



U.S. Department  
of Transportation  
**National  
Highway  
Traffic Safety  
Administration**

**ODI RESUME**

**Investigation:** PE24015  
**Prompted By:** SGO Review  
**Date Opened:** 05/10/2024      **Date:** 03/31/2025  
**Closed:**  
**Investigator:** Paul Parker      **Reviewer:** Scott Simmons  
**Approver:** Tanya Topka  
**Subject:** Rear-end Collisions Involving Zoox Vehicles

**MANUFACTURER & PRODUCT INFORMATION**

**Manufacturer:** Zoox, Inc.  
**Products:** Zoox automated vehicle (AV) and Zoox Automated Driving System  
**Population:** 258  
**Problem Description:** Subject vehicle unexpected sudden braking leads to rear-end collisions.

**FAILURE REPORT SUMMARY**

	ODI	Manufacturer	EWR D&I	Other	Total	EWR Field Reports
<b>All Incidents:</b>	0	4	0	3	4*	0
<b>Crashes/Fires:</b>	0	4	0	3	4*	0
<b>Injury Incidents:</b>	0	3	0	3	3	0
<b>Number of Injuries:</b>	0	3	0	3	3*	0
<b>Fatality Incidents:</b>	0	0	0	0	0	0

**Description of Other:**

Reports of collisions involving the subject vehicles submitted under SGO 2021-01

\*Total eliminates duplicates received by the manufacturer

**ACTION/SUMMARY INFORMATION**

**Action:** This Preliminary Evaluation (PE) is closed with recall 25E019.

**Summary:**

On May 10, 2024, the Office of Defects Investigation (ODI) opened a Preliminary Evaluation (PE24015) to assess reports of sudden unexpected braking in Zoox vehicles, leading to rear-end

collisions, as well as to evaluate the performance of the Zoox Automated Driving System in crosswalks around vulnerable road users and in other similar rear-end collision scenarios.

These unexpected braking events can increase the risk of a collision. To assess these risks, ODI collected information from Zoox as part of this investigation. In response to ODI's Request for Information, Zoox provided information describing hard braking events commanded by the ADS. These hard braking events were identified by certain thresholds, including rate of deceleration. ODI analyzed the hard braking events commanded by the Zoox ADS and determined that Zoox ADS-equipped vehicles contributed to 4 collisions. Each of these collisions involved a vulnerable road user, with three of the incidents resulting in injury. Three of the collisions were reported under Standing General Order 2021-01 (SGO), while the other collision was not reportable under the SGO.

On March 13, 2025, Zoox filed a safety recall (NHTSA Recall No. 25E019) stating that in specific circumstances "the Zoox ADS software may have reacted over-cautiously and braked unnecessarily hard" and that "the Zoox ADS software may have incorrectly anticipated a collision and braked unnecessarily hard." These behaviors could lead to increased risk of a rear-end collision caused by unnecessary hard braking. The Zoox recall report indicated that Zoox's ADS has been remedied through a software update that addresses the described defects. As of November 7, 2024, the updated software was released to all impacted Zoox vehicles.

In view of the recall action taken by Zoox and ODI's analysis of the available data, including data presented by Zoox demonstrating a resolution of these hard braking incidents after the software update, ODI is closing this Preliminary Evaluation. NHTSA reserves the right to take additional action if warranted by new circumstances.

To review the SGO reports cited above, go to [NHTSA.gov/laws-regulations/standing-general-order-crash-reporting](https://www.nhtsa.gov/laws-regulations/standing-general-order-crash-reporting). The SGO report ID numbers are provided below:

30610-7578   30610-7589   30610-4810