



INSURANCE INSTITUTE  
FOR HIGHWAY SAFETY

HIGHWAY LOSS  
DATA INSTITUTE

[www.iihs.org](http://www.iihs.org)

# Initial Evaluation of Crash Avoidance Technologies Using Insurance Data

TRB Annual Meeting  
Washington, DC • January 14, 2013

Matthew Moore, Vice President, HLDI

## The Insurance Institute for Highway Safety,

founded in 1959, is an independent, nonprofit, scientific, and educational organization dedicated to reducing the losses — deaths, injuries, and property damage — from crashes on the nation's highways.

## The Highway Loss Data Institute,

founded in 1972, shares and supports this mission through scientific studies of insurance data representing the human and economic losses resulting from the ownership and operation of different types of vehicles and by publishing insurance loss results by vehicle make and model.

Both organizations are wholly supported by auto insurers.



# Highway Loss Data Institute

# HLDI data providers have 80% share of U.S. auto insurance market

- AAA Northern California, Nevada and Utah
- Allstate
- American Family
- Amica
- ANPAC
- Auto Club Group
- Automobile Insurers Bureau of Mass.
- Chubb
- COUNTRY
- Erie
- Farm Bureau Financial Services (Iowa Farm Bureau)
- Farmers
- Foremost
- GEICO
- GMAC
- The Hartford
- High Point
- Kentucky Farm Bureau
- Liberty Mutual
- MetLife
- Nationwide
- PEMCO
- Progressive
- Rockingham
- Safeco
- Secura Insurance
- State Farm
- Tennessee Farm Bureau
- Travelers
- Unitrin
- USAA

# Insurance coverages

- Collision
- Physical damage liability
- Bodily injury liability
- Medical payments
- Personal injury protection

# Insurance measures

- Exposure
  - Expressed in insured vehicle years
  - One insured vehicle year represents 1 vehicle insured for 1 year or 2 vehicles insured for 6 months
- Claim frequency
  - Calculated by dividing claims by exposure
  - Expressed as the number of claims per selected number of insured vehicle years (exposure)
- Claim severity
  - Represents the average cost per claim
  - Calculated by dividing dollars paid for all claims by the claim count
- Overall losses
  - Represents the average cost per insured vehicle (year)
  - Calculated by dividing total dollars paid for claims by exposure



# Evaluation of crash avoidance technologies

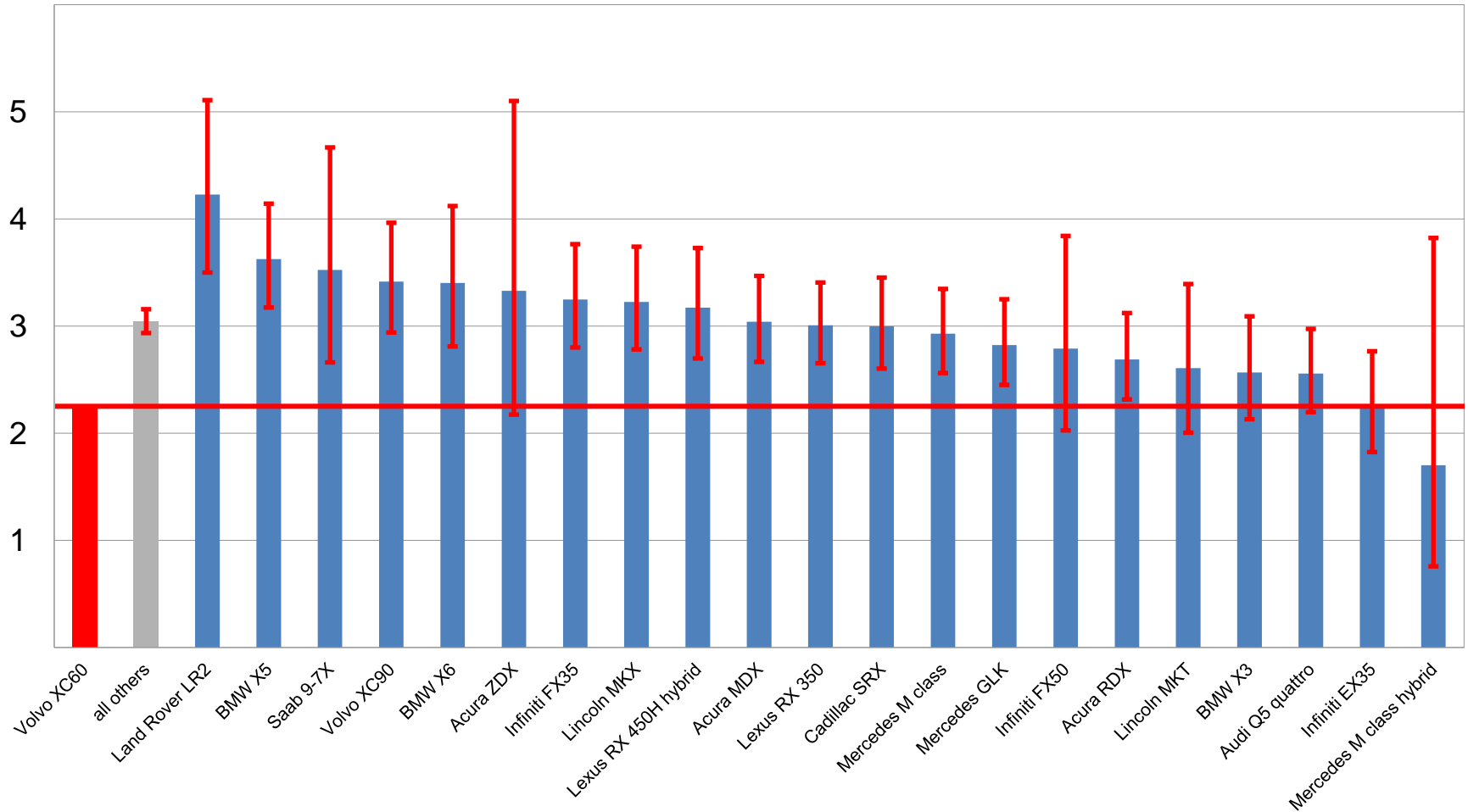


# Volvo City Safety



# Property damage liability claim frequencies for 2010 Volvo XC60

With City Safety vs. other 2009-10 midsize luxury SUVs



# Early information about new technology

Example of Volvo City Safety loss reduction benefits (HLDI)

<b>vs. other midsize luxury SUVs</b>	claim frequency			claim severity			overall losses		
property damage liability	-29.3%	<b>-26.6%</b>	-23.9%	\$174	<b>\$270</b>	\$362	-\$21	<b>-\$166</b>	-\$125
bodily injury	-58.9%	<b>-51.1%</b>	-41.8%						
collision	-23.8%	<b>-22.0%</b>	-20.1%	-\$645	<b>-\$517</b>	-\$392	-\$109	<b>-\$98</b>	-\$86

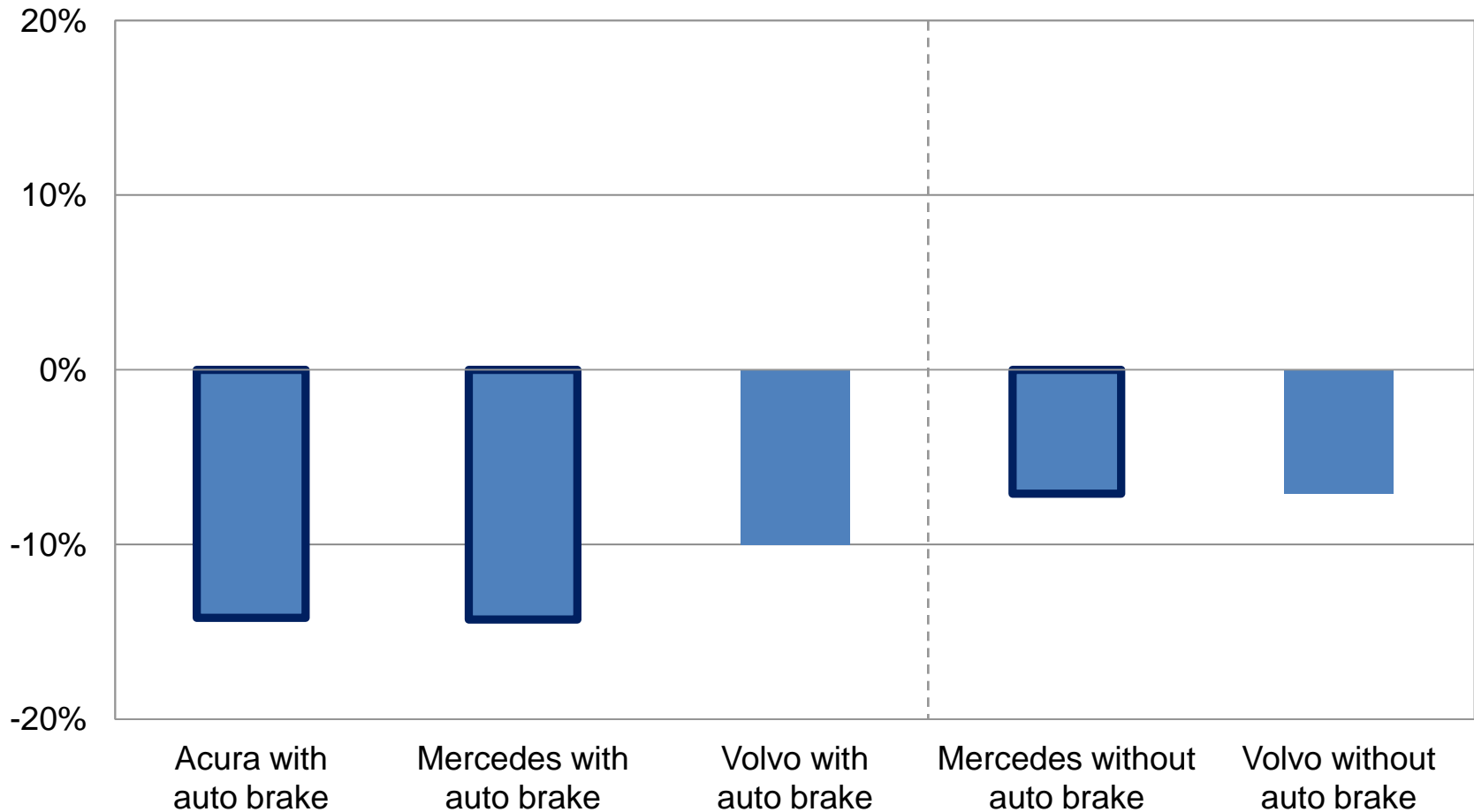
<b>vs. other Volvos</b>	claim frequency			claim severity			overall losses		
property damage liability	-24.5%	<b>-19.2%</b>	-13.7%	\$488	<b>\$646</b>	\$794	-\$5	<b>\$2</b>	\$7
bodily injury	-62.3%	<b>-49.2%</b>	-31.4%						
collision	-20.2%	<b>-16.7%</b>	-13.0%	-\$362	<b>-\$147</b>	\$58	-\$72	<b>-\$53</b>	-\$36



# Forward collision warning and mitigation systems

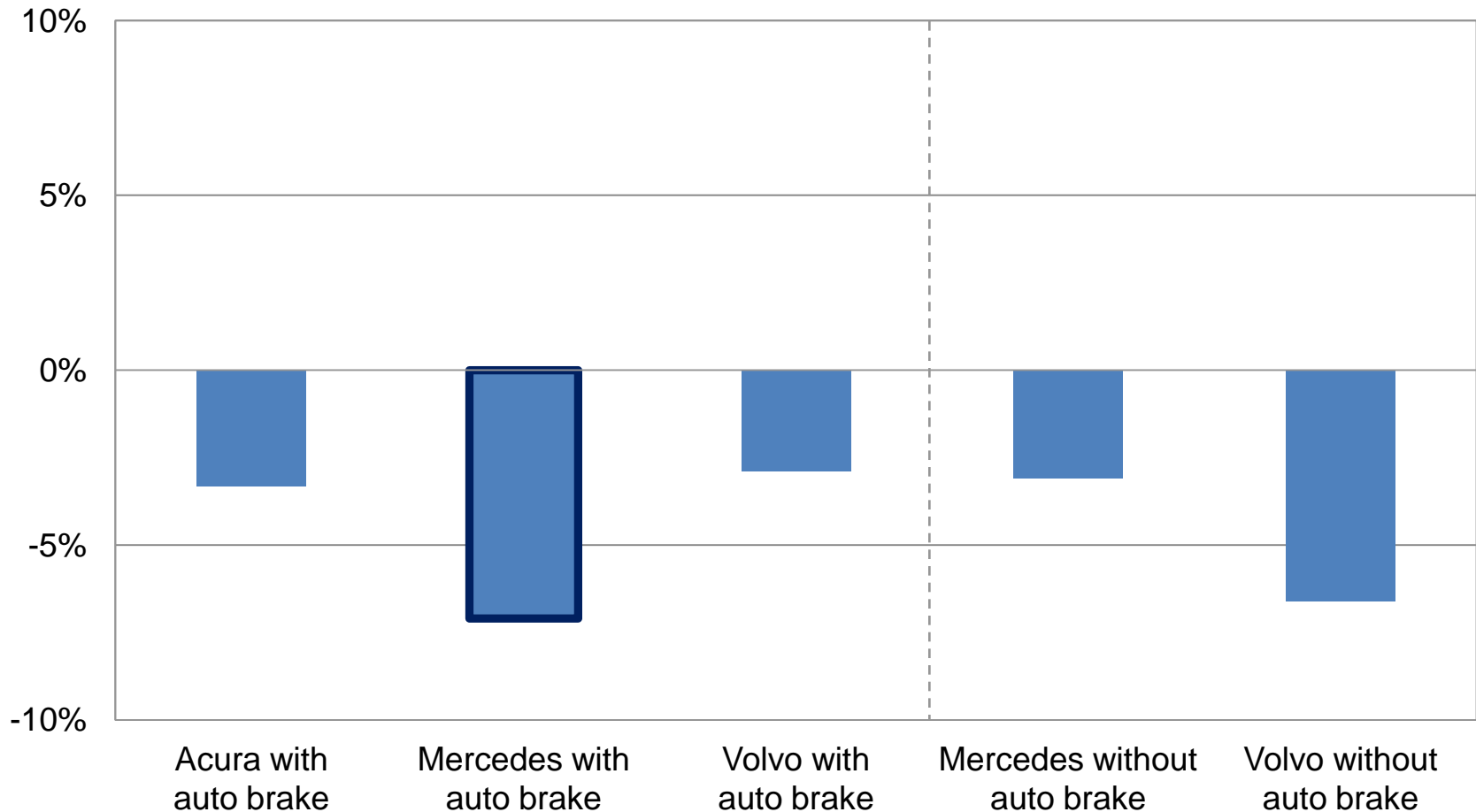
# Forward collision warning with and without autonomous braking

Property damage liability claim frequency by manufacturer



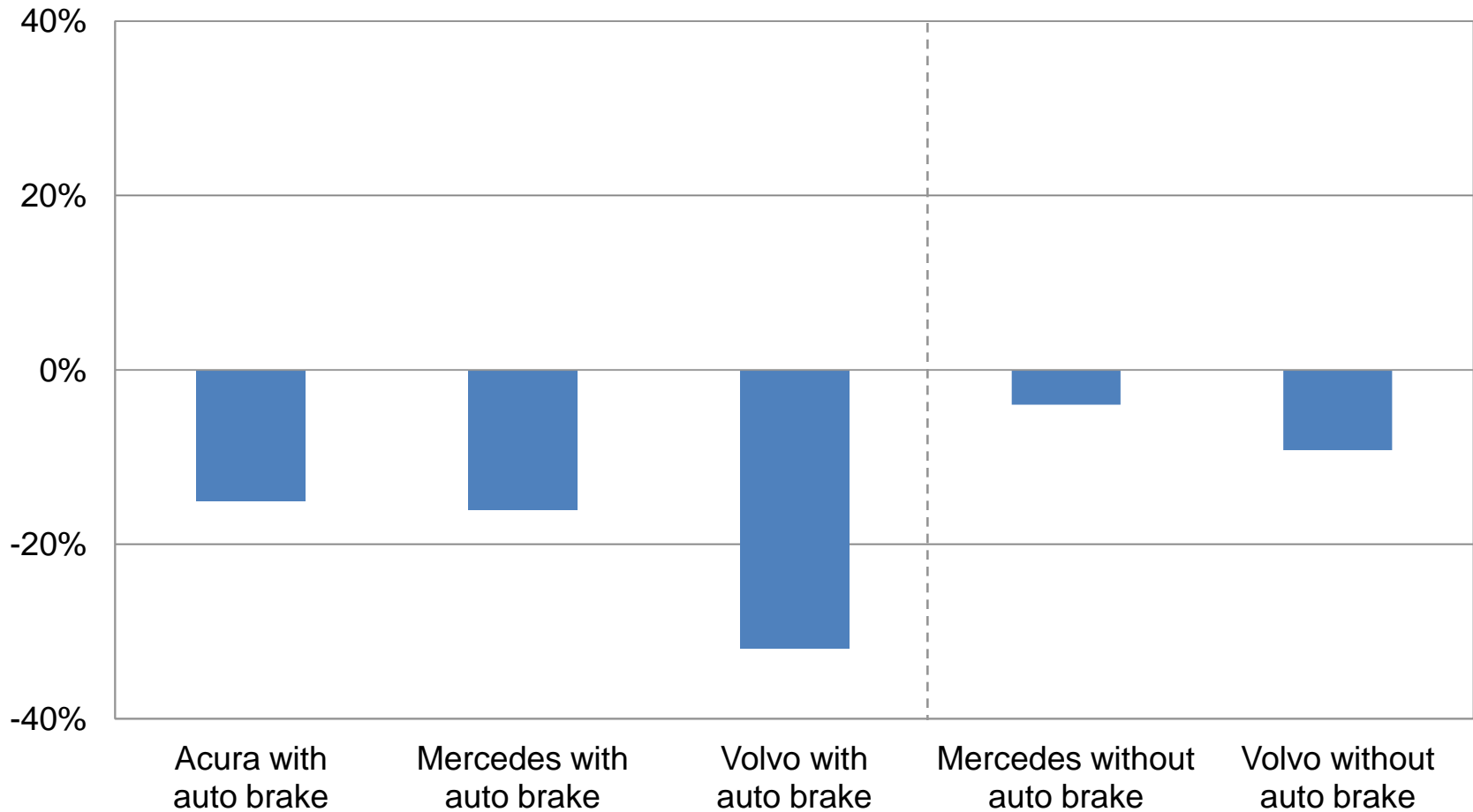
# Forward collision warning with and without autonomous braking

Collision claim frequency by manufacturer



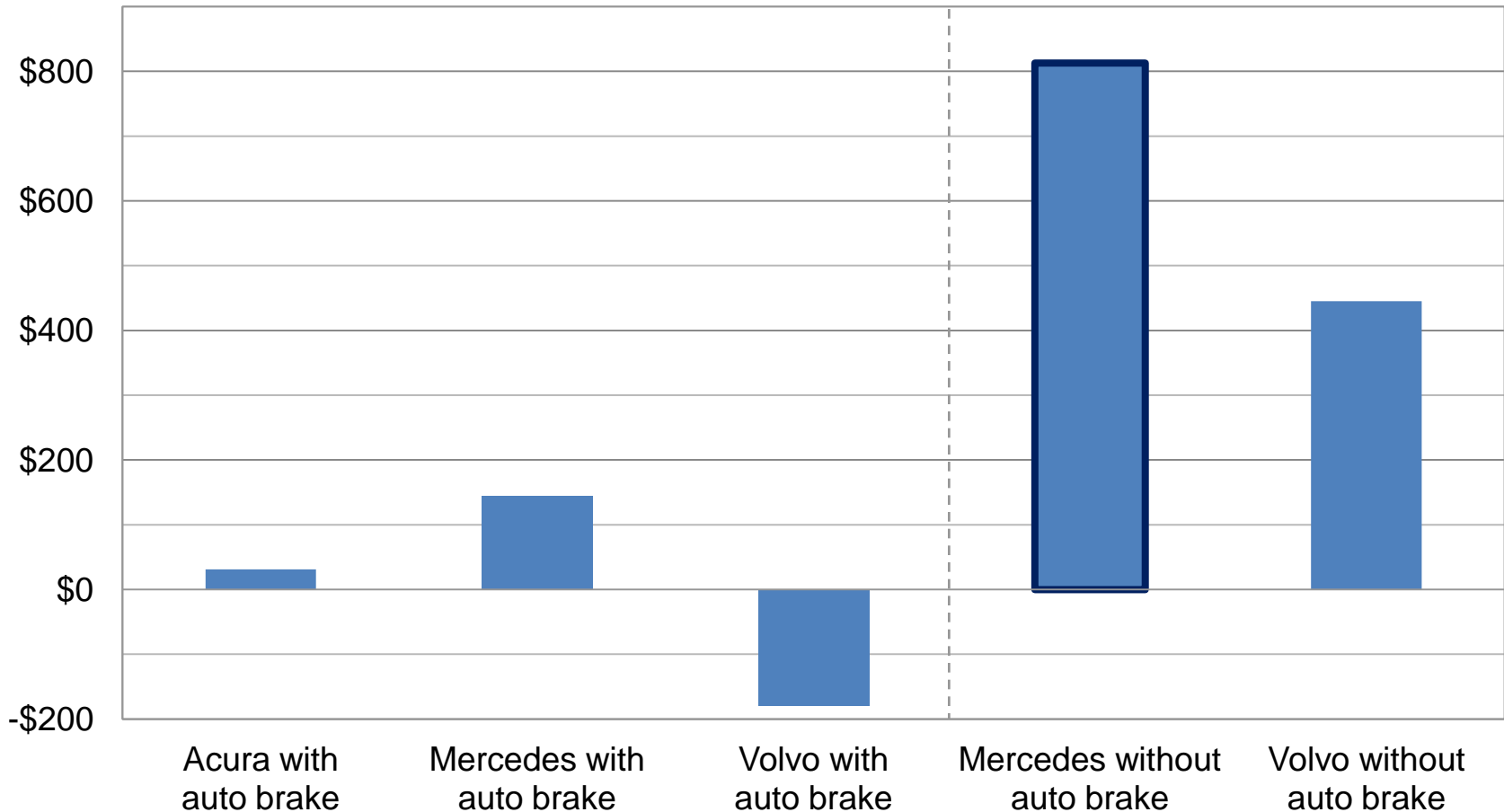
# Forward collision warning with and without autonomous braking

Bodily injury claim frequency by manufacturer



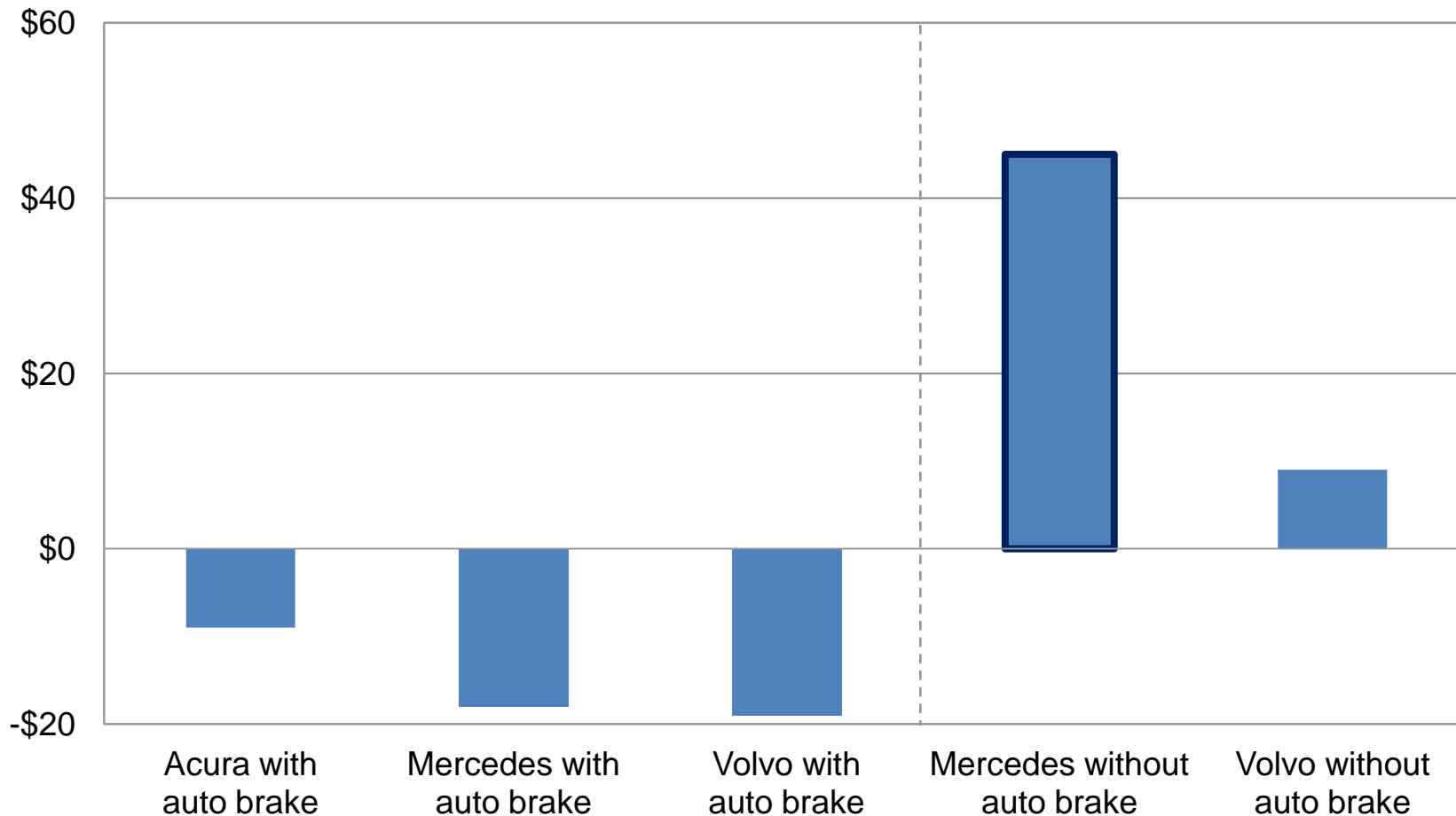
# Forward collision warning with and without autonomous braking

Collision claim severity by manufacturer



# Forward collision warning with and without autonomous braking

Collision claim losses per insured vehicle year by manufacturer



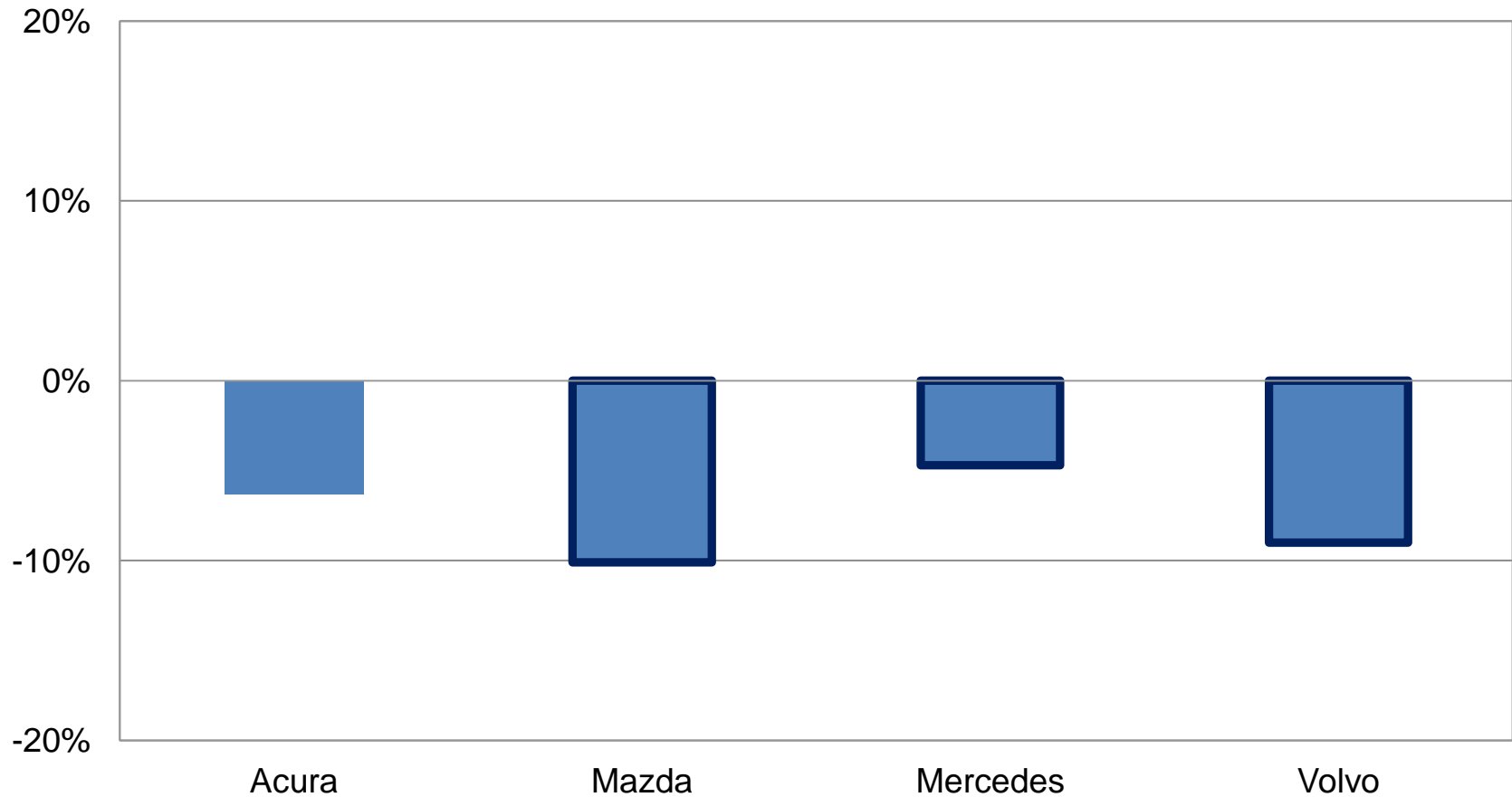




# Adaptive headlights

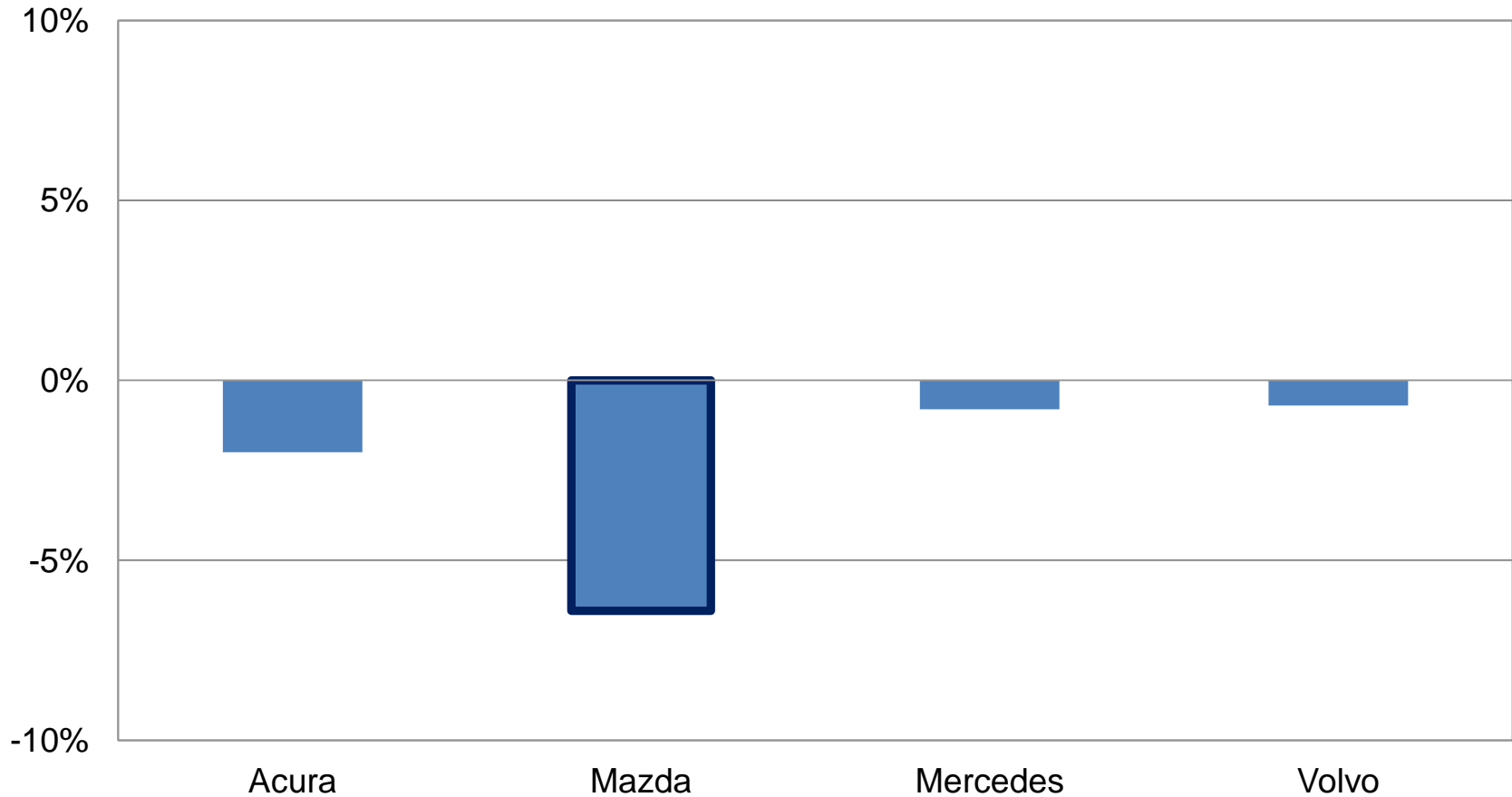
# Adaptive headlights

Property damage liability claim frequency by manufacturer



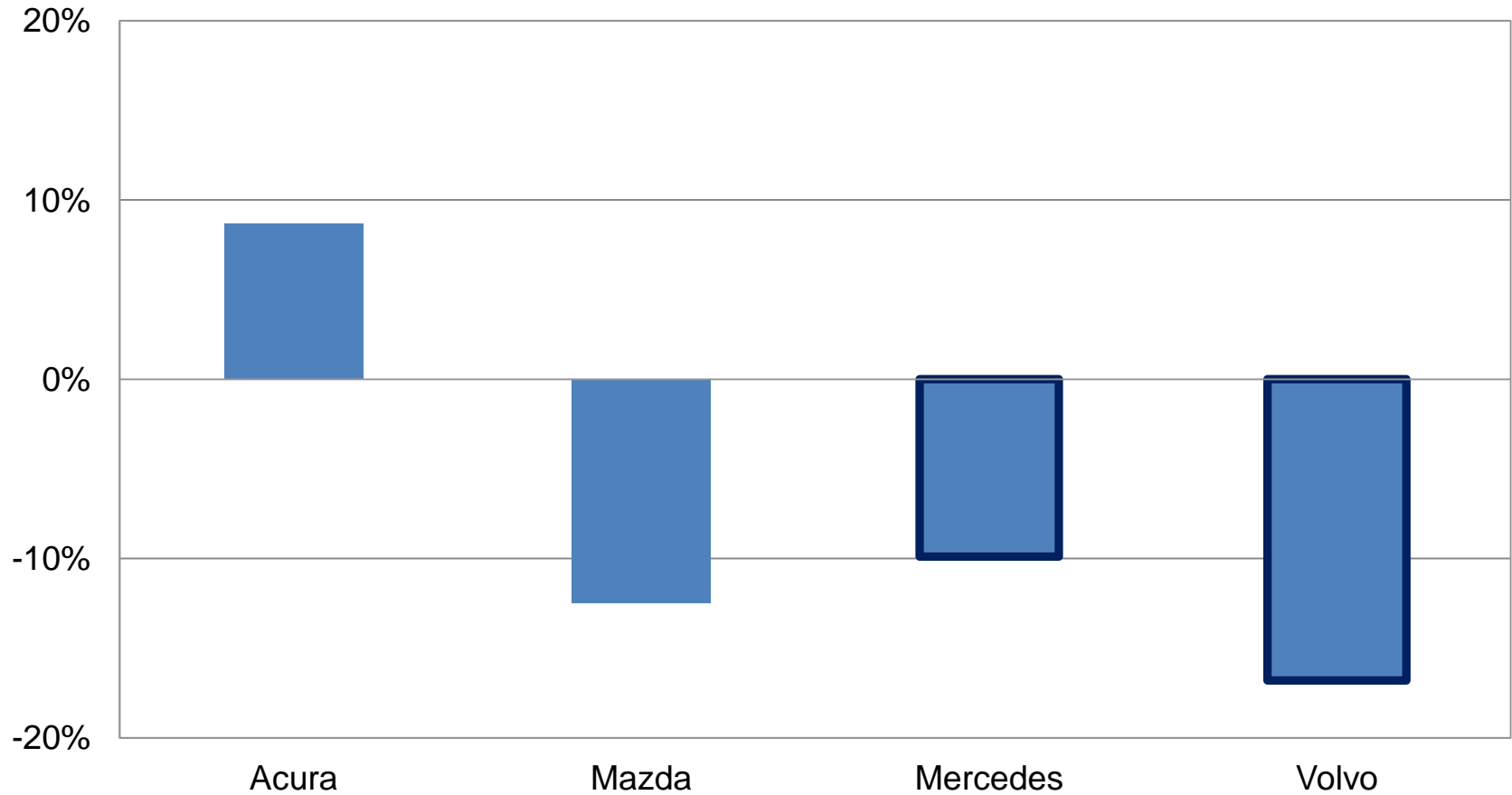
# Adaptive headlights

Collision claim frequency by manufacturer



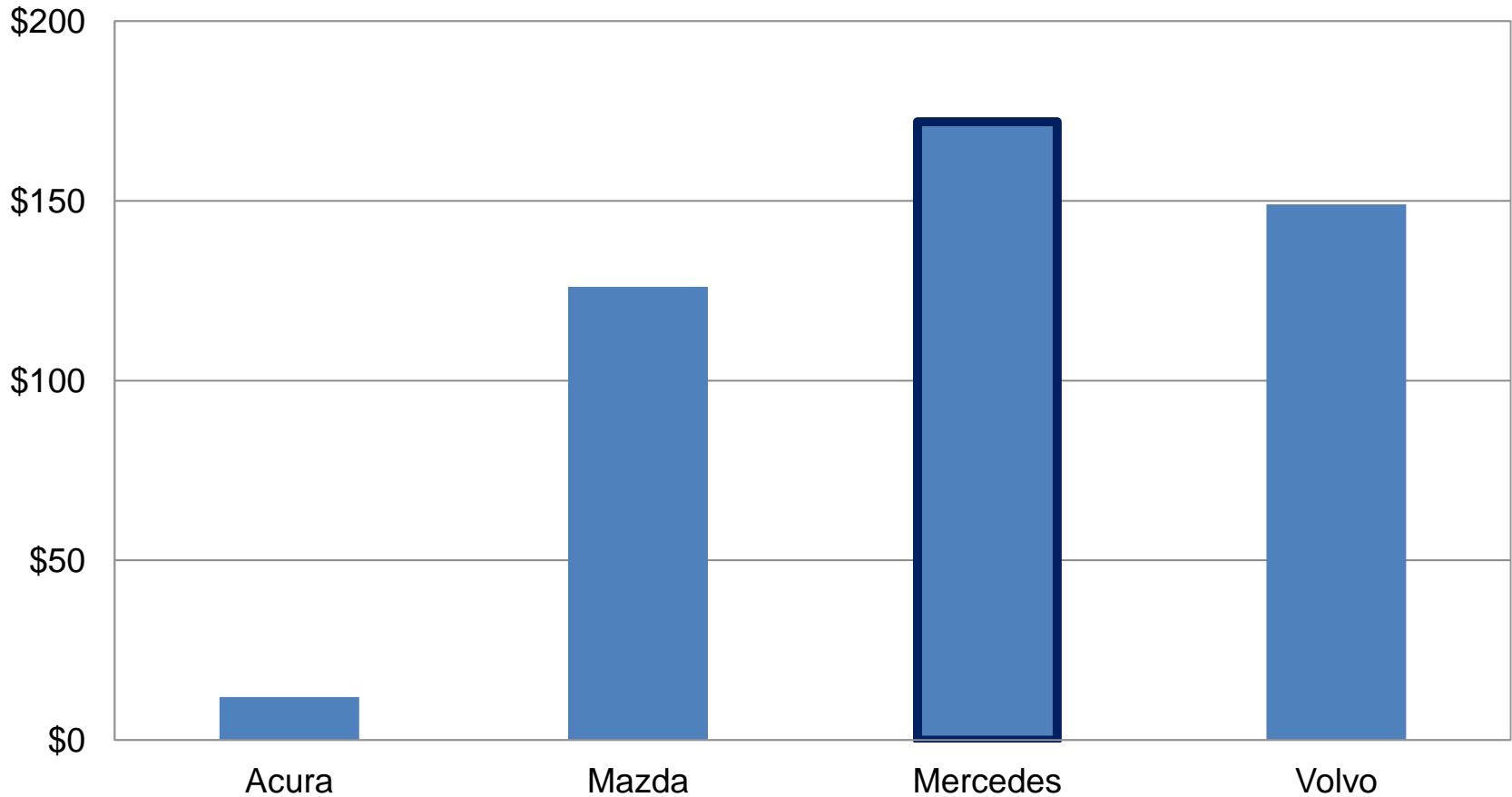
# Adaptive headlights

Bodily injury claim frequency by manufacturer



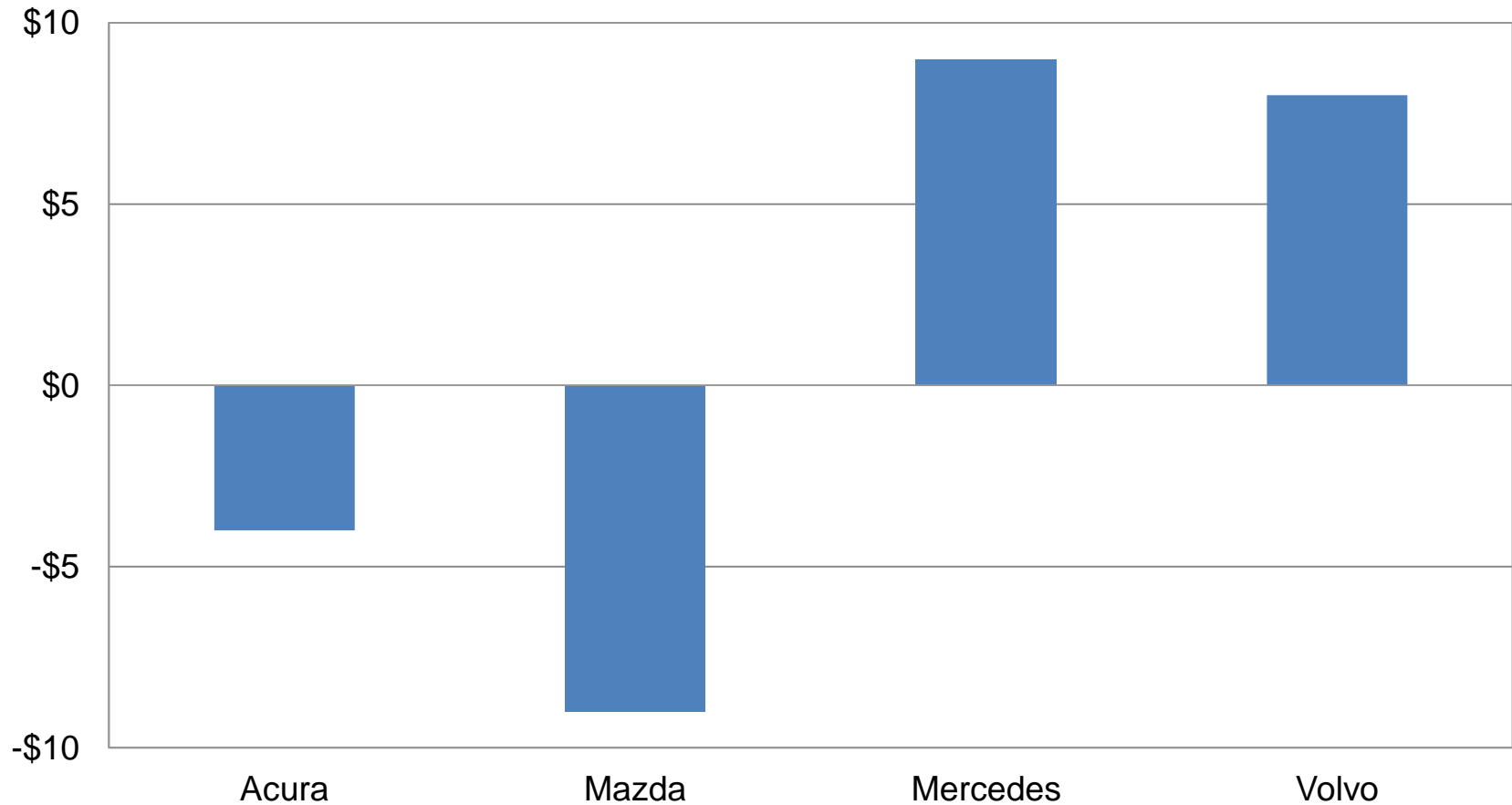
# Adaptive headlights

Collision claim severity by manufacturer



# Adaptive headlights

Overall collision losses by manufacturer

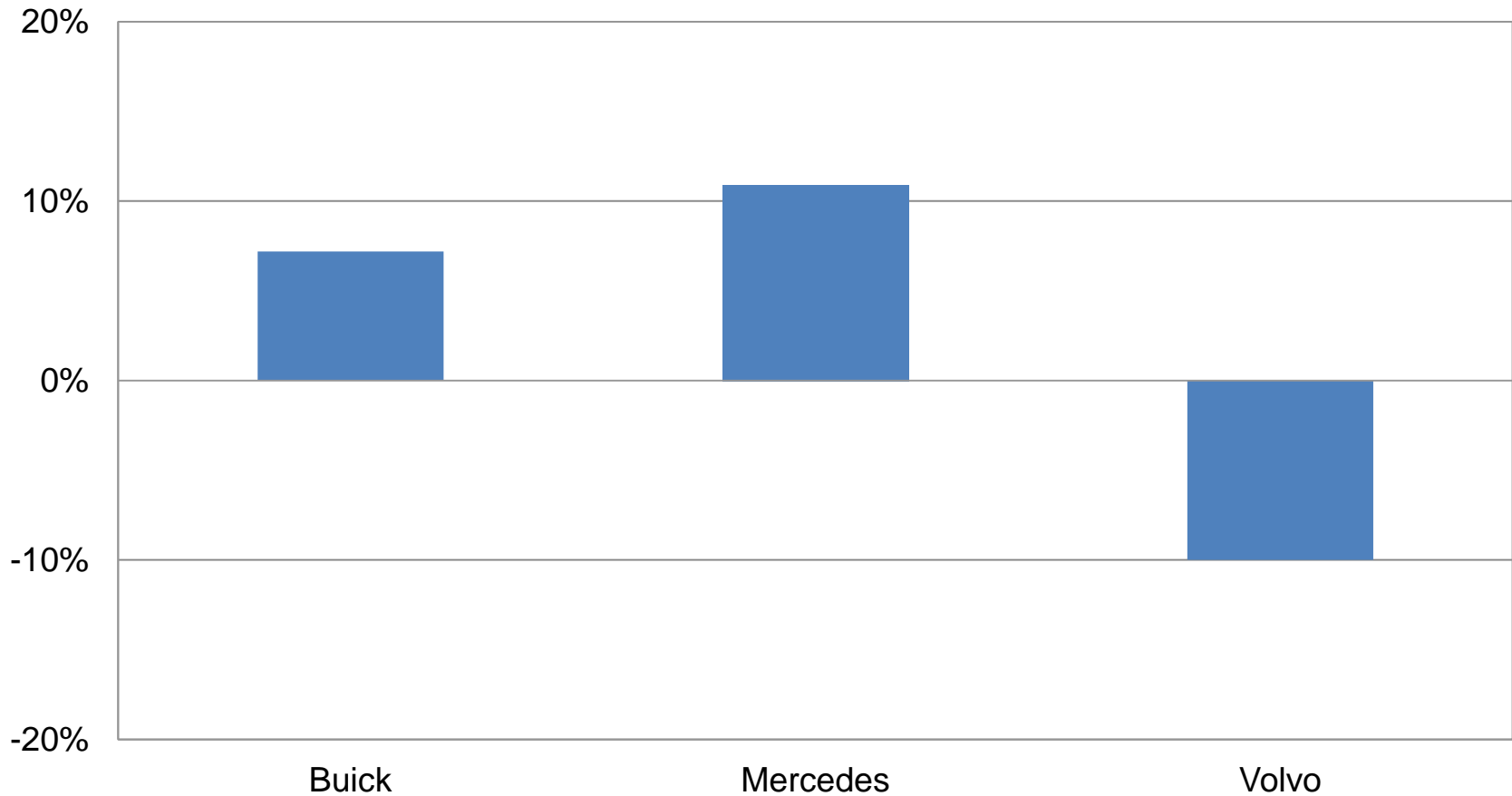




# Lane departure warning

# Lane departure warning without active assist

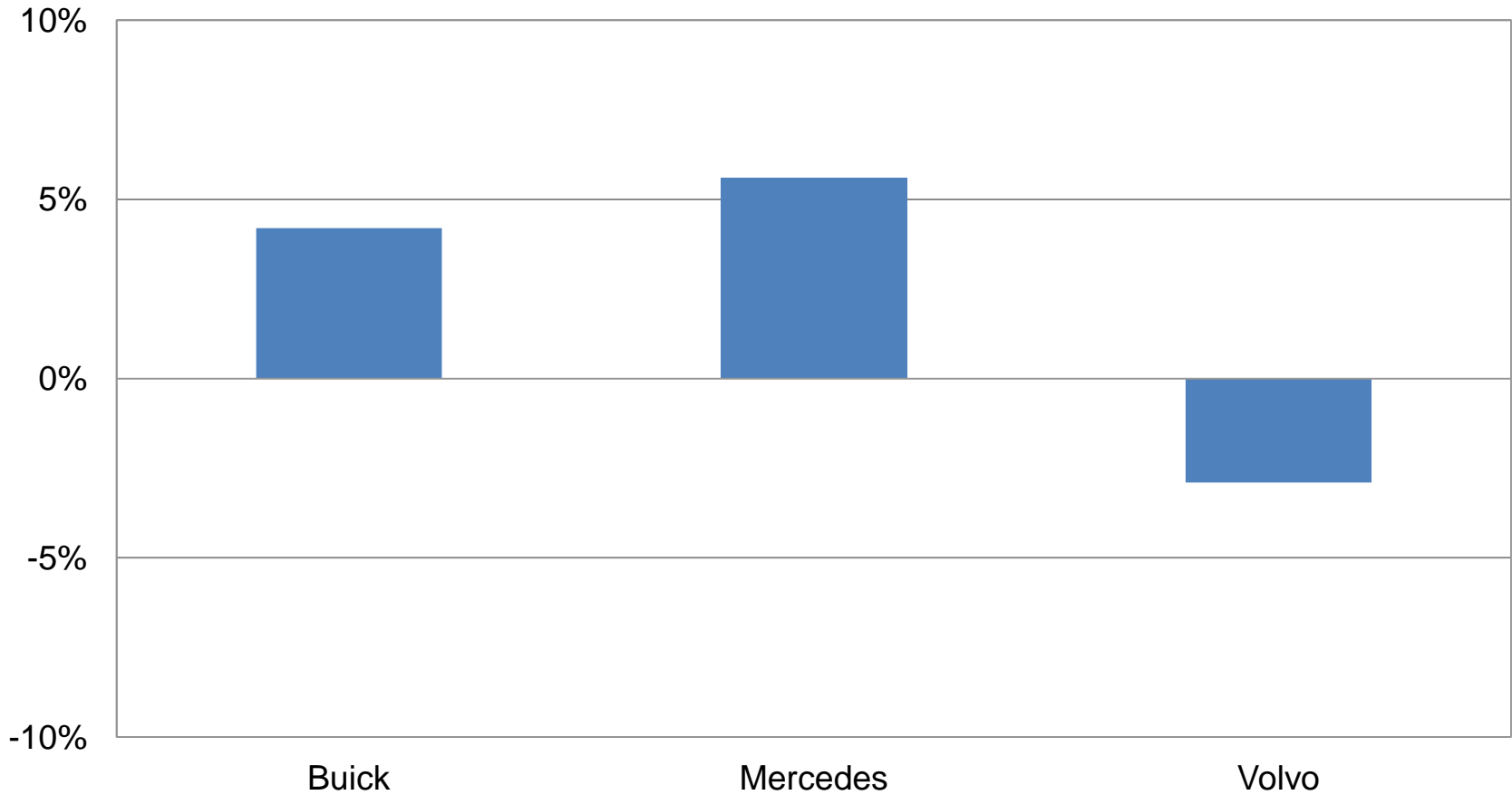
Property damage liability claim frequency by manufacturer





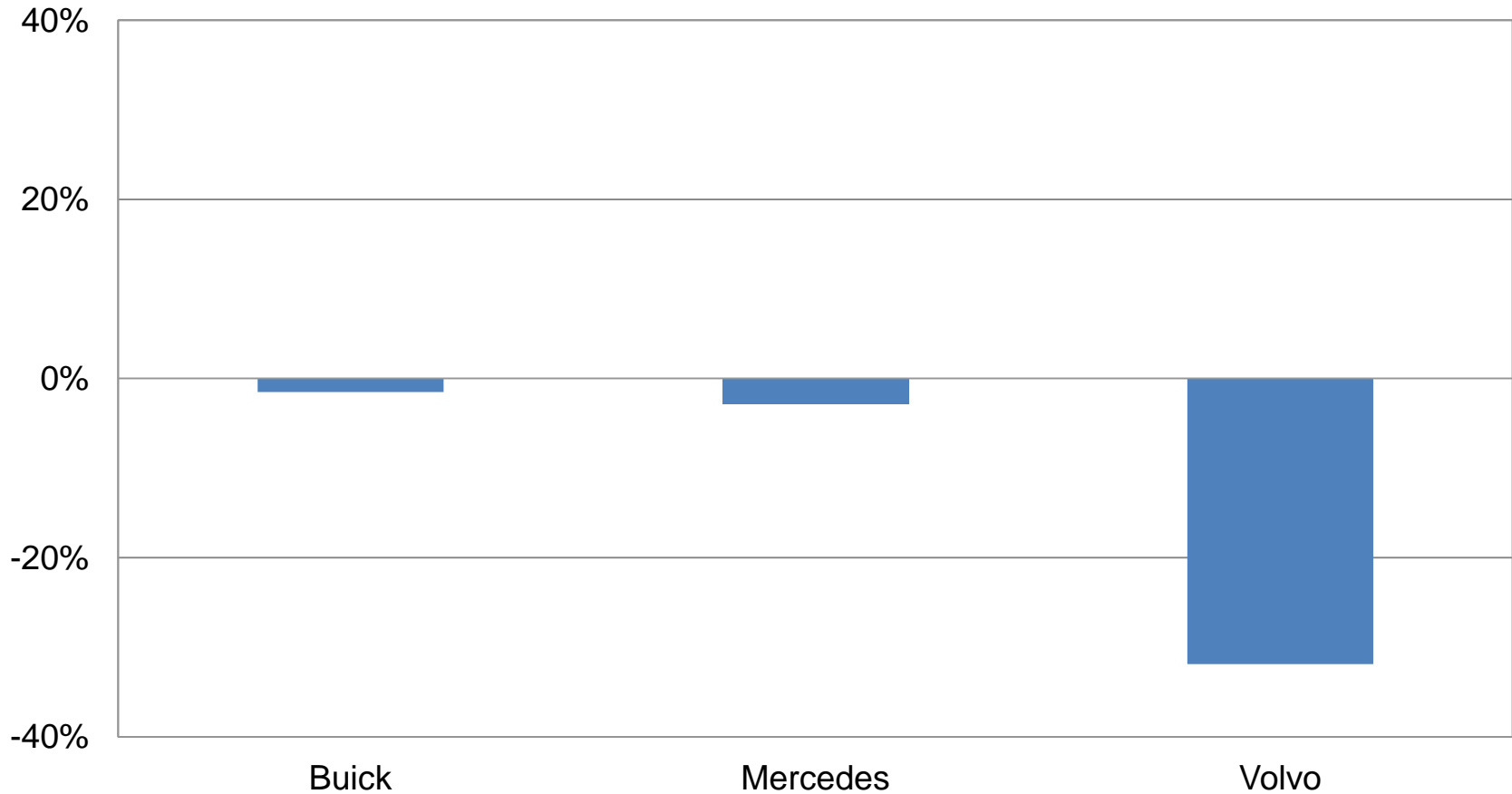
# Lane departure warning without active assist

Collision claim frequency by manufacturer



# Lane departure warning without active assist

Bodily injury liability claim frequency by manufacturer

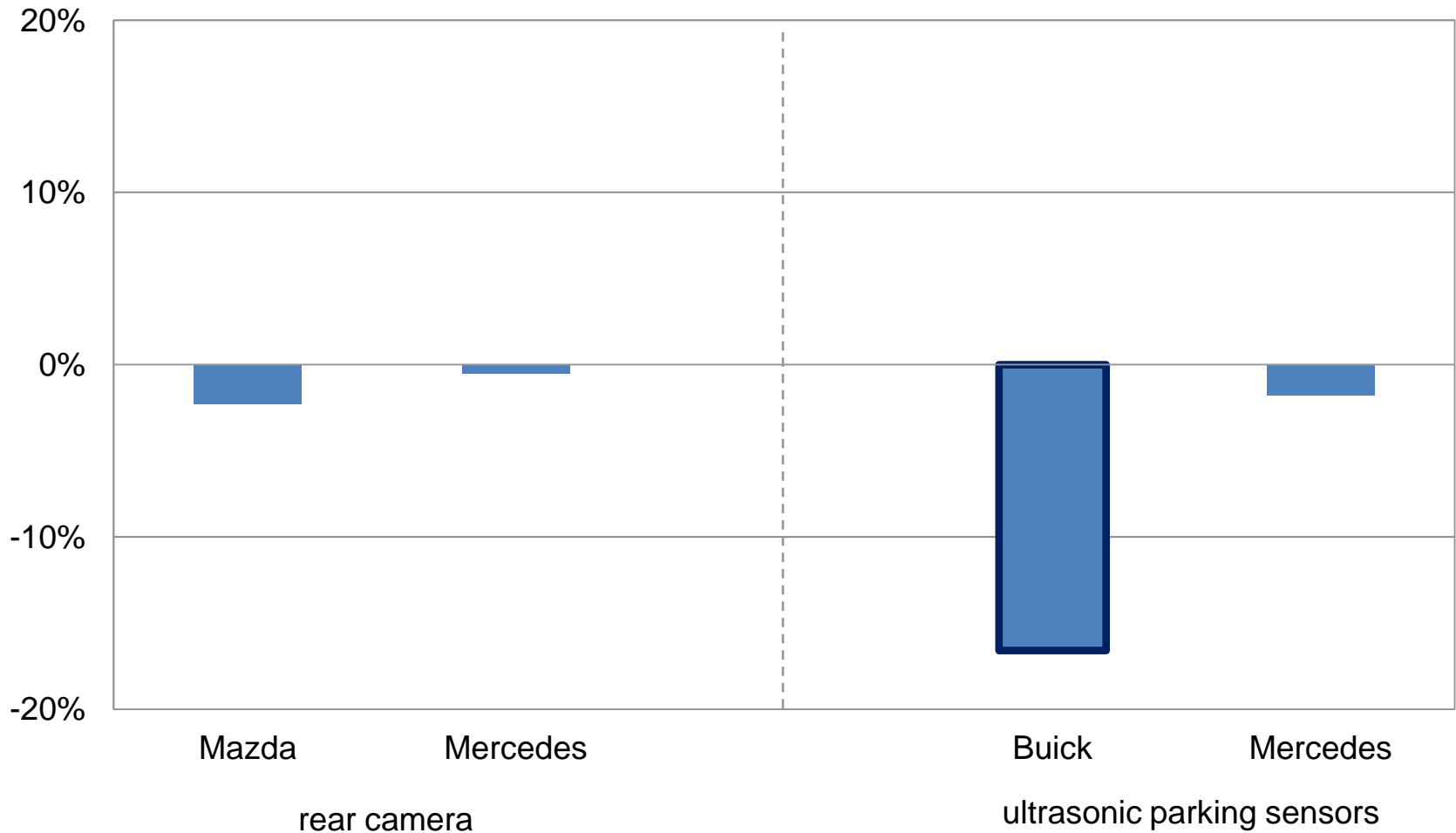




# Parking assistance systems

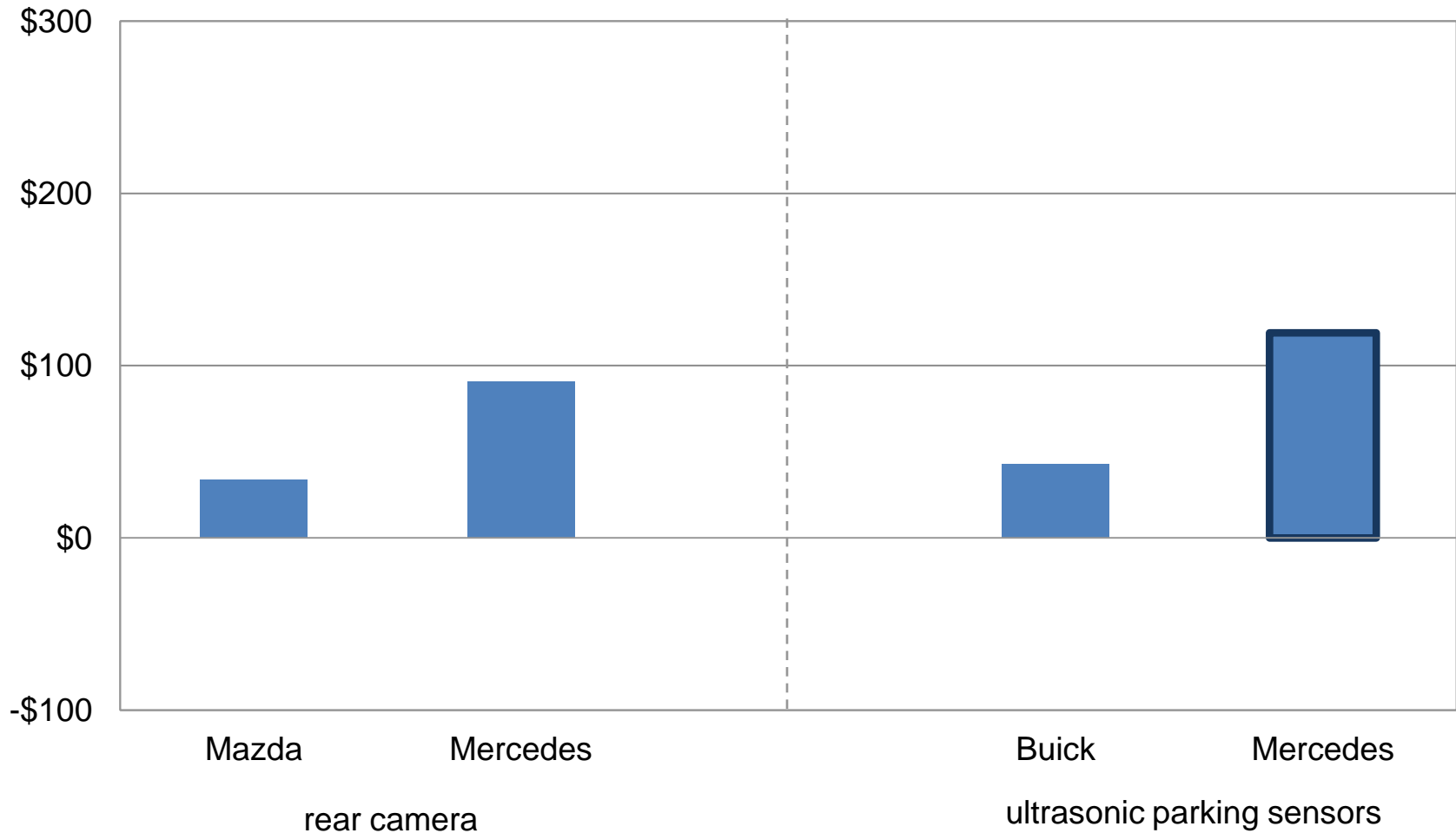
# Property damage liability claim frequency for rear camera and parking sensors

By manufacturer



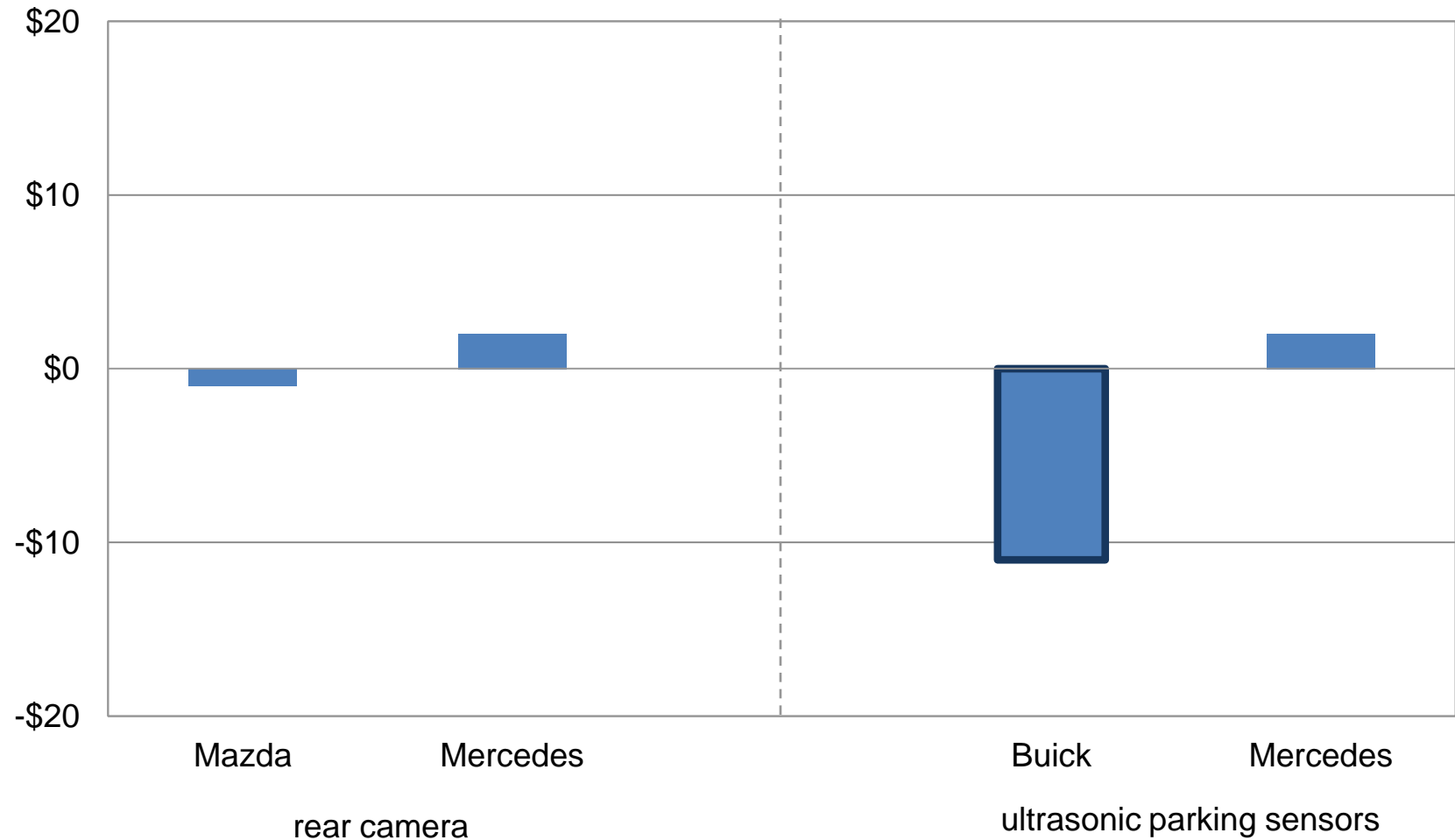
# Property damage liability claim severity for rear camera and parking sensors

By manufacturer



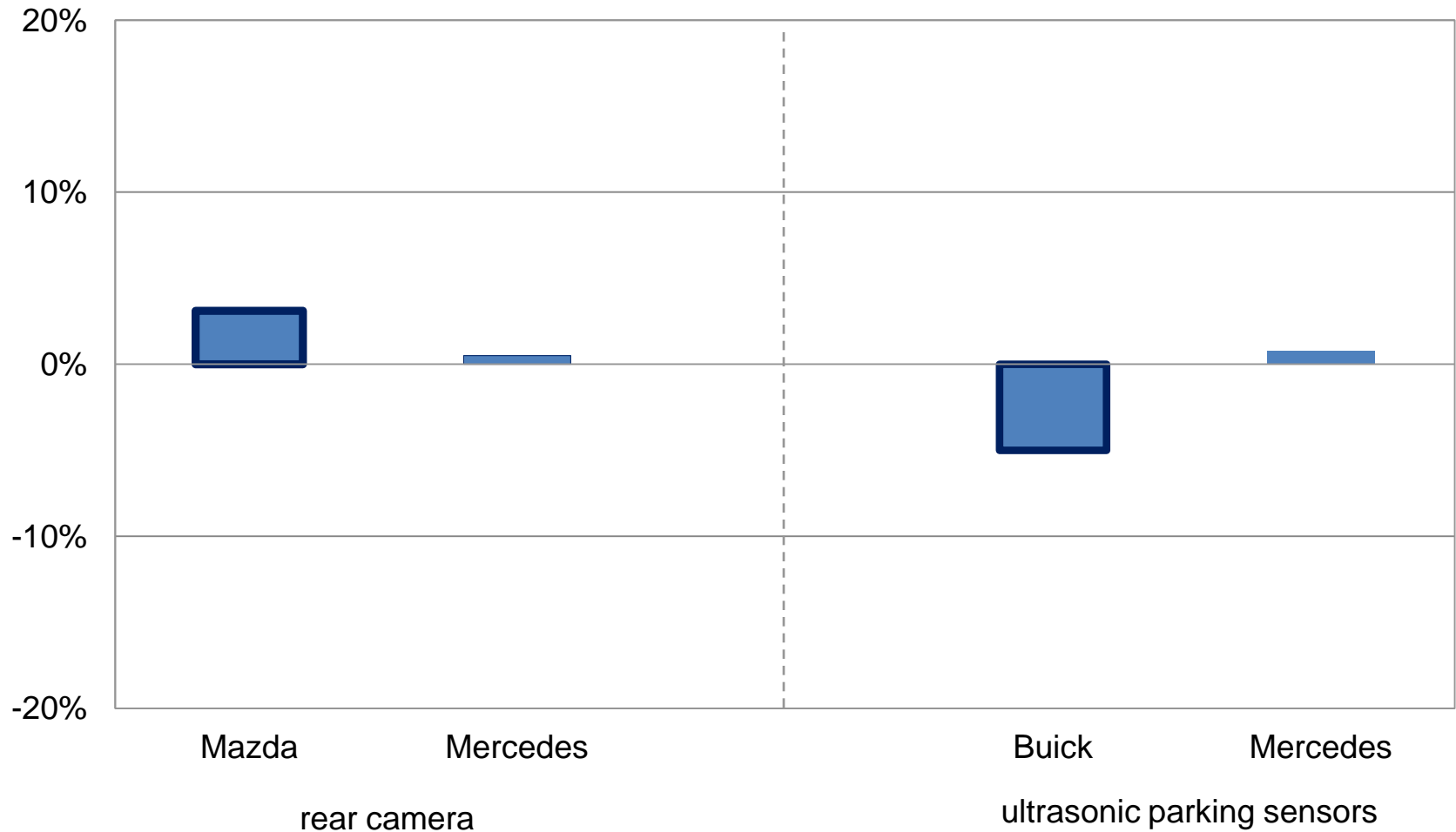
# Property damage liability claim overall losses for rear camera and parking sensors

By manufacturer



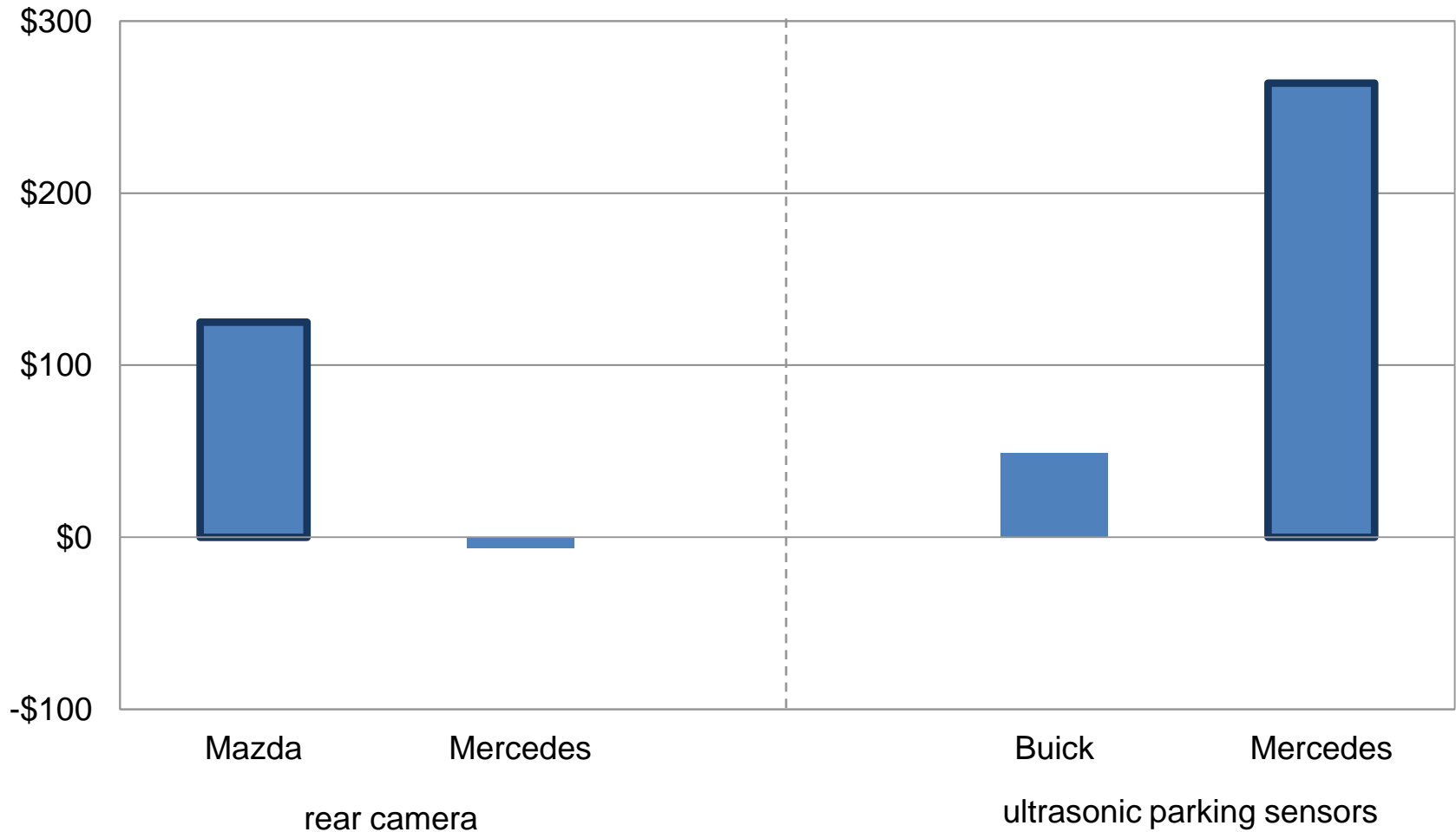
# Collision claim frequency for rear camera and parking sensors

By manufacturer



# Collision claim severity for rear camera and parking sensors

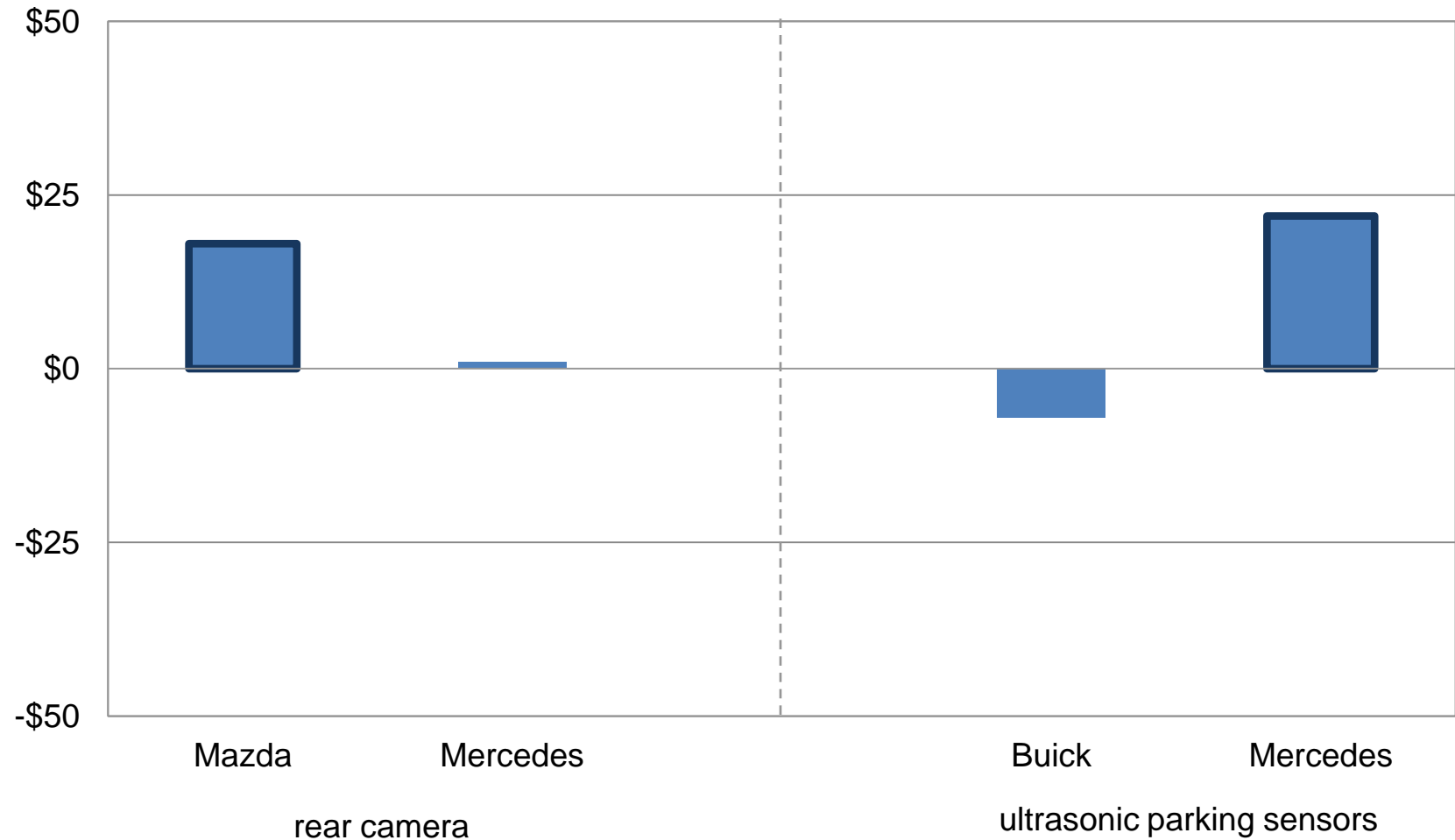
By manufacturer





# Collision claim overall losses for rear camera and parking sensors

By manufacturer





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and property damage on the highway