Disaster	100		Exposure to Forces of Nature, Disaster	100		Exposure to Forces of Nature, Disaster	100	
Exposure to Mechanical Forces	91		Exposure to Mechanical Forces	90		Exposure to Mechanical Forces	91	
Falls	77		Falls	66		Falls	67	
Fires, Heat & Hot Substances	95		Fires, Heat & Hot Substances	96		Fires, Heat & Hot Substances	92	

Using the map to compare the UL Safety Index of several countries



UNDERWRITERS LABORATORIES INC.
333 PFINGSTEN ROAD
NORTHBROOK, IL 60062

ULSafetyIndex.org

Publication date: December 15, 2017