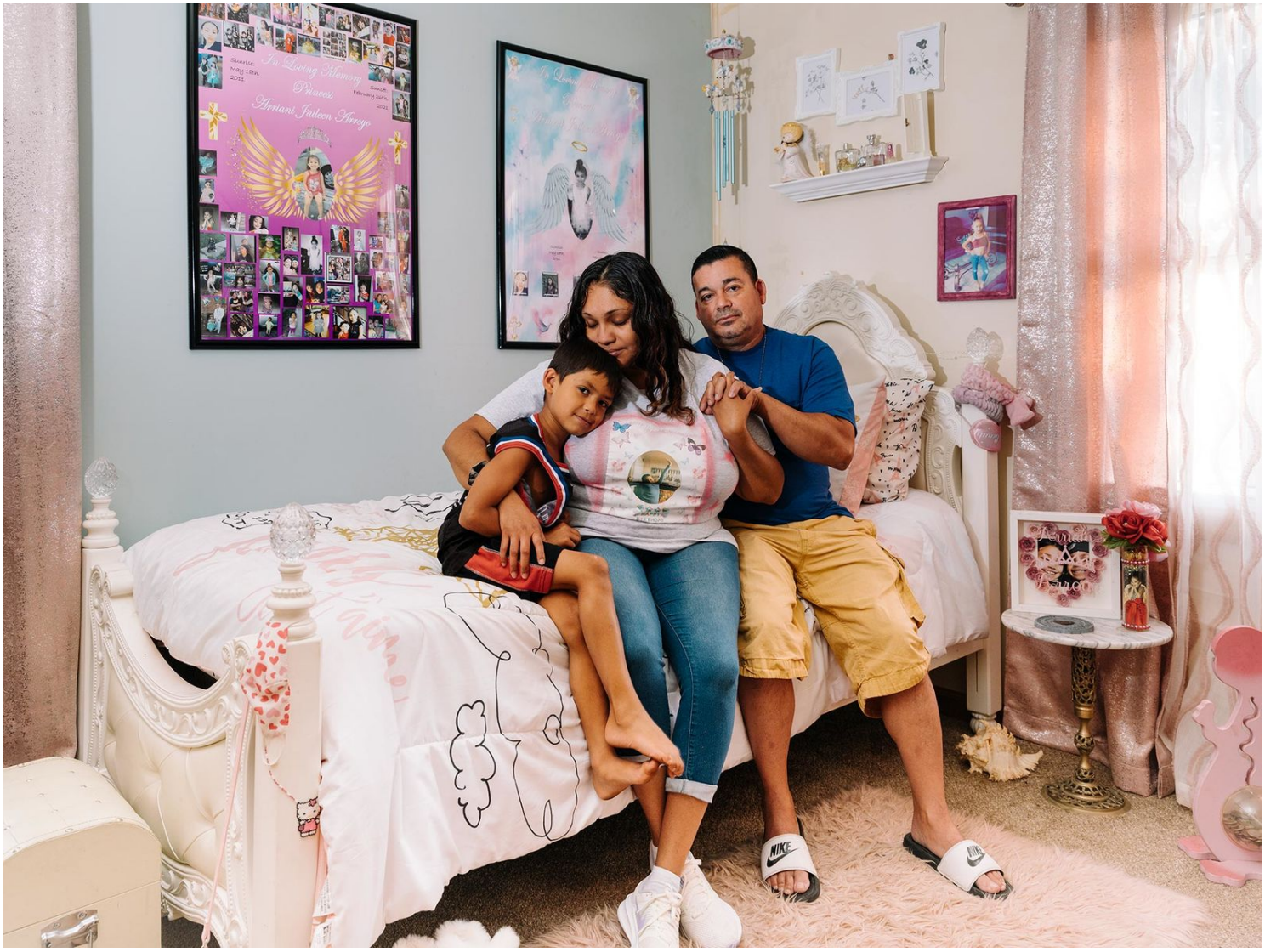


The Arroyo family in Arriani's bedroom. *Photographer: David Kasnic for Bloomberg Businessweek*

Businessweek | The Big Take

TikTok's Viral Challenges Keep Luring Young Kids to Their Deaths

Children are dying from the blackout challenge. Why isn't the world's most popular app doing more to protect them?

By Olivia Carville

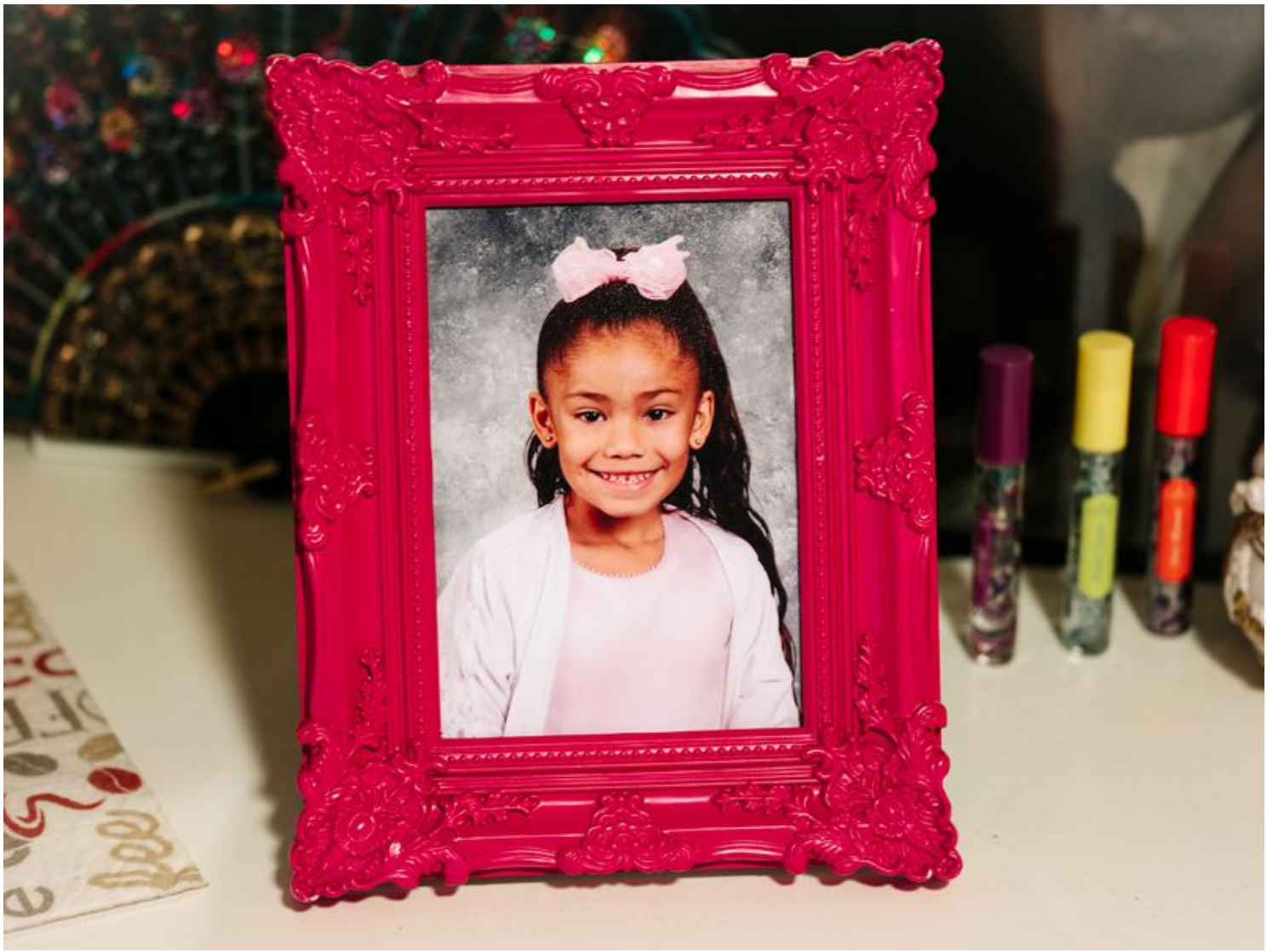
November 29, 2022 at 9:01 PM PST

"Sissy's tangled!"

The 5-year-old boy's panicked cries echoed down the hallway of the Arroyos' three-bedroom clapboard house in Milwaukee. It was February 2021, and he'd been playing with his 9-year-old sister, Arriani, before bedtime. Their mother was at a Bible study class, and their father was in his basement workshop, out of earshot. The boy had watched Arriani climb atop a toy chest, wrap a metal dog leash

around her neck and hook the buckle to the wardrobe door hinge. Now she was hanging 2 feet from the ground, kicking and desperately scratching at her neck.

A few days later, after Arriani was buried wearing a princess dress and tiara, her nails freshly painted, the boy told his parents what had happened. They were playing a game, he said, like they saw on TikTok.



A photograph of Arriani at her family's home. *Photographer: Dave Kasnic for Bloomberg Businessweek*

The game had a name: the blackout challenge. Kids around the world were choking themselves with household items until they blacked out, filming the adrenaline rush they got regaining consciousness and then posting the videos on social media. It's a modern incarnation of choking dares that have been around for decades, only now they're being delivered to children by powerful social media algorithms and reaching those too young to fully grasp the risk.

There was no press coverage of Arriani's death, and TikTok didn't learn about it for months. But the company was aware that kids not old enough to have profiles on its app were dying doing the blackout challenge. In the weeks before, TikTok's trust and safety team, which works to protect users and

defend the company's reputation, had begun investigating a similar incident in Palermo, Sicily. A 10-year-old girl, Antonella Sicomero, had been found hanging from a towel rack in January with a bathrobe belt around her neck. Antonella's parents told local media she'd died playing "an extreme game on TikTok." The Palermo prosecutor's office opened an investigation, and Italy's privacy watchdog ordered the social network to remove any user in the country whose age it couldn't verify as being over 13, alleging that it was failing to abide by its own rule to keep preteens off the app.

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A small group from trust and safety spent days reviewing every clip Antonella had recently watched, according to two team members who saw a summary of the internal report into her death and requested anonymity because they weren't authorized to talk to the media. There were a lot of videos: The report said Antonella, whose school was closed because of Covid-19, was on the app as much as 10 hours a day. The group also learned that, like many kids her age, Antonella had claimed she was older than 13 when she created her account.

The team reported finding no evidence that TikTok's algorithm had recommended the challenge to Antonella. That was a relief to senior executives, the team members say. A crisis management strategy was drafted to distance TikTok from the tragedy, painting it as an industrywide issue. The company told journalists the challenge "had never been a trend" on the platform and said users learned about it "from sources other than TikTok."

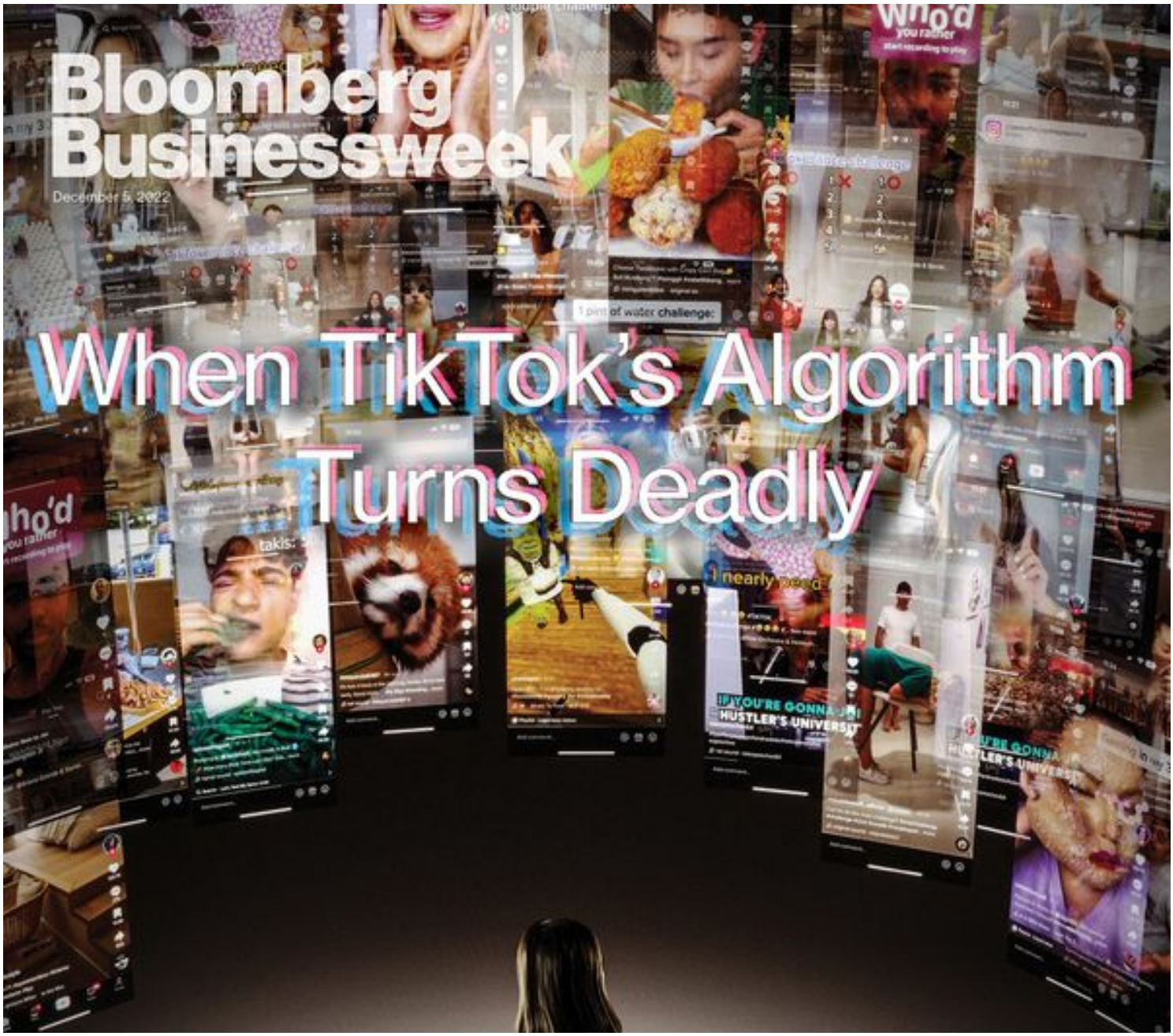
The blackout challenge has been linked to the deaths of at least 15 kids age 12 or younger in the past 18 months

TikTok has continued with the same message, including in a recent statement to *Bloomberg Businessweek*, as children too young to be on social media have kept dying. The blackout challenge has been linked to the deaths of at least 15 kids age 12 or younger in the past 18 months, according to data *Businessweek* compiled from news reports, court records and interviews with family members. At least five children age 13 and 14 also died in that time. Headlines in the wake of the deaths frequently singled out TikTok, but police departments denied Freedom of Information Act requests to see incident reports that might help prove which platform was involved, if any.

By the time of Arriani's death, executives were scrambling to figure out how they could better detect and kick out children who'd lied about their age. There are no effective mechanisms to block underage users from social media platforms, an issue that's plagued them since their invention. In 2021, TikTok met with at least two providers of facial age-estimation software, which can distinguish between a child and a teenager with relative accuracy, according to people familiar with the talks. These machine-learning programs scan faces for clues about a person's age, and the companies say the systems work without identifying individuals or storing any data, which could raise privacy concerns.

Even so, a top executive at TikTok nixed the deals, one of the people familiar with the talks says. The company, owned by Beijing-based ByteDance Ltd., had been accused by regulators and politicians around the world of being a surveillance tool for the Chinese government and was facing a possible ban in the US, which is still under review. The executive, the person says, feared that using biometric data would stoke suspicions that China was spying on child users. Other social media platforms, including Twitter, Instagram and photo-sharing app BeReal, have since teamed with these age-estimation software providers.

TikTok declined to comment about the meetings or why it hasn't adopted the technology. It says it removes the accounts of underage kids and took down 41 million of them in the first half of this year alone. But with more than 1 billion users worldwide, former employees say, the task is endless—just ask any young TikTok addict whether having their account deleted would keep them off the platform for more than a few minutes.



Featured in *Bloomberg Businessweek*, Dec. 5, 2022. Subscribe now. *Photo illustration: Justin Metz for Bloomberg Businessweek; Photos: Getty; TikTok*

US law bars social media companies from collecting data on children younger than 13, and TikTok says it complies with the rules. Kids under that age who try to register for an account in the US are shunted to a version of the app where they can watch curated content without having a personal profile or being shown ads. But TikTok owns youth culture—it's the most popular app in the US, used by almost 70% of teens age 13 to 17, according to one survey—and the company is aware kids often lie about their age to get the adult version. And although TikTok doesn't disclose information about the age of its users, internal data leaked to the *New York Times* showed that in 2020 as many as one-third were under the age of 14.

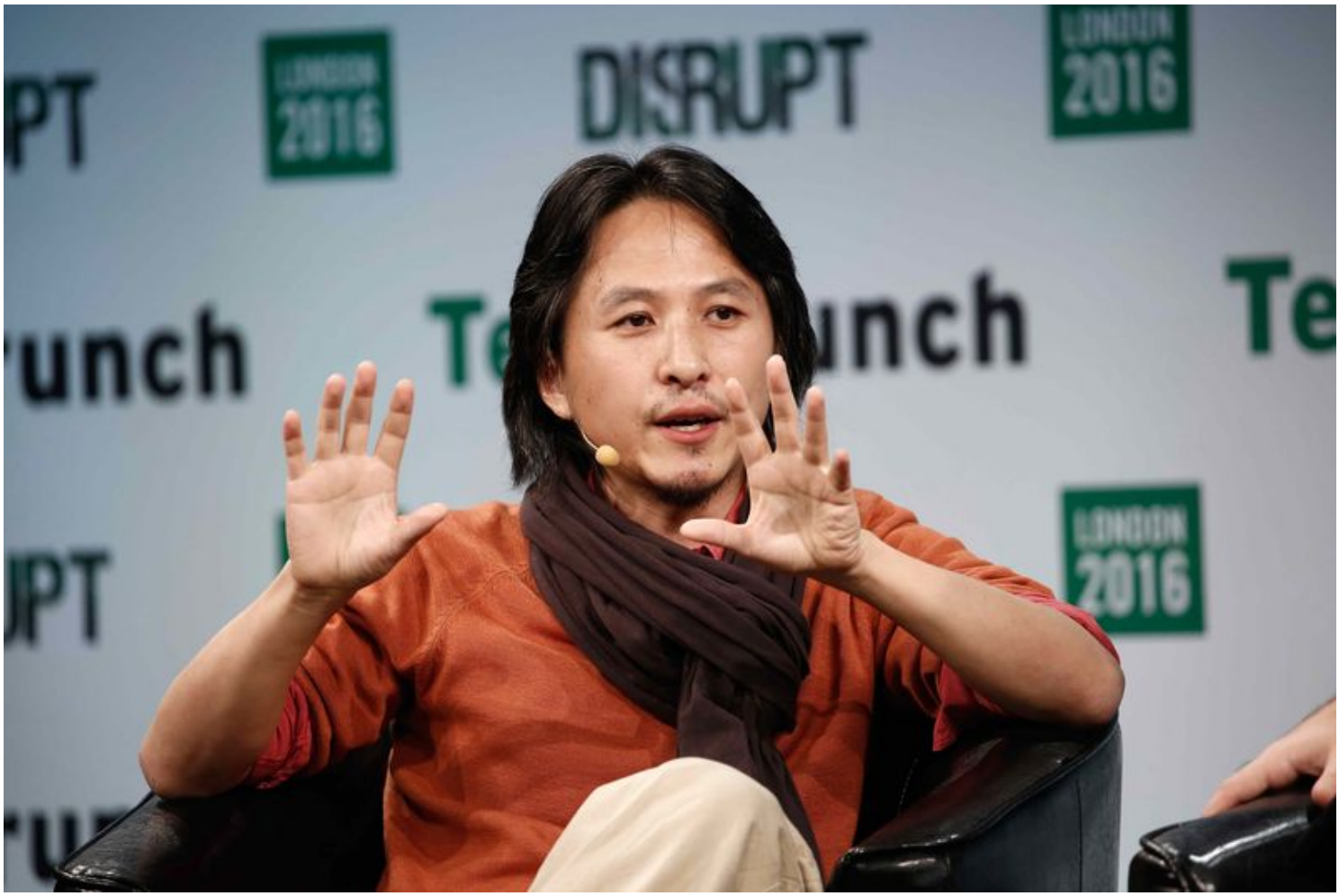
It's a sensitive issue for the company, which tells employees to "speak of young people, but not of children," according to an internal messaging document reviewed by *Businessweek*. TikTok has been fined for letting kids onto its app, and regulators around the world are investigating its age-verification measures. It's also facing wrongful-death lawsuits in the US, alleging that its algorithm sent the blackout challenge to kids as young as 8 years old.

The ongoing scrutiny is welcome news to some of the more than two dozen current and former trust and safety workers interviewed for this article. They say the company could and should be doing more to prevent children from using the app. "The PR line at TikTok is that user safety is our No. 1 priority," says a former California-based trust and safety leader who asked not to be identified discussing internal company matters. "That's not true. Growth is the No. 1 priority. Being the No. 1 app in the world is the No. 1 priority. Making more money is the No. 1 priority."

When ByteDance spent about $800 million to merge TikTok with lip-syncing app Musical.ly in 2018, it got more than just 200 million new users. It also inherited an investigation by the US Federal Trade

Commission into Musical.ly's practice of letting young kids on its app. Musical.ly had for years flouted US law, welcoming those under 13 who were locked out of competing platforms and at the same time violating the Children's Online Privacy Protection Act, which seeks to shield preteens from being targeted by advertisers.

Musical.ly's co-founder and co-chief executive officer, Alex Zhu, acknowledged at a *TechCrunch* conference in 2016 that many of the app's top users were underage. But he said it was in compliance with the law because the kids had their parents' consent. There was no point installing an age requirement, Zhu said; if Musical.ly asked for a birthdate, kids would just lie. While that may have been an honest admission, in 2019 ByteDance was fined $5.7 million by the FTC, at the time the largest child-privacy settlement in US history. (The penalty hardly took a bite out of a company now valued at $300 billion, and it was soon eclipsed by a $170 million child-privacy fine against Alphabet Inc.-owned YouTube and Google.)



Zhu at TechCrunch Disrupt London in 2016. *Photographer: John Phillips/Getty Images*

At the same 2016 conference, Zhu said that what distinguished Musical.ly from other entertainment apps was its daily challenges. The company promoted a new one every day, typically generating more than 1 million videos. When Musical.ly was absorbed into TikTok, the challenges came with it.

These challenges resonated with teens stuck at home during the first wave of Covid. They evolved from choreographed dance routines into family-bonding trends—things like showing four generations in one video or dressing up pets. In 2020, TikTok's downloads jumped 75%. To amplify the surge, company representatives reached out to influencers to encourage them to try different challenges.

When some turned dangerous, with kids climbing stacked milk crates, chugging Benadryl or vandalizing school property, TikTok established a "harm spectrum" to help its moderators decide what could stay up and what should come down, according to Eric Han, the company's US head of safety. The cinnamon challenge, in which users ate a spoonful of powder, could lead to minor lung damage, but it was deemed unlikely to cause catastrophic harm, so the trust and safety team attached a warning to the content and left it up. They had other pressing issues to solve, including election integrity, combating hate speech and coping with the Trump administration's threat to ban TikTok over national security concerns.

Amid that chaos and the app's explosive growth, the challenges kept getting riskier. In the skull-breaker challenge, two people would trick a third to jump up between them and then trip the leaper in midair, resulting in reports of concussions and brain damage. The outlet challenge, which involves dropping a penny onto the prongs of a partly plugged-in phone charger to watch it spark, led to students being charged with property destruction. The fire challenge, in which kids doused objects with accelerant and set them on fire, sometimes ended in third-degree burns. And the blackout challenge has been outright deadly.

US health officials seem to have studied deaths linked to choking games only in the years before the social media boom. A report published by the Centers for Disease Control and Prevention in 2008 found that 82 children from age 6 to 19 had died playing the choking game between 1995 and 2007, the year the first iPhone was released. The government hasn't published another study on the issue since, but anecdotal reports from researchers suggest social media has amplified the problem.

Judy Rogg became an advocate seeking to raise awareness of the choking challenge after her 12-year-old son, Erik, died playing the game in 2010, long before TikTok was created. Rogg started a nonprofit called Erik's Cause, which helps train schools about how to handle online risks and gathers statistics on choking-game-related deaths. She's found that since 2018 at least 33 kids younger than 13 have died. "It's grown more popular with social media," Rogg says. "It's absolutely exploded."

The challenges bounce across platforms, morphing into new iterations with different hashtags and code words as users sidestep safety restrictions. The blackout challenge goes by many names, from the more obvious "choking game" and "pass-out challenge," to the subtler "flatliner" and the obscure "space monkey." Kids misspell words to avoid detection, like "space monkee" or "blackout tr1ck." Videos with some of these titles exist on TikTok today, showing kids taking deep breaths and pushing on one another's chests until they faint or choking each other with their hands. You can see kids temporarily lose consciousness then wake up laughing. One caption says: "Craziest feeling ever."

More than 70% of US children have a cellphone by the age of 12, and half of all kids from 8 to 11 in the UK are viewing TikTok content daily, according to surveys in both countries. TikTok trains its moderation teams to look for underage users and draws on text-based analytics to detect keywords such as a written age in a bio. It also relies on other users to surface their accounts. Mahsau Cullinane, a company spokeswoman, declined to disclose more details, to avoid teaching kids how to "circumvent our safeguards." She did point out that TikTok released a tool in 2020 that allows parents to monitor their child's activities on the app.

A global army of about 40,000 moderators is responsible for reviewing videos at TikTok, three-quarters of whom work on contract. Each looks at about 1,000 videos a day, taking around 20 seconds to review each one, according to former employees. They say the system isn't geared toward finding underage users. Posts are filtered to moderators by artificial intelligence software that scans every video uploaded—10 billion in the first quarter of this year alone—and automatically removes anything that would violate a community guideline, such as nudity or violence. If the software is unsure, it sends the material to a human to assess. Every video that has more than about 3,000 views (the number varies across countries) is also sent to a moderator, ensuring that the most popular content gets a human review. Kids younger than 13 are unlikely to post content that violates guidelines or reaches that many eyes, though.

TikTok's moderators might be actively looking for the accounts of underage users, but they never removed Arriani Arroyo's, where she posted videos for her 260 followers. She wasn't hiding her identity: Her profile photo was a picture of her 9-year-old face. In her videos she's dancing, laughing and playing with her brother. Her last post had 457 views.

Read More: A Parents Guide to Talking to Kids About Social Media

"These are the last things she ever wore," Christal Arroyo says, taking a pair of tie-dyed pajamas from her daughter's dresser. She unfolds the top delicately, revealing a jagged tear where the paramedics cut it open. "I don't like to look at them," she says, refolding the garment. "I come to smell them." Rain pelts the window, and lightning sends a shock of white into Arriani's bedroom. Arroyo doesn't notice. She has her eyes closed, breathing in her daughter's lingering scent.

Arriani loved glitter, nail polish and fairy princess dresses. She collected seashells and wrote to-do lists in her diary: "brush teeth, pick out clothes, do hair and makeup, have fun!" Her favorite song was *Girl on Fire* by Alicia Keys, and she'd sing it during her morning routine. She'd wanted an iPhone when she turned 8—"like every kid in America," her mother says. Her favorite app was TikTok. When the pandemic shut her school in 2020, Arriani became "obsessed" with it, Arroyo says.

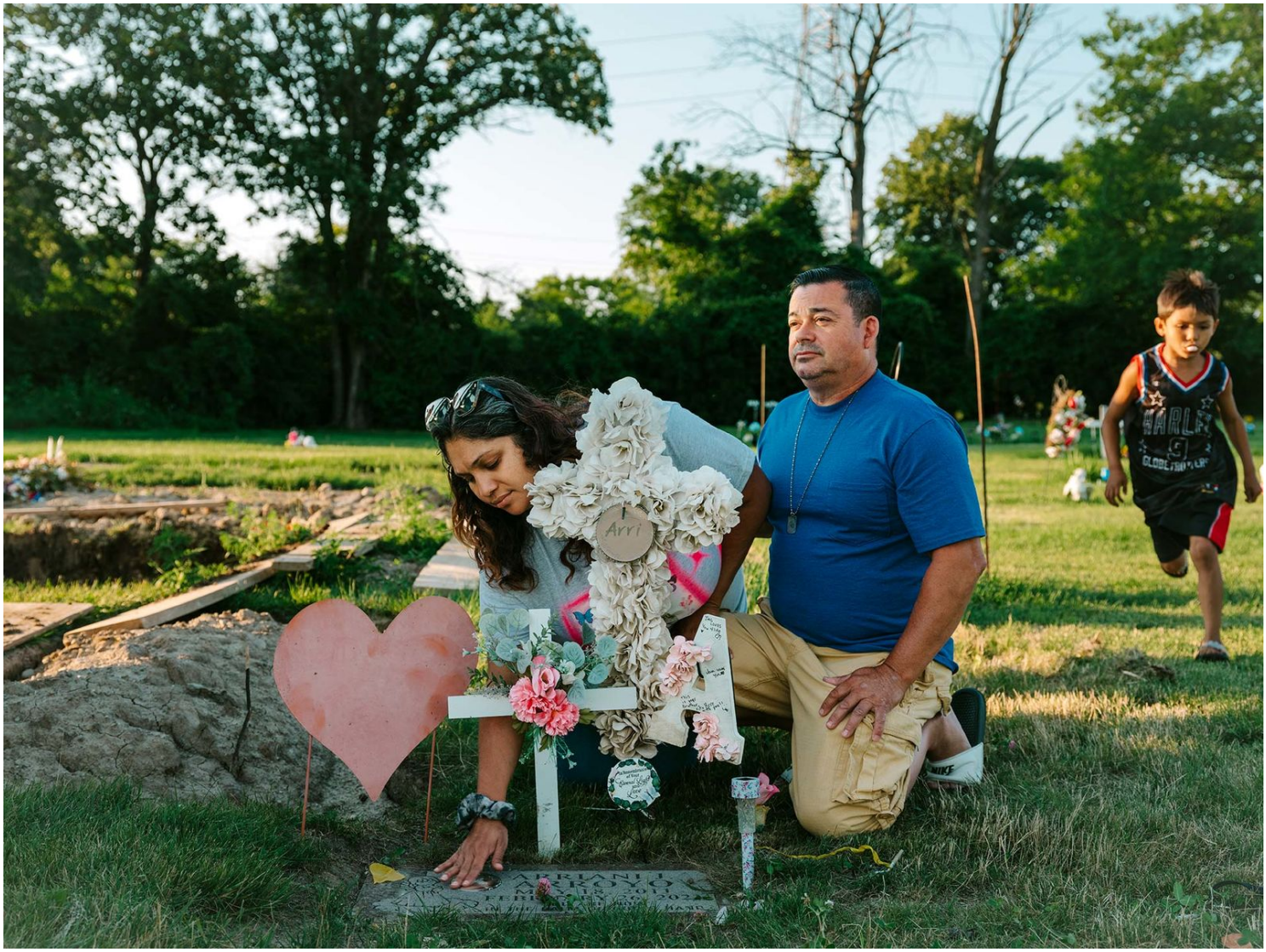
Arriani and her brother spent hours doing dancing trends and viral challenges. Some were innocent enough, such as holding water in your mouth until you start giggling or eating only red foods for 24 hours. They were playing together the night she died. "I've had people comment, 'Where were the

parents?'" her father, Eddie Arroyo, says. "Well, I was at home that same day, that same moment, and I didn't hear anything." His son came down to the basement, where he was cutting insulation, to tell him Arriani was tangled.

"I followed him up to see what was wrong, and that's where I found her," he says, pointing toward his son's bedroom. The dog leash she'd hanged herself with had been intended for a puppy the family was planning to buy. "She couldn't breathe, couldn't scream out," Eddie says.

Some parents would pack up and leave, haunted by the memory. The Arroyos chose to remain in the house where Arriani died because it's also where she lived. Her bejeweled Juicy Couture Ugg boots sit by the bed; her pink *Sleeping Beauty* sleep mask hangs from the bedpost. They'd wanted to bury her in the cemetery across the street, whose grounds are visible through her glittery curtains. But raising five kids on Eddie's truck-driver salary—Christal is a full-time pre-law student—they couldn't afford a plot. Instead, Arriani was buried a seven-minute drive down the road.

After the funeral, the Arroyos asked Arriani's friends what game she'd been playing when she died. That's when they first heard the words "blackout challenge."



The Arroyo family at Arriani's grave. *Photographer: Dave Kasnic for Bloomberg Businessweek*

They read the news reports as more kids kept dying. Joshua Haileyesus was found in Colorado two months later with a shoelace around his neck; his father, Zeryihun, said he'd died attempting TikTok's blackout challenge. Three more children died in June, also resulting in blackout challenge headlines: Nate Squires, 13, in Massachusetts; LaTerius Smith Jr., 9, in Tennessee; and James Boyd-Gergely, 14, in Australia. In July, Lalani Walton, 8, was found hanging in her bedroom, also in Tennessee. In September, Hayden Robert Craig, 10, was found hanging from a tree in his backyard in Georgia.

Police didn't publicly link any of these deaths to TikTok. Other fatalities may have gone unreported, according to Rogg, the Erik's Cause founder. "Unfortunately, many of these deaths are misclassified as suicide," she says. The only way to prove a child was participating in the challenge or to figure out which platform was involved is for officials to conduct a psychological autopsy—an investigation of the child's online network and friendship groups to reconstruct what they may have been thinking—or order a forensic analysis of their devices to determine what they'd been watching online.

Officers in Clarksville, Tennessee, where Lalani Walton died, did just that. According to a lawsuit her parents filed, police said the analysis of her phone showed she'd spent hours watching blackout challenge videos on TikTok on a road trip the day before her death. (A spokesman for the Clarksville Police Department declined to comment.) After Hayden Robert Craig's body was found in Georgia, a policeman noticed his iPad nearby, according to an incident report seen by *Businessweek*. It refreshed to show a TikTok of a black screen with a bloody knife emoji.

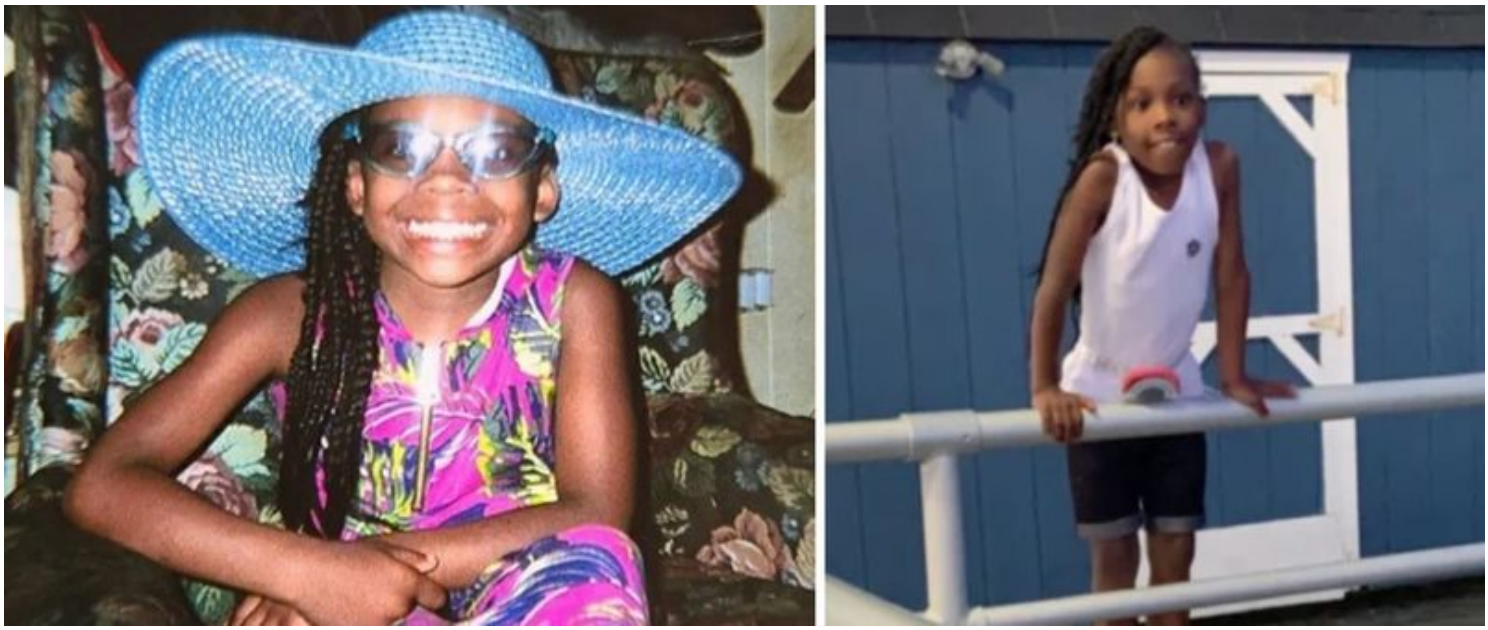
Members of TikTok's Asia-Pacific safety advisory council, which consists of outside experts, raised concerns about the blackout challenge being linked to deaths in their region, too. Linh Phuong Nguyen, a Vietnamese expert in child online safety who's on the council, says several kids died attempting the challenge in Cambodia, the Philippines and Vietnam. One, from Ho Chi Minh City, was only 5. She used a piece of chiffon to hang herself from her bunk bed after viewing the challenge on YouTube. (A spokeswoman for YouTube says the platform removes blackout challenge videos and bans "any activity that prevents breathing or can lead to suffocation.")

Some on the council suggested to TikTok and other social media platforms that they build an alliance to stop dangerous challenges from spreading, people familiar with the private meetings say. But TikTok had few friends in Silicon Valley. According to the *Washington Post*, one potential ally, Meta Platforms Inc., had hired opposition researchers in 2021 to plant news stories about how TikTok was spreading dangerous challenges that had actually originated on Facebook. Meta didn't deny the smear campaign to turn the public against its biggest rival, whose format and algorithm it was simultaneously working to copy.

Cullinane, the TikTok spokeswoman, says the company takes "each and every report of an alleged dangerous act or challenge incredibly seriously." After each death and headline, TikTok assigned a task force to investigate. But insiders say these inquiries were designed to deflect blame. Every time a blackout challenge headline was connected to TikTok, the team assigned to the case found evidence that the children who died were using multiple social media platforms and concluded there was no way to prove which app directed them to the challenge. In some cases the team couldn't confirm the existence of a TikTok account at all.

After Antonella Sicomero's death in January 2021 and the ban on unverified TikTok accounts in Italy, the company agreed to reverify the ages of the country's 12.5 million users. It wound up deleting half a million accounts. TikTok also told its regional managers to keep an eye out for any blackout challenge content in their markets, removed videos promoting such content and ended users' ability to search for it in the app. TikTok declined to reveal how many videos were removed, but Cullinane says the company has never found any evidence of the challenge trending on the platform. She points to a survey it commissioned that year showing that only 0.3% of teens said they'd taken part in a challenge they considered "really dangerous." The global survey also found that 2% said they'd participated in challenges they deemed "risky and dangerous."

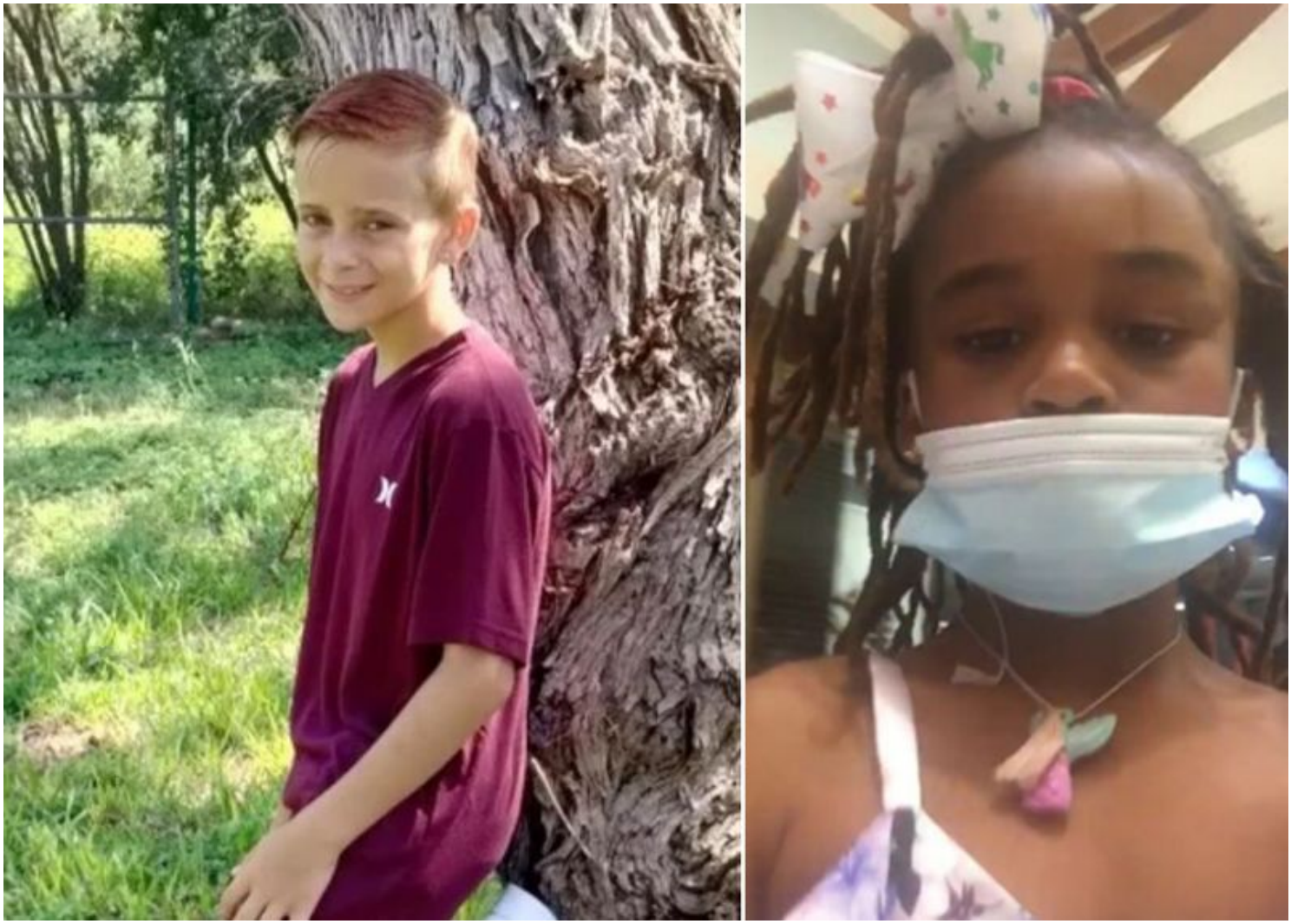
Despite the measures TikTok has taken, the deaths keep happening. Last December, 10-year-old Nylah Anderson hanged herself with the strap of a handbag at home in a suburb of Philadelphia. After her death, her mother, Tawainna Anderson, found cellphone videos of Nylah and her cousin playing an asphyxiation game and reported it to the police.



Nylah Anderson *Source: US District Court for the Eastern District of Pennsylvania*

An officer wrote in an incident report that the cousin told him "it was a strangulation challenge they saw on TikTok and YouTube." According to a wrongful-death lawsuit against TikTok and ByteDance that Nylah's mother filed in federal court in Pennsylvania in May, a forensic analysis of Nylah's phone showed TikTok had sent her a video that encouraged her to place a purse on a coat hanger in a closet, position her head between the bag and shoulder strap and suspend herself until she blacked out. The company "unquestionably knew that the deadly blackout challenge was spreading through their app and that their algorithm was specifically feeding the blackout challenge to children, including those who had died," the complaint said.

In July the Social Media Victims Law Center in Seattle filed a second suit, on behalf of the parents of Arriani Arroyo and Lalani Walton. The center, founded in 2021 by Matthew Bergman, a product liability lawyer, has brought more than 40 lawsuits against TikTok, Meta, Snapchat and YouTube alleging mental health harms, social media addiction and wrongful death. Bergman, who spent his career suing asbestos manufacturers, says he turned his attention to social media last year when he heard about Meta whistleblower Frances Haugen leaking documents describing the ways Facebook was harming teens. These platforms "are experimenting with our children and putting profits over people," Bergman says.



Zaiden Baldwin (left) and Lalani Walton. *Courtesy: Social Media Victims Law Center*

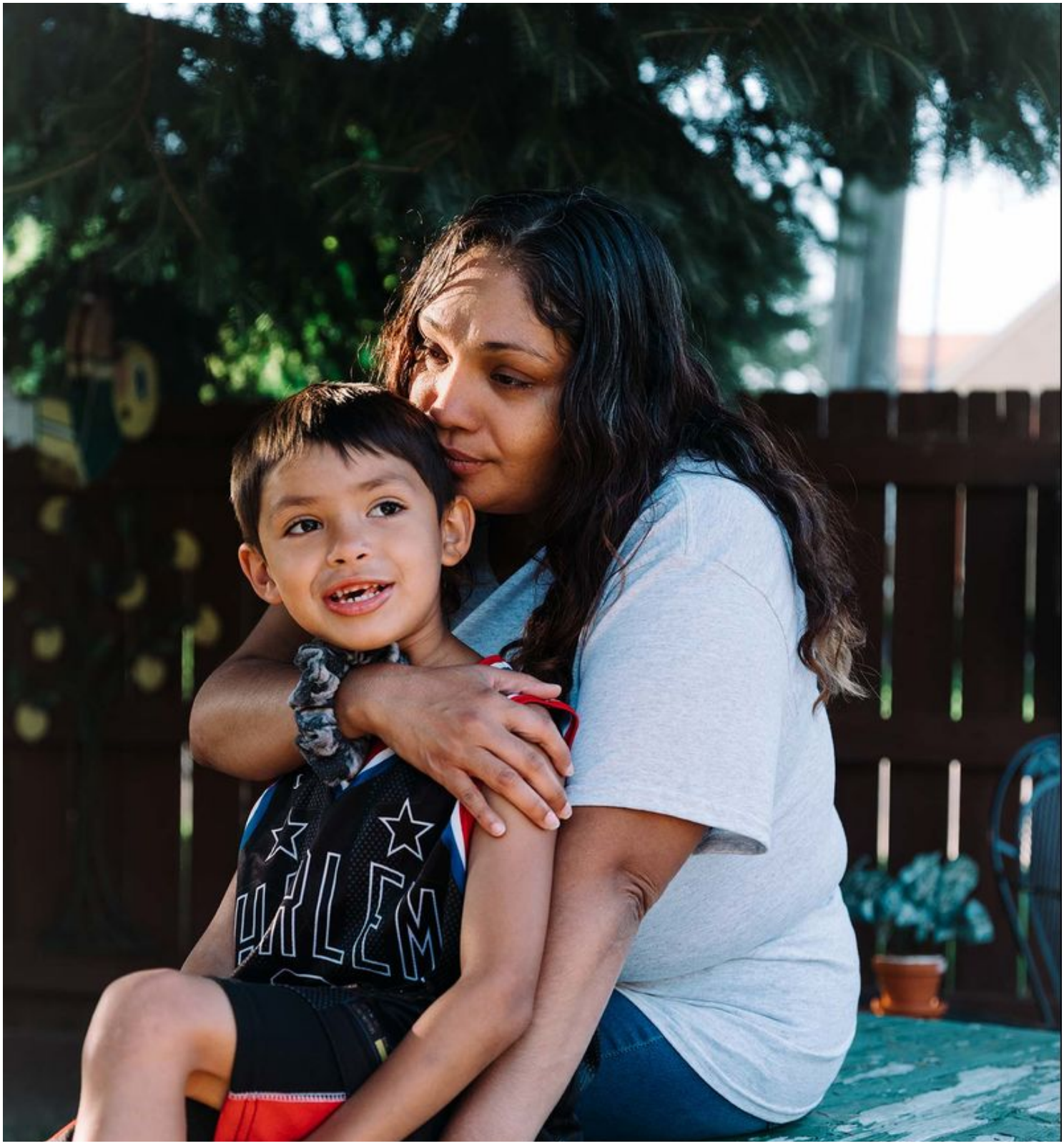
The lawsuit filed by the Arroyo and Walton families alleges that TikTok is liable for their deaths because its algorithm recommended the challenge to the girls and was unable to stop it from spreading. In August the case was amended to add another plaintiff, the grandmother and legal guardian of Zaiden Baldwin, 11, who was found hanging behind a shed in New Mexico earlier in the summer. He'd told his older sister he'd seen blackout challenge videos on TikTok and wanted to try it, the complaint says. The case is pending, and TikTok hasn't filed a response.

"The last thing in the world these companies want to do is stand up in front of a jury and explain to them why their profits were more important than life," Bergman says. "They are going to employ every legal artifice they possibly can to avoid that reckoning, and we're going to fight as hard as we can to hold them accountable." In September a third lawsuit against TikTok was filed after a 13-year-old boy died attempting the blackout challenge, also in New Mexico.

Cullinane, the TikTok spokeswoman, says that her sympathies are with the families but that she can't comment on pending litigation. In July the company filed a motion to dismiss the Nylah Anderson lawsuit, claiming it has "no legal duty of care to protect against third-party depictions of dangerous activity." TikTok contended in the motion that it's shielded by Section 230 of the Communications

Decency Act, which says tech platforms can't be held liable for the content published on their sites. In October a judge dismissed the case, agreeing that TikTok couldn't be sued even if it had recommended the challenge to Nylah. Her mother's lawyers have filed an appeal.

The Supreme Court may have something to say about the matter. In October it agreed to hear an unrelated case about the scope of Section 230's immunity provision. Its decision could allow the blackout challenge lawsuits to proceed—or wipe them out.



Christal Arroyo and her son outside their home. *Photographer: David Kasnic for Bloomberg Businessweek*

Social media platforms are under increasing pressure from lawmakers to do more to protect children. In September, California Governor Gavin Newsom signed an online privacy law, modeled after the UK's age-appropriate design code, that forces tech companies to prioritize children's best interests over commercial ones. The California code, set to take effect in 2024, requires companies to estimate the age of a child user "with a reasonable level of certainty." A federal bill, which also has a section on age verification, advanced out of a Senate panel with bipartisan support this summer. That bill, the Kids Online Safety Act, requires the National Institute of Standards and Technology to spend a year studying how platforms can accurately verify age while safeguarding minors' privacy.

That's always been the balancing act for tech companies: safety versus privacy. If they use facial-recognition technology or ask users for government-issued identification, such as a driver's license or passport, they're criticized for breaching privacy rights and hoarding personal data. If all they do is ask users to enter a date of birth, they're attacked for not doing enough to protect kids who lie about their age. And any friction introduced by age verification is antithetical to the message contained in a TikTok internal document reviewed by *Businessweek*: "Our ultimate goal is to increase daily active users."

Looming regulatory pressure has forced the age-assurance issue to the fore, leading some of the biggest social media platforms to hire third-party age-estimation companies in the past 18 months. Unlike facial-recognition technology, which seeks to identify a person and depends on storing millions of images, age-estimation software doesn't retain, share or reuse data, according to Julie Dawson, chief policy and regulatory officer at digital-identity company Yoti Ltd. Yoti is based in London and works with Meta-owned Instagram; its software has studied hundreds of thousands of faces with known ages, and it's programmed to break an image into pixels, analyze the patterns and estimate how old the person is.

"They have these solutions ready to go. They could implement them almost immediately"

Last year, Yoti demonstrated the technology to TikTok in private meetings, Dawson says, adding, "As of now, they haven't decided to do it." TikTok has also met with Hive, a San Francisco company working with Twitter Inc. and Reddit, according to three people with knowledge of the matter. Those discussions, which began in early 2021, also haven't gone anyplace.

Dawson says TikTok was "quite worried" about the optics of allowing a third-party software provider to use its biometric data. That February, ByteDance had agreed to pay $92 million to settle a class-action lawsuit brought in Illinois by users who accused the company of using facial images without their consent for targeted advertising. TikTok disputed the allegations, but four months later it altered its privacy policy to grant the app express permission to collect "faceprints and voiceprints" of its users. In October its executives were grilled in Congress about how they planned to use that data. They avoided the question but said TikTok collects less data than other social media companies.

The problem, says Michael Rich, a pediatrician and director of the Digital Wellness Lab at Boston Children's Hospital, is that "these companies don't see their users as customers to be served, they see them as a product they are selling." Platforms don't seriously enforce age restrictions because it's not in their best interests to do so, he points out. "It's no news to anybody that the companies go through the motions of age-gating but are not enforcing it super-hard."

Marc Berkman, CEO of the Organization for Social Media Safety, a consumer-protection group, says TikTok is harming children by not using third-party age-estimation software. "The protections they have are not adequate," says Berkman, whose group offers educational advice on how to keep kids safe online. "They have these solutions ready to go. They could implement them almost immediately. They choose not to. That's serving a business interest, not a safety interest."

Two more deaths took place in August. Archie Battersbee, a 12-year-old in Essex, England, passed away after spending months on life support. He'd been found unconscious with a ligature around his neck. His mother told reporters he'd been trying the blackout challenge, though a coroner found no evidence to back that up. Also in August, Leon Brown, 14, was found unresponsive in his Scotland home. Local news reports said his friends had told his mother Leon saw the blackout challenge on TikTok and was trying it with them on a video call.

"My question to TikTok," says Christal Arroyo, "is what are you going to do to change the platform? Because at this point it's not safe for anyone, and it's definitely not safe for any child." Arroyo says her happiness died with Arriani. "A social media app," she muses in a bewildered tone. "I never thought in my mind that could ever result in me losing my daughter."

In a video taken with a mobile phone a few weeks before she died, Arriani sits in the back seat of her parents' car, wearing a ruffly pink top with blue flowers. Her dark hair is pulled back, with flyaway hairs curling above her ears. She's holding the phone with one hand, the camera so close you can see she recently lost one of her baby teeth. "Don't care about what other people say about you," Arriani

says. “Be confident and be passionable because everyone in this world is beautiful.” She blows the camera a kiss and makes a peace sign. “So, bye,” she says, smiling.

Businessweek sent the video to Hive, one of the software companies that met with TikTok. Its machine-learning model broke down the clip into frames and scanned each image to arrive at an age estimate for Arriani. “The technology to do this is definitely there,” says CEO Kevin Guo. “But maybe these platforms prefer not to understand the scope of this issue.”

Hive’s model took three seconds to estimate that Arriani was 10. She died three months shy of her 10th birthday.