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CHILD PASSENGER SAFETY IN INDONESIA: AN ANALYSIS OF THE NEED FOR SPECIFIC SEAT BELT REGULATIONS

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Abstract: Current Indonesian road safety laws, particularly Law No. 22 of 2009 on Traffic and Road Transport, lack specific provisions for the use of child restraint systems, which significantly reduces child passenger safety. Unlike many developed countries with strict regulations that mandate child-specific safety equipment, Indonesian regulations currently mandate only standard seatbelts designed for adults. This inadequacy poses a substantial risk to children because of their physical vulnerability. This study examines the urgency of specific regulations regarding child safety restraints for child passengers in Indonesia. This research employs a normative legal approach to analyze Indonesia's existing legislation alongside international practices. The findings underscore those countries such as the United States, the United Kingdom, and Australia have effectively lowered child accident rates through mandatory child safety restraints and public awareness campaigns. The study concludes that adopting similar practices in Indonesia could enhance child passenger safety, reduce injury rates, and improve overall road safety for young passengers. The implementation of specific child restraint laws and public awareness initiatives are recommended to ensure comprehensive legal protection for child passengers in Indonesia.

Keywords: *Child safety, child restraint system, traffic law, Indonesia*

Abstrak: Penelitian ini mengkaji urgensi pengaturan khusus terkait sabuk keselamatan bagi penumpang anak di Indonesia. Hukum keselamatan jalan raya yang berlaku saat ini, khususnya Undang-Undang No. 22 Tahun 2009 tentang Lalu Lintas dan Angkutan Jalan, belum memiliki ketentuan khusus tentang penggunaan sistem pengaman anak, yang mengurangi tingkat keselamatan penumpang anak secara signifikan. Berbeda dengan banyak negara maju yang memiliki regulasi ketat untuk peralatan keselamatan anak, regulasi di Indonesia saat ini hanya mewajibkan sabuk keselamatan standar yang dirancang untuk orang dewasa. Kelemahan ini meningkatkan risiko bagi anak-anak mengingat kerentanan fisik mereka. Penelitian ini menggunakan pendekatan yuridis normatif, dengan menganalisis undang-undang yang berlaku di Indonesia dan membandingkannya dengan praktik internasional. Temuan menunjukkan bahwa negara seperti Amerika Serikat, Inggris, dan Australia telah berhasil menurunkan angka kecelakaan pada anak melalui kewajiban penggunaan alat pengaman anak dan kampanye kesadaran publik. Penelitian ini menyimpulkan bahwa adopsi praktik serupa di Indonesia dapat meningkatkan keselamatan penumpang anak, mengurangi angka cedera, dan meningkatkan keselamatan berkendara bagi anak-anak.

Kata kunci**:** *Keamanan anak, sistem pengaman anak, undang-undang lalu lintas, Indonesia*

INTRODUCTION

Child safety in transportation is a global issue that continues to receive attention from experts and policymakers, as children are among the most vulnerable groups to injuries due to traffic accidents. The World Health Organization (WHO) notes that traffic accidents are the leading cause of death in children and adolescents aged 5–14 years worldwide. In 2018, more than 186,300 children died from traffic accidents, with millions of serious life-threatening injuries.[1] In low- and middle-income countries, including Indonesia, child mortality rates due to traffic accidents are higher than in high-income countries. Factors such as inadequate road infrastructure, low awareness of seatbelt use, and regulations that do not specifically target child safety contribute to high accident rates.

Children are among the most vulnerable groups in traffic accidents owing to significant physiological differences from adults, which increases the risk of severe injuries. Physiologically, children's bodies are smaller and lighter, causing them to experience greater impact forces during collisions.[2] This risk is compounded by the fact that adult seatbelts, which are designed for adult postures, are unsuitable for children's body sizes. When children wear adult seatbelts, the shoulder strap often crosses their neck or face, which can result in serious injuries to the neck and face during impact.[3] Additionally, the lap belt, which should sit across the hips, rests on the abdomen, increasing the risk of dangerous internal injuries due to pressure on undeveloped abdominal organs.[4]

These unique characteristics underscore the need for special safety equipment, such as child restraint systems, designed to provide optimal protection to children's bodies. Studies have indicated that the use of child restraint systems can reduce the risk of fatal injuries in children by up to 71% in frontal collisions.[5] These devices are designed to hold children in a safer position and distribute impact forces more evenly, thereby reducing the likelihood of direct contact with hard-vehicle interiors. Without this equipment, children are more vulnerable to severe injuries, especially to their

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[1] WHO, "Global status report on road safety 2023," 2023, https://www.who.int/teams/social-determinants-of-health/safety-and-mobility/global-status-report-on-road-safety-2023.

[2] Kristy B. Arbogast dkk., "Evaluation of Pediatric Use Patterns and Performance of Lap Shoulder Belt Systems in the Center Rear," *Annual Proceedings / Association for the Advancement of Automotive Medicine* 48 (2004): 351.

[3] Rocio Suarez-del Fueyo dkk., "Cluster Analysis of Seriously Injured Occupants in Motor Vehicle Crashes," *Accident Analysis & Prevention* 151 (Maret 2021): 105787, https://doi.org/10.1016/j.aap.2020.105787.

[4] Katarina Bohman, Helena Stigson, dan Maria Krafft, "Long-Term Medical Consequences for Child Occupants 0 to 12 Years Injured in Car Crashes," *Traffic Injury Prevention* 15, no. 4 (19 Mei 2014): 371, https://doi.org/10.1080/15389588.2013.826799.

[5] Merissa A Yellman, Bethany West, dan David A Sleet, "Motor Vehicle Crashes, Injuries, and Deaths: Epidemiology and Prevention," dalam *Lifestyle Medicine, Fourth Edition* (CRC Press, 2024), 1348.

heads, necks, and spines, which are still in the developmental stage.[6] Therefore, the need for policies that mandate the use of special safety equipment for children is not merely an option but a fundamental requirement for creating a safer driving environment for them.

In Indonesia, traffic accident data show that children are frequently victims of accidents. According to a report from the Indonesian National Police Traffic Corps, in 2022, approximately 1,900 traffic accidents involved children as victims, both passengers and pedestrians. Of this number, 40% of the child victims sustained serious injuries, while 15% lost their lives.[7] One of the main factors contributing to the high rates of injury and fatalities among children in accidents is the lack of child-specific safety restraints. Many parents in Indonesia are still unaware of the importance of using seatbelts that are appropriate for a child's age and size. Additionally, the absence of regulations mandating the use of child car seats or seatbelts specifically designed for children exacerbates this situation.

Various studies have shown that the use of seatbelts and child car seats significantly reduces the risk of severe injury and death among children in traffic accidents. For instance, Durbin et al. found that children using appropriate seatbelts or child car seats have a much lower risk of injury compared to those not protected by proper safety devices. Using seatbelts for children can reduce the risk of death by up to 54% among children aged 1 to 4 years.[8] Developed countries such as the United States, the United Kingdom, and Australia have implemented strict regulations on child seatbelt usage, including minimum age requirements and child car seat mandates. In Indonesia, although seatbelt regulations exist under Law No. 22 of 2009 on Traffic and Road Transport, these regulations still do not specifically address child safety as vehicle passengers. Law No. 22 of 2009 on Traffic and Road Transport is the primary regulation governing the safety of transportation in Indonesia. Although this law mandates the use of seatbelts for drivers and passengers, its provisions are general and do not specifically address the unique safety needs of children as vehicle passengers. For instance, Article 57 of Law No. 22 of 2009 mandates seatbelt use for all passengers without distinguishing between adult and child passengers. This creates a significant gap in child protection as children have different physical

[6] Dennis R. Durbin, Benjamin D. Hoffman, dan COUNCIL ON INJURY, VIOLENCE, AND POISON PREVENTION, "Child Passenger Safety," *Pediatrics* 142, no. 5 (November 2018): e20182461, https://doi.org/10.1542/peds.2018-2461.

[7] Kepolisian Republik Indonesia, "Jumlah Korban Kecelakaan Lalu Lintas pada 2022 Meningkat Tajam, Ini Trennya," 2024, https://databoks.katadata.co.id/transportasi-logistik/statistik/d2c8b42f818a703/jumlah-korban-kecelakaan-lalu-lintas-pada-2022-meningkat-tajam-ini-trennya.

[8] Durbin, Hoffman, dan COUNCIL ON INJURY, VIOLENCE, AND POISON PREVENTION, "Child Passenger Safety," 2461.

characteristics and require safety devices tailored to their body size. This lack of specificity results in the use of standard seatbelts designed for adult bodies for children. These belts often do not effectively protect a child's body and may even cause injuries, especially when the belt crosses the child's neck or face. Studies show that adult seat belts can lead to internal injuries and other serious risks for children because the design does not account for child anatomy

The high rate of traffic accidents involving children in Indonesia highlights the urgent need to strengthen regulations and raise awareness about the importance of seatbelts for child passengers. By introducing stricter regulations and promoting public awareness of the importance of child protection in vehicles, Indonesia can reduce the incidence of accidents involving children and safeguard future generations from fatal traffic accident risks.

Although traffic safety has become a key focus of transportation policy in Indonesia, specific regulations regarding seatbelts for child passengers remain inadequate. Law No. 22 of 2009 on Traffic and Road Transport mandates seatbelt use for drivers and adult passengers, yet it does not explicitly stipulate the use of child-specific seatbelts or car seats tailored to a child's age, weight, and height. The lack of specific regulations signifies a significant gap in Indonesia's legal transportation safety system. In practice, many parents do not use appropriate seatbelts or child car seats for their children because there is no legal requirement to do so.

Research shows that children who do not use seatbelts or specially designed child restraints face a higher risk of serious injury or death in traffic accidents.[9] The use of improper seatbelts, such as adult seatbelts worn by children, is also ineffective in protecting them from injury, as these belts are not designed for smaller bodies. In Indonesia, there is currently no national policy mandating the use of car seats for children, unlike in developed countries, such as the United States or the United Kingdom, where car seat usage is required for children up to a certain age.[10] This indicates that the legal protection for child passengers in Indonesia remains limited. In the United States, the National Highway Traffic Safety Administration (NHTSA) mandates that children under the age of two use rear-facing car seats, as this position more effectively protects their heads, necks, and spines, which are still developing. After the age of two, children are required to use a booster seat until they are large enough to safely use an adult seatbelt, which is typically around 8 to 12 years old or

[9] Julie Brown dan Lynne Bilston, "Child restraint misuse: incorrect and inappropriate use of restraints by children reduces their effectiveness in crashes," *Journal of the Australasian College of Road Safety* 18, no. 3 (2007): 36.

[10] Angela H. Eichelberger, Aline O. Chouinard, dan Jessica S. Jermakian, "Effects of Booster Seat Laws on Injury Risk Among Children in Crashes," *Traffic Injury Prevention* 13, no. 6 (November 2012): 632, https://doi.org/10.1080/15389588.2012.660663.

145 cm in height. The enforcement of this policy has proven effective in reducing fatal injuries among children in the United States, and studies have shown that child restraint systems reduce the risk of fatal injuries by up to 71% during frontal collisions.[11] In the United Kingdom, similar strict regulations have been applied. UK safety standards require child car seats for all children under the age of 12 or 135 cm in height, whichever comes first. This rule is reinforced by strict penalties for non-compliance and public awareness campaigns on the importance of child-car seats. Research by Mayhew and Simpson shows that implementing these specific and stringent regulations has significantly contributed to reducing fatal accidents involving children in the United Kingdom.[12]

The Indonesian government, through Law No. 22 of 2009 on Traffic and Road Transport, mandates seatbelt use for drivers and adult passengers; however, this regulation does not explicitly require seatbelts tailored for children. The regulation only mandates drivers and passengers the use of seatbelts to reduce the risk of injury in accidents, without specifically addressing the unique safety needs of children. Although efforts have been made through traffic safety campaigns, such as promoting child car seat use, regulations mandating child-specific safety devices have not been implemented nationally.

In several developed countries such as the United States, the use of child car seats up to a certain age is legally required.[13] This lack of specific regulations results in the absence of clear safety standards for children in Indonesia. Additionally, law enforcement efforts related to child safety in vehicles are still limited, with minimal penalties for those who do not use child seatbelts, ultimately reducing the effectiveness of legal protection.

The purpose of this study is to examine the urgency of specific seatbelt regulations for child passengers in Indonesia from a child protection perspective. This research aims to identify gaps in existing regulations and highlight the importance of more specific policies on child seatbelt usage to enhance road safety. The urgency of this study stems from the high rate of traffic accidents involving children as victims, and the lack of adequate legal provisions to optimally protect them.

[11] Scott J. Oglesbee dkk., "A Cross-Sectional Geographic Information Systems Study of a Pediatric Emergency Department Child Restraint System Distribution Program," *Journal of Emergency Nursing* 48, no. 3 (Mei 2022): 279, https://doi.org/10.1016/j.jen.2022.02.002.

[12] Brian O'Neill dan Dinesh Mohan, "Preventing Motor Vehicle Crash Injuries and Deaths: Science vs. Folklore Lessons from History," *International Journal of Injury Control and Safety Promotion* 27, no. 1 (2 Januari 2020): 9, https://doi.org/10.1080/17457300.2019.1694043.

[13] Durbin, Hoffman, dan COUNCIL ON INJURY, VIOLENCE, AND POISON PREVENTION, "Child Passenger Safety."

This gap indicates that, although Law No. 22 of 2009 has contributed to overall road safety, it has not sufficiently addressed the particular safety needs of children as a vulnerable group. Therefore, a more specific and detailed regulatory update is needed, mandating the use of safety devices appropriate to the age and size of children, such as car seats or specialized seatbelts, to provide optimal protection for child passengers.

In examining child passenger safety on the road, human rights theory—specifically, the child's right to protection from harm—plays a crucial role in providing a theoretical framework. The right of children to be protected from risks and harm is internationally recognized through the *Convention on the Rights of the Child* (CRC), adopted by the United Nations, and ratified by Indonesia through Presidential Decree No. 36 of 1990. The CRC asserts that every child has the right to protect from all forms of exploitation and threats to their safety and places an obligation on the state to ensure that this right is upheld.[14] In this context, the normative approach allows for a critical evaluation of Indonesian regulations, such as Law No. 22 of 2009 on Traffic and Road Transport, to assess whether the current laws are adequate for protecting children as passengers.

Article 19 mandates that states must take all necessary measures to protect children from all forms of violence and risks that may endanger their physical and mental wellbeing. From a human rights perspective, protecting children on the road is not only a technical safety issue but also a state obligation to ensure the most fundamental rights of children: the right to life and development. The absence of regulations mandating the use of child restraint systems or child car seats indicates that current safety regulations do not yet meet the internationally recognized principles of CRC. It also suggests that existing regulations are inconsistent with human rights principles, which prioritize protecting children from safety threats.

The Rechtsstaat principle also stresses that laws must be protective and provide certainty so that all parties can clearly understand their rights and obligations. In Indonesia, Law No. 22 of 2009 on Traffic and Road Transport mandates the use of seatbelts, but the regulation is general and does not specify requirements for child safety. This creates legal uncertainty in protecting children as passengers, who need special protection in high-risk situations. The absence of specific rules on child car seat

[14] Yellman, West, dan Sleet, "Motor Vehicle Crashes, Injuries, and Deaths: Epidemiology and Prevention," 1347.

use reflects a violation of the principle of legal certainty, where children, as a vulnerable group, are not provided with adequate protection.[15]

This research is normative juridical and focuses on the examination of applicable laws and regulations. The normative juridical approach aims to analyze legal norms governing child passenger safety, particularly regarding seatbelt usage in Indonesia.[16] This approach emphasizes legislative, conceptual, and comparative approaches, This comparative law approach highlighting that Indonesia could adopt best practices from these countries to address current regulatory gaps and ensure that international safety standards are met, thereby providing optimal protection for children.

This study seeks to review and interpret Law No. 22 of 2009 on Traffic and Road Transport as well as other relevant regulations to assess the extent to which existing laws provide legal protection for children as passengers. Additionally, this approach is used to compare regulations in Indonesia with those in other countries, such as the United States, United Kingdom, and Australia, which have implemented stricter policies on child safety in vehicles. Through this comparative analysis, gaps in existing regulations can be identified, leading to recommendations for enhancing legal protection for children in Indonesia.

This study employed a prescriptive analysis method to analyze the collected data.[17] Prescriptive analysis aims to provide concrete solutions to the issues identified through the normative juridical approach. With this approach, data gathered from legislation, scientific literature, and international practices will be analyzed to generate normative recommendations for improving legal protection for child passengers in Indonesia.

DISCUSSION

1.1 Analysis of Law No. 22 of 2009 on Traffic and Road Transport

The Principle of the Best Interests of the Child, as outlined in the Convention on the Rights of the Child (CRC), which has been ratified by Indonesia, states that in every policy affecting children, their best interests must be a primary consideration. Based on this principle, protecting children's safety in traffic is not merely a technical issue but a legal obligation for the state to prioritize the safety of children as a vulnerable

[15] Tri Basuki Joewono dan Hisashi Kubota, "Safety and Security Improvement in Public Transportation Based on Public Perception in Developing Countries," *IATSS Research* 30, no. 1 (2006): 87, https://doi.org/10.1016/S0386-1112(14)60159-X.

[16] Peter Mahmud Marzuki, *Penghantar Ilmu Hukum* (Jakarta: Kencana Prenada Media Group, 2008), 31.

[17] Peter Mahmud Marzuki, *Penelitian Hukum* (Jakarta: Kencana, 2014), 41.

group, The state must ensure that children receive maximum protection from accident risks through clear and specific regulations, such as mandating the use of child car seats appropriate to their age, weight, and height.

Furthermore, the theory of the Right to Safety and Health strengthens the argument that children have a fundamental right to protect themselves from risks and threats to their safety. According to this theory, every child has the right to be in a safe environment, including public or private transportation. The absence of specific regulations on child-car seats in Indonesia indicates that children's fundamental rights to protection have not been fully met. In other words, the state has a duty to provide a legal framework that ensures the safety of children while traveling through a framework that has already been implemented in many developed countries.[18]

Law No. 22 of 2009 on Traffic and Road Transport is the primary regulation governing transportation safety in Indonesia, including the mandatory use of seatbelts. However, while this law mandates seatbelt usage for drivers and adult passengers, it does not specifically address child passenger safety. Article 57, which requires all passengers to wear seatbelts, does not differentiate between adult and child passengers. This creates a significant gap as children have different safety needs, such as child restraint systems (car seats), which are specifically designed for their smaller and more vulnerable bodies in the event of an accident.[19]

In many other countries, child passenger safety regulations are more specific. In Europe, for example, child restraint systems require the use of child car seats for children up to 12 years old or 135 cm in height, whichever comes first.[20] These regulations also include strict technical standards for car seats, which must be adapted according to the child's weight and height. Countries, such as Sweden, have demonstrated that implementing stringent child car seat policies significantly contributes to reducing fatalities and injuries among children in traffic accidents.[21]

In Japan, child safety in vehicles is the top priority. The country mandates the use of child car seats for passengers under six years of age. Research shows that the implementation of this policy has significantly reduced serious injuries among

[18] Dinesh Mohan, "Traffic Safety: Rights and Obligations," *Accident Analysis & Prevention* 128 (Juli 2019): 161, https://doi.org/10.1016/j.aap.2019.04.010.

[19] NHTSA, "NHTSA | National Highway Traffic Safety Administration," 2023, https://www.nhtsa.gov/.

[20] European Commission, "Children - European Commission," 2020, https://road-safety.transport.ec.europa.eu/eu-road-safety-policy/priorities/safe-road-use/children_en.

[21] Rui Liang dkk., "Effectiveness Analysis of a Foldable Booster Safety Seat with Integrated Seatbelt Buckle for Reducing Children's Vehicle Accident Injury Risk," *International Journal of Crashworthiness* 28, no. 6 (2 November 2023): 823, https://doi.org/10.1080/13588265.2022.2130623.

children, with a 60% decrease in child fatalities following enforcement of this rule.[22] Japan also integrates continuous public education on the importance of child-specific safety devices.

In contrast, Indonesia does not yet have regulations requiring the use of child car seats or child-specific seatbelts. This regulatory gap creates serious safety risks for children. In countries such as Japan and across Europe, strict child safety regulations have been scientifically proven to reduce the risk of fatal accidents among children. Therefore, a revision of Law No. 22 of 2009 is necessary to adopt more specific policies that ensure adequate protection of children in Indonesia during travel.

Law No. 22 of 2009 on Traffic and Road Transport has provided a basic framework for traffic safety in Indonesia, including the mandatory use of seatbelts for drivers and motor vehicle passengers. However, this regulation still has significant weaknesses, particularly in terms of the specific protection for child passengers. The law does not explicitly mandate the use of child restraint systems or seatbelts adapted to the needs of children. Standard seatbelts designed for adults are not optimized to protect children effectively, owing to the differences in their size and body posture.[23] This legal gap potentially increases the risk of serious injuries or deaths in children involved in traffic accidents.

The absence of specific regulations for child car seat use in Law No. 22 of 2009 also does not align with the global recommendations issued by international organizations such as the WHO. According to the WHO, children under the age of 12 years should use car seats appropriate to their weight and height to ensure maximum protection. In Indonesia, without regulations mandating child car seat use, many parents may not be aware of the importance of this safety device or may lack the motivation to use it. This lack of awareness and weak law enforcement puts many children in Indonesia at a higher risk of traffic accidents than in countries with stricter regulations.

In practice, this regulatory absence also impacts the lack of public education regarding the importance of specific protection for child passengers. In many developed countries, governments actively promote child road safety campaigns, including child car seats and appropriate seatbelt usage. Without a legal requirement in Indonesia, child protection in vehicles relies more on individual parental awareness

[22] Shinji Nakahara, Masao Ichikawa, dan Yukari Nakajima, "Effects of Increasing Child Restraint Use in Reducing Occupant Injuries Among Children Aged 0–5 Years in Japan," *Traffic Injury Prevention* 16, no. 1 (2 Januari 2015): 57, https://doi.org/10.1080/15389588.2014.897698.

[23] Jessica S. Jermakian dkk., "Lower Extremity Injuries in Children Seated in Forward Facing Child Restraint Systems," *Traffic Injury Prevention* 8, no. 2 (7 Mei 2007): 177, https://doi.org/10.1080/15389580601175250.

than government policy enforcement.[24] This contrasts with countries such as Canada, where child car seat rules are integrated as part of national regulations and are supported by strict penalties for violators.[25] Therefore, the absence of specific provisions in Law No. 22 of 2009 highlights the urgency to review and update the law to encompass child safety more specifically and comprehensively.

Countries such as the United States, Europe, Japan, and Australia have established strict regulations regarding child safety in vehicles, and the implementation of these policies has proven to be effective in reducing accident rates and fatal injuries among children. In the United States, for example, both federal and state laws require the use of child-car seats tailored to a child's age, weight, and height. Children are required to use a child restraint system until they reach a certain weight or age with strict law enforcement. Arbogast's research showed that the use of child car seats significantly reduces the risk of fatal injuries in children. In this study, children who used standard-compliant car seats had a much lower risk of fatal injuries, approximately 50-60% lower than children who did not use car seats.[26]

Similar regulations have been applied in Europe. The European Union mandates that children under 135 cm in height must use a child car or booster seat when traveling. Member countries, such as Germany and Sweden, have shown drastic reductions in fatal accidents involving children.[27] In Sweden, the use of child protection systems such as rear-facing car seats has proven to be highly effective in reducing child mortality rates in accidents by up to 80%. This makes Sweden one of the countries with the highest standards of child traffic safety.

Japan has also adopted child-car seat policies since 2000. Research by Desapriya shows that this policy successfully reduced fatal accident rates among children under five years of age. Japanese regulations require that children under six years of age use car seats that are appropriate to their body size. Consequently, since the implementation of this rule, the child mortality rate in traffic accidents has decreased by 64% within the first decade of enforcement.[28]

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[24] Kristy B. Arbogast dkk., "Field Investigation of Child Restraints in Side Impact Crashes," *Traffic Injury Prevention* 6, no. 4 (1 Desember 2005): 355, https://doi.org/10.1080/15389580500255831.

[25] Task Force on Community Preventive Services, "Recommendations to Reduce Injuries to Motor Vehicle Occupants," *American Journal of Preventive Medicine* 21, no. 4 (November 2001): 16, https://doi.org/10.1016/S0749-3797(01)00380-4.

[26] Arbogast dkk., "Evaluation of Pediatric Use Patterns and Performance of Lap Shoulder Belt Systems in the Center Rear," 57.

[27] Bohman, Stigson, dan Krafft, "Long-Term Medical Consequences for Child Occupants 0 to 12 Years Injured in Car Crashes," 371.

[28] E. Desapriya dkk., "Compulsory Child Restraint Seat Law and Motor Vehicle Child Occupant Deaths and Injuries in Japan 1994–2005," *International Journal of Injury Control and Safety Promotion* 15, no. 2 (Juni 2008): 94, https://doi.org/10.1080/17457300802080602.

Australia, which also enforces strict child road safety regulations, mandates the use of child car seats up to the age of seven. This rule enforcement is accompanied by aggressive public awareness campaigns that contribute to a reduction in fatal injuries among children in traffic accidents. Research by Oxley noted that regulations in Australia have successfully reduced the rate of accidents resulting in serious injuries to children by up to 35% in recent years.[29]

Law No. 22 of 2009 on Traffic and Road Transport requires revisions to include specific regulations on child safety in vehicles. The absence of provisions mandating the use of child car seats or child-specific seatbelts creates a gap in legal protection for children. Practices in countries such as the United States, Sweden, Japan, and Australia have proven that strict regulations and effective enforcement of child restraint systems can significantly reduce fatal accidents and serious injuries among children. Therefore, Indonesia should take steps to enhance child safety on roads. Policy reforms that adopt successful international practices, such as mandating child-car seats and public awareness campaigns, should be prioritized to protect this vulnerable group.[30]

Child safety policies in vehicles vary among developed countries; however, these countries generally enforce high standards for child protection. For example, in European countries, regulations on child-car seats are required based on age and height, with strict penalties for violators. For instance, in Germany, children under 150 cm are required to use special car seats until the age of 12, whereas in Sweden, a similar policy is applied with an emphasis on using rear-facing car seats until the child is four years old.[31]

Differences in approach can also be seen in the United States, where child seatbelt policies vary by state but generally mandate the use of child restraint systems until the age of eight or based on specific height requirements. Research by Kallan indicated that states with strict child car seat policies have successfully reduced the rates of fatalities and serious injuries among children in traffic accidents.[32] Through stringent and consistent policies, developed countries have managed to decrease the

[29] Irene G. Chen dkk., "Child Passenger Injury Risk in Motor Vehicle Crashes: A Comparison of Nighttime and Daytime Driving by Teenage and Adult Drivers," *Journal of Safety Research* 37, no. 3 (Januari 2006): 300, https://doi.org/10.1016/j.jsr.2006.01.005.

[30] J Felipe García-España, Flaura K Winston, dan Dennis R Durbin, "Safety belt laws and disparities in safety belt use among US high-school drivers," *American journal of public health* 102, no. 6 (2012): 1128.

[31] Lotta Jakobsson, "Rearward facing child seats-past, present and future," 2017, 3.

[32] Michael J Kallan, Flaura K Winston, dan Mark R Zonfrillo, "Child passenger safety practices and injury risk in crashes with father versus mother drivers," *Injury prevention* 20, no. 4 (2014): 273.

risk of fatal accidents involving children, highlighting the importance of clear and measurable safety regulations for protecting children in vehicles.

In the United States, child vehicle safety policies are regulated through federal standards and state regulations that strictly govern the use of child restraint systems (car seats) and seatbelts. The National Highway Traffic Safety Administration (NHTSA) sets guidelines and safety standards for child car seats, requiring their use by children until they reach the age of eight or achieve specific weight and height limits.[33] This policy emphasizes that children under two years old should use rear-facing car seats, while older children should use booster seats until adult seatbelts can be safely fastened.

In each state, child car seat policies vary, but enforcement is generally strict. Violations of these rules may result in various fines and, in some cases, point deductions from a driver's license. Additionally, some states, such as New York and California, have imposed additional fines and educational programs for repeat offenders.[34]

The implementation of these policies has had a significant impact on reducing child injury and mortality rates in accidents. A study by Tom Whyte showed that appropriate child car seat use can reduce the risk of fatal injuries by up to 71% in frontal collisions. According to the NHTSA data, states with stringent law enforcement report higher compliance rates, which directly contribute to lower child fatality rates in accidents. In the United States, the use of child restraint systems and strong public education efforts have increased the safety of child passengers, demonstrating that strict and consistent regulations can serve as effective models for child safety policies.[35]

In the United Kingdom, child vehicle safety policies are governed by strict standards similar to those in the United States, but with some key differences. The UK mandates the use of child car seats for passengers under 12 years of age or shorter

[33] Julie Brown dkk., "Increase in Best Practice Child Car Restraint Use for Children Aged 2–5 Years in Low Socioeconomic Areas after Introduction of Mandatory Child Restraint Laws," *Australian and New Zealand Journal of Public Health* 37, no. 3 (Juni 2013): 273, https://doi.org/10.1111/1753-6405.12070.

[34] Salaheddine Bendak, "Seat Belt Utilization in Saudi Arabia and Its Impact on Road Accident Injuries," *Accident Analysis & Prevention* 37, no. 2 (Maret 2005): 368, https://doi.org/10.1016/j.aap.2004.10.007.

[35] Tom Whyte dkk., "Comparative Performance of Rearward and Forward-Facing Child Restraint Systems with Common Use Errors: Effect on Crash Injury Risk for a 1-Year-Old Occupant," *Traffic Injury Prevention* 23, no. 2 (17 Februari 2022): 95, https://doi.org/10.1080/15389588.2021.2012168.

than 135 cm, regardless of age, as emphasized in the United States. [36] This means that children who have not reached the minimum height must use a child restraint system or a booster seat tailored to their weight. This rule is more specific than most states in the U.S., where age is the primary indicator of when a child should use a car seat or booster seat. Additionally, the UK imposes strict sanctions, including hefty fines, for drivers who do not comply with this rule, and penalties can increase if violations are repeated.

In Australia, a similar policy has been implemented with more detailed regulations based on age groups and seating positions. Children under four years of age are required to use rear-facing child car seats, while children aged four to seven must use booster seats or forward-facing car seats in the back seat. By segmenting car seat use according to age and seating position, Australia adds an extra layer of protection not always seen in the U.S. or UK policies. Studies indicate that implementing this policy significantly reduces the risk of serious injuries in children by up to 50% in Australia.[37]

The results of strict policies in the UK and Australia have proven to be effective. The UK has recorded a sharp decline in child fatality rates over the past decade since the implementation of these rules, and Australia has seen a reduction in serious injuries among children, particularly following the introduction of age- and seat-position-based policies. Policies in the UK and Australia, while similar to those in the United States, tend to be more detailed and emphasize child body size, showing that an approach focused on children's physical aspects can be more effective.

Child safety policies on roads implemented in the United States, United Kingdom, and Australia offer valuable examples for Indonesia to strengthen child passenger safety regulations. These countries' approaches, which focused on child car seat use based on age, height, and weight, as well as strict law enforcement, have proven effective in reducing fatal accidents and serious injuries among children. By adopting these international practices, Indonesia could address the legal gaps in Law No. 22 of 2009, ensuring optimal protection of children on the road. Additionally, public education campaigns and awareness regarding the importance of child car seats can improve public compliance with regulations. These steps are expected to strengthen child safety policies in Indonesia and create a safer driving environment for future generations.

[36] Peter Barss dkk., "Prevalence and Issues in Non-Use of Safety Belts and Child Restraints in a High-Income Developing Country: Lessons for the Future," *Traffic Injury Prevention* 9, no. 3 (28 Mei 2008): 258, https://doi.org/10.1080/15389580802040352.

[37] Brown dkk., "Increase in Best Practice Child Car Restraint Use for Children Aged 2–5 Years in Low Socioeconomic Areas after Introduction of Mandatory Child Restraint Laws," 277.

1.2 The Urgency of Special Seat Belt Regulations for Children in Indonesia

Children require special protection on the road because their physical characteristics and developmental stages make them more vulnerable to severe injuries in vehicle accidents. Anatomically, children's bodies are smaller and lighter than those of adults, which causes them to experience greater impact forces in accidents. Additionally, children's body structure, including bone and muscle strength, is still developing, making them more susceptible to severe injuries, especially to the head, neck, and spine, which are highly vulnerable to accidents.[38] Studies indicate that children who do not use car seats or seatbelts appropriate for their size are at a higher risk of injury or death in traffic accidents.

The high rate of injuries among children in accidents is also due to their limited ability to understand risks and take preventive action. As passengers, children are not equipped to recognize dangers, such as the importance of wearing seatbelts or sitting in a safe seat. Research by Elliott revealed that children often lack full awareness of driving safety, thus requiring adequate policies and safety devices for protection. Child car seats and specially designed seatbelts provide better protection than standard seatbelts, which are typically not suited to a child's body size and may cause internal injuries in the event of an impact.[39]

Furthermore, the effectiveness of child-specific safety equipment has been proven scientifically. For example, the use of child restraint systems has been shown to reduce the risk of fatal injuries by up to 71% in children involved in frontal collisions. These systems are designed to evenly distribute impact forces and secure children in safer positions, thereby preventing direct contact with hard-vehicle interiors. Therefore, the importance of child-specific safety devices is not merely optional but a fundamental necessity that must be supported by regulations. This additional protection is crucial for ensuring child safety on the road and for reducing the impact of potentially serious injuries in accidents.

Passenger safety regulations in Indonesia, particularly concerning seatbelt and child car seat usage, still have many gaps in terms of child passenger protection. Currently, Law No. 22 of 2009 on Traffic and Road Transport regulates seatbelt use; however, its provisions are general and do not specifically address the unique safety needs of children in vehicles. There are no explicit rules mandating the use of child

[38] Durbin, Hoffman, dan COUNCIL ON INJURY, VIOLENCE, AND POISON PREVENTION, "Child Passenger Safety."

[39] Kallan, Winston, dan Zonfrillo, "Child passenger safety practices and injury risk in crashes with father versus mother drivers," 278.

restraint systems or car seats tailored to a child's body size, even though children have different safety needs than adults do.

In comparison, developed countries have implemented stricter policies regarding the use of child-car seats to reduce fatal accident rates. Research indicates that specially designed child car seats can significantly reduce the risk of serious injuries to children in accidents. The absence of such regulations in Indonesia often results in children sitting without adequate protection, only using adult seatbelts that are not suitable for their size. Standard seatbelts may endanger children as they can cause internal injuries due to incorrect positioning during accidents, as they are designed for adult bodies.

Additionally, the lack of public awareness campaigns and education about the importance of child car seats reduces the effectiveness of the existing regulations. In many countries, governments actively conduct campaigns and education through various media to raise public awareness of the importance of child-car seats. In Indonesia, such efforts are very limited, leaving many parents unaware of the risks their children face when traveling without proper protection. Insufficient regulation enforcement and low public awareness means that child passenger protection in Indonesia remains suboptimal. More specific regulations mandating child car seat use, along with public awareness campaigns, are essential for creating a safer transportation environment for children in Indonesia.

The absence of specific child car seat regulations in Indonesia has serious consequences for child safety on roads. Without policies requiring the use of child restraint systems, many children in Indonesia end up using adult seatbelts or even sitting without proper protection, increasing the risk of severe injury or death in the event of an accident. Data from the Indonesian National Police show that traffic accidents are one of the leading causes of injury and death among children in Indonesia, with a high incidence in the under-12 age group.[40] In many cases, children who do not use special car seats are more likely to sustain severe head, neck, and spinal injuries due to impact.

Studies have shown that the use of adult seatbelts in children can cause internal injuries, as the belts are not designed for their body size. In countries without specific child car seat regulations, children involved in motor vehicle accidents tend to experience more severe injuries than those in countries with strict regulations. Although there are no specific statistics on child car seat usage in Indonesia, the high

[40] Yuto Kitamura, Makiko Hayashi, dan Eriko Yagi, "Traffic Problems in Southeast Asia Featuring the Case of Cambodia's Traffic Accidents Involving Motorcycles," *IATSS Research* 42, no. 4 (Desember 2018): 166, https://doi.org/10.1016/j.iatssr.2018.11.001.

accident rate among children highlights the urgency of improving child protection in vehicles.[41]

In Indonesia, law enforcement related to child safety remains limited, with weak oversight and lack of strict penalties for violations. This indicates that the state has not fully met its obligation to provide adequate protection for vulnerable groups. According to welfare state principles, the government is obligated to provide strict supervision and enforce laws to ensure child safety as a part of societal welfare.[42] Enforcing strict sanctions along with continuous public education is an essential step in improving compliance with child safety regulations.

Welfare State Theory emphasizes that the state has a proactive responsibility to protect vulnerable groups, including children, by providing a comprehensive legal framework and effective oversight mechanisms. In the context of child road safety, this principle requires the state to ensure that regulations related to the use of child safety equipment, such as child car seats, are effectively implemented through strong and consistent law enforcement.

One case illustrating the impact of this regulatory gap is a school bus accident in Central Java in 2020, in which several children sustained serious injuries due to the lack of appropriate safety equipment.[43] Without policies mandating child safety devices, many school buses and private vehicles in Indonesia do not provide child-car seats. During accidents, children in these vehicles are more vulnerable to severe or even fatal injuries.

The absence of these regulations impacts not only children's physical risks, but also demonstrates a lack of legal protection for this vulnerable group. Countries such as Sweden and Australia, which have strict child car seat regulations, have successfully reduced fatal-injury rates among children in accidents. If Indonesia aims to reduce fatal accidents and serious injuries among children, regulatory updates including mandatory child car seat usage must be prioritized.

CONCLUSION

This study found that Indonesia's child passenger safety regulations, particularly on the use of seatbelts and *child car seats*, still have many shortcomings. Although Law No. 22/2009 on Road Traffic and Transportation requires the use of seatbelts, it does not specifically address the safety needs of children as a vulnerable group. The

[41] Elizabeth Pascal, "Welfare rights in state constitutions," *Rutgers LJ* 39 (2007): 864.

[42] Duncan Lindsey, *The welfare of children* (Oxford University Press, USA, 2004), 12.

[43] Yusak O. Susilo, Tri Basuki Joewono, dan Upali Vandebona, "Reasons Underlying Behaviour of Motorcyclists Disregarding Traffic Regulations in Urban Areas of Indonesia," *Accident Analysis & Prevention* 75 (Februari 2015): 273, https://doi.org/10.1016/j.aap.2014.12.016.

existing provisions do not include the mandatory use of *child restraint systems* or *child car seats* that are appropriate for the weight and height of the child. Comparisons with developed countries, such as the United States, Japan, the United Kingdom, and Australia, show that stricter regulations on child safety have proven to be effective in reducing fatal injuries and fatalities. This conclusion underscores the need for regulatory reforms to protect Indonesian children.

This study uses a normative juridical approach that focuses on positive law analysis, comparative law, and prescriptive analysis. This approach discloses gaps in existing regulations and provides concrete normative solutions. By comparing Indonesian regulations with international best practices, this study shows that *the* concepts of *the best interests of the child* and *the right to safety and health have* not been adequately implemented in national policy. The method used has proven its ability to explore neglected areas such as the importance of public awareness campaigns and child physical size-based approaches in safety regulation design.

This research is limited to a normative analysis of regulations and does not include an empirical study to evaluate implementation on the ground or level of public compliance with existing regulations. In addition, this study only compares a few specific countries, so it does not fully represent the various models of child safety regulations worldwide. Future research should include empirical data, such as stakeholder interviews and public surveys, to provide a more comprehensive picture of implementation challenges and the public acceptance of child safety policies.

DISCLOSURE

Conflicts of Interest

The authors declare no conflict of interest regarding the publication of this paper.

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The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated organization, institution, or funder. The authors are solely responsible for the content, including any errors or omissions

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The authors declare that no generative AI tools were used in the conceptualization, design, data analysis, or interpretation of the results for this manuscript. However, AI-based tools, such as Grammarly, were utilized to assist with language editing and proofreading. The final content and intellectual conclusions of the manuscript are the sole responsibility of the authors.

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All authors contributed significantly to this research and manuscript. Oos Ariyanto conceptualized the study, developed the research framework, and conducted the primary analysis of Indonesia's legal regulations. Setiawan Noerdajasakti contributed to the comparative law analysis by examining international child safety standards and their applicability to Indonesia. Faizin Sulistio provided critical insights into the human rights perspective and ensured the alignment of the discussion with international conventions, including the CRC. All authors were involved in drafting and revising the manuscript, and they approved the final version for submission.

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