What the evidence says about high-mount brake lights

🚙 Effectiveness in passenger vehicles

When the **third brake light (CHMSL)** was required on passenger cars (starting in 1986) and light trucks in the U.S., research showed:

- A reduction in **rear-impact crashes of about ~4.3% long-term** after widespread adoption, as drivers adjusted to the lights.
- That equated to tens of thousands of crashes and injuries avoided each year for passenger cars and light trucks.

This provides a *reasonable basis* for estimating what similar lighting could do for heavy trucks — even though **no large, peer-reviewed study has yet quantified fatalities saved specifically for semi-trailers**.

🚚 Applying CHMSL effectiveness to semi-trucks

🛑 Semi-truck crash magnitude

In the U.S., large trucks:

- Were involved in **~4,300+ fatal crashes in 2023 alone**. IIHS
- A substantial share of those involve vehicles being *rear-ended* or striking the vehicle ahead.

Heavy-truck rear-end collisions have been studied as a safety priority by FMCSA and NHTSA because of their frequency and severity. NHTSA

📉 What a 4.3% reduction *might* look like

If we *conservatively* assume that requiring a high-mount center brake light on all semi-tractors and trailers would:

- **Reduce rear-impact crashes involving semis by ~4%** (comparable to passenger car results) — and
- If roughly **30–40%** of heavy-truck crashes are rear-end or involve braking response issues, as some data suggest, then:

Then a rough projected estimate might be:

Metric	Estimate (U.S. per year)
Total fatal crashes involving large trucks	~4,350+ IIHS
Crashes where poor visibility/brake recognition is a factor	~30–40% (industry sources) NHTSA
Potential reduction with CHMSL-type device	~4%
Estimated fatalities potentially reduced	~50–70 deaths/year (ballpark)

⚠️ Important caveats:

- This is extrapolation based on *passenger vehicle* data applied to trucks — the real effect could be higher or lower depending on crash types, lighting design, and driver attention. Regulations.gov
- Heavy trucks already have brake lights; the *center* high-mount position enhances conspicuity further — research suggests CHMSLs help because they are in the direct line of sight and signal braking sooner/more clearly

So a *conservative estimate* suggests **dozens of lives per year could be saved** if all semis had properly designed high-mount brake lights — and likely many more injuries prevented as well.

📌 Additional context: enhanced brake-lighting systems

Beyond simply adding a center brake light:

- Fleets using **brake-activated pulsating auxiliary lights** (e.g., higher intensity LED stop lamps) have reported **33%+ reductions in rear-end collisions and large reductions in injury crashes** in real-world operations.
- This suggests that beyond the modest 4% improvement from traditional CHMSLs, *enhanced or dynamic lighting* could produce larger crash reductions if standardized and widely adopted — potentially **saving even more lives** than a static brake light requirement alone.

🧠 Bottom line

- Requiring a **high-mount third brake light** on semi-tractors and trailers could plausibly save **tens of lives per year** (and prevent many more injuries), based on historical effectiveness in cars/trucks and heavy-truck crash data.
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- The true benefit might be *greater* if the lighting is optimized (LED, dynamic, pulsing) rather than a static CHMSL.
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- **Important nuance:**
  Dynamic brake lights are *already legal* under FMCSA exemptions, which strongly supports their safety case — but they are not yet universally codified.

- While a high-mount center brake light alone could save dozens of lives annually, evidence and human-factors research suggest that dynamic or pulsing brake lights could prevent **two to three times more rear-end fatalities**, making them one of the most cost-effective safety upgrades available for heavy trucks today.

  NOTE: In addition to lives saved by adding high-mount 3rd brakes lights to semi-trucks, thousands of injuries could be avoided, alone millions of dollars in property annually.
