

## **APPENDIX A. PLAN VIEW OF SNAPSHOTS OF VEHICLE IMPACT SIMULATIONS**

This appendix presents plan view snapshots of vehicle-CMB impact simulations for the current design and all of the retrofit designs.

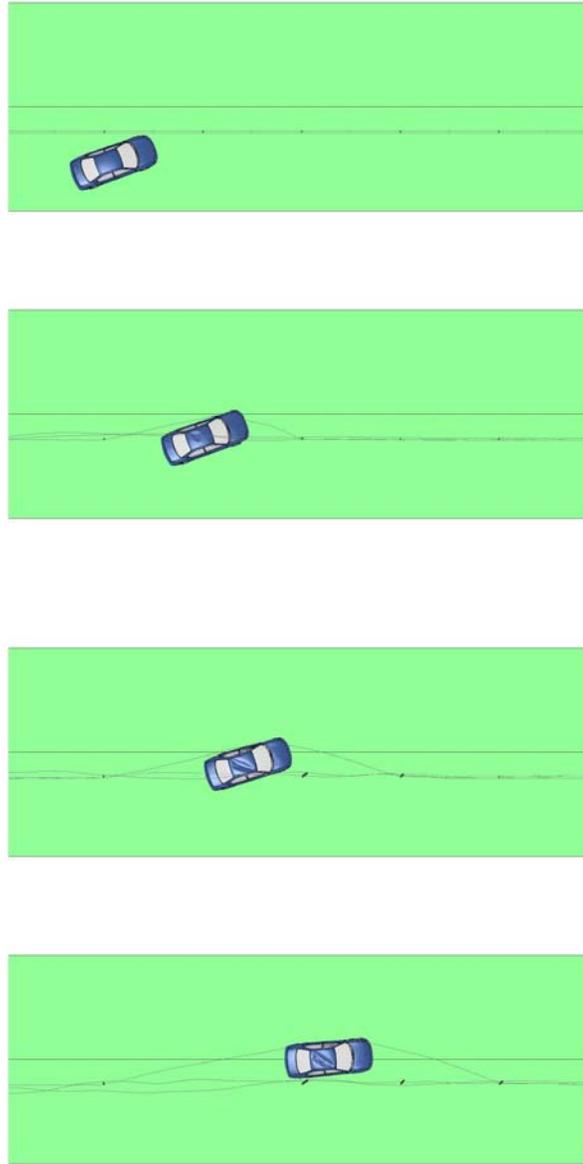


Fig. A.1: Front-side impact by Dodge Neon at 20° and 55 mph for the current design.

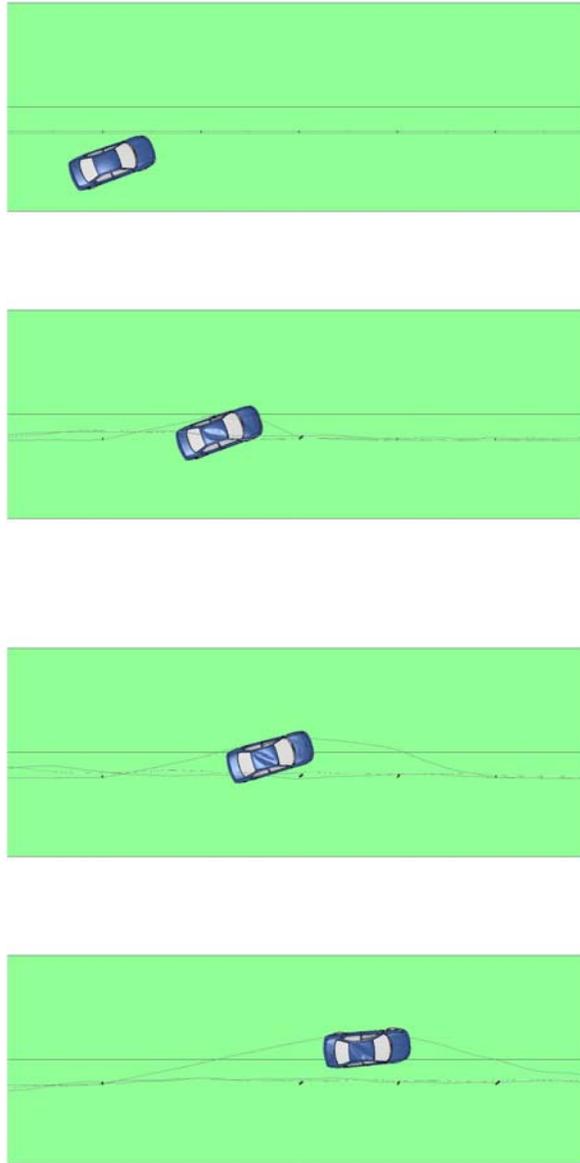


Fig. A.2: Front-side impact by Dodge Neon at 20° and 65 mph for the current design.

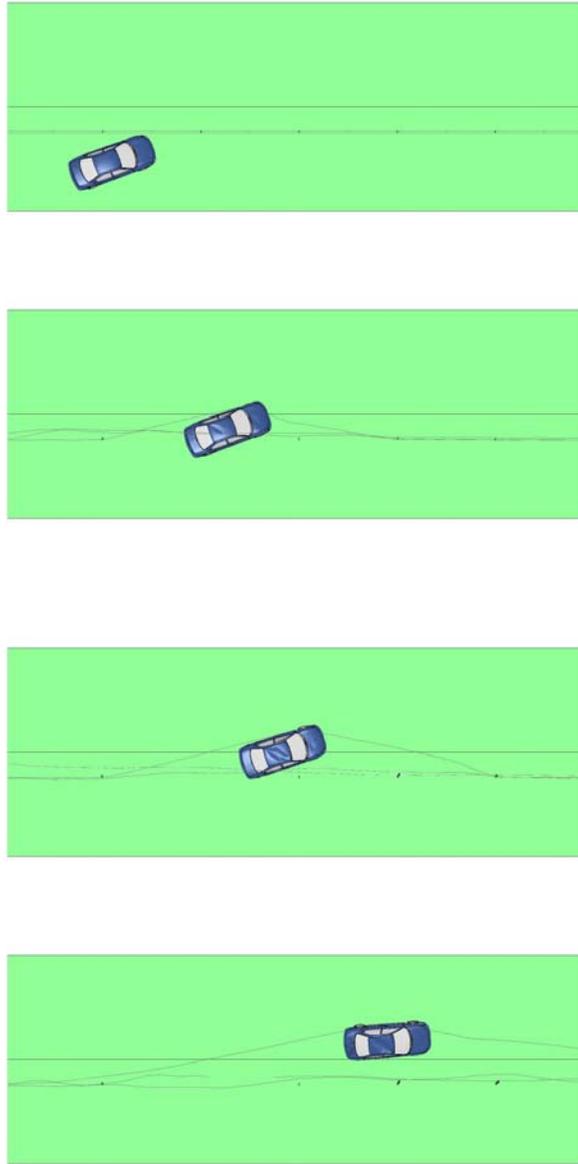


Fig. A.3: Front-side impact by Dodge Neon at 20° and 70 mph for the current design.

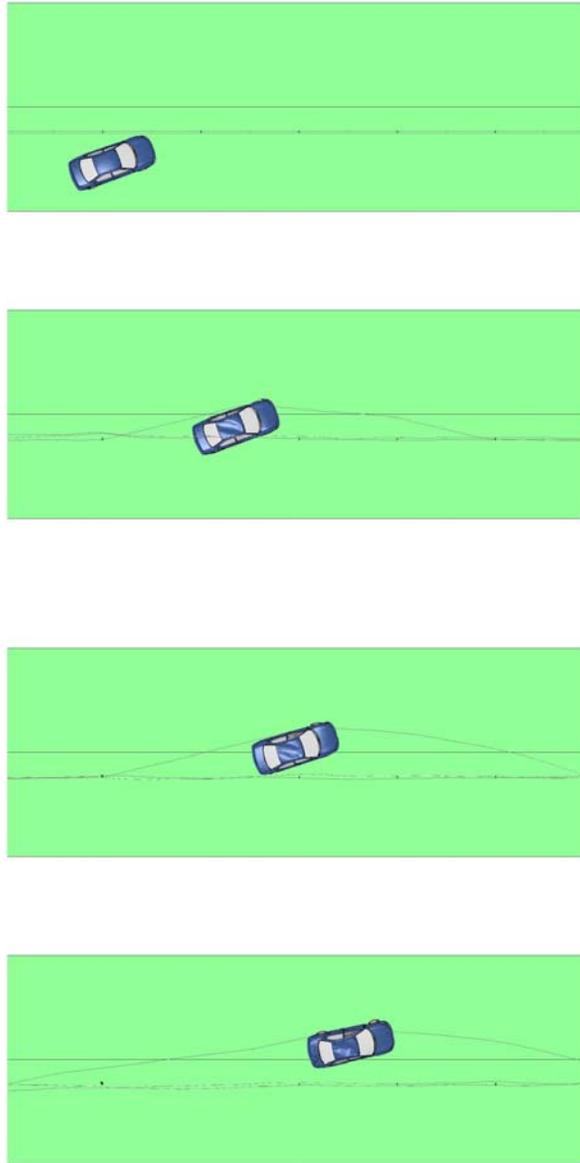


Fig. A.4: Front-side impact by Dodge Neon at 20° and 75 mph for the current design.

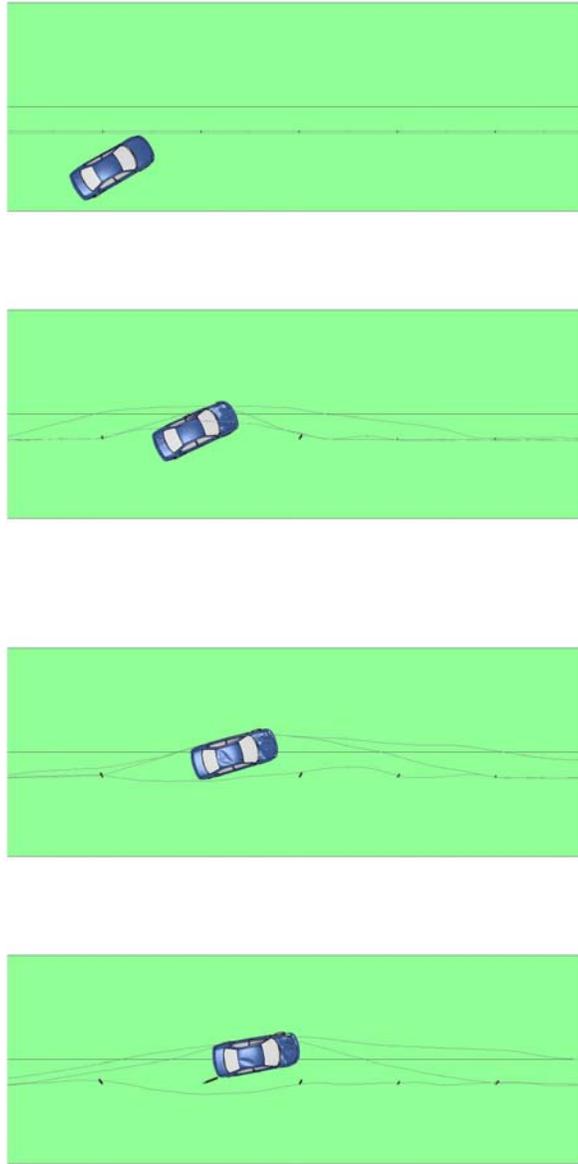


Fig. A.5: Front-side impact by Dodge Neon at 30° and 55 mph for the current design.

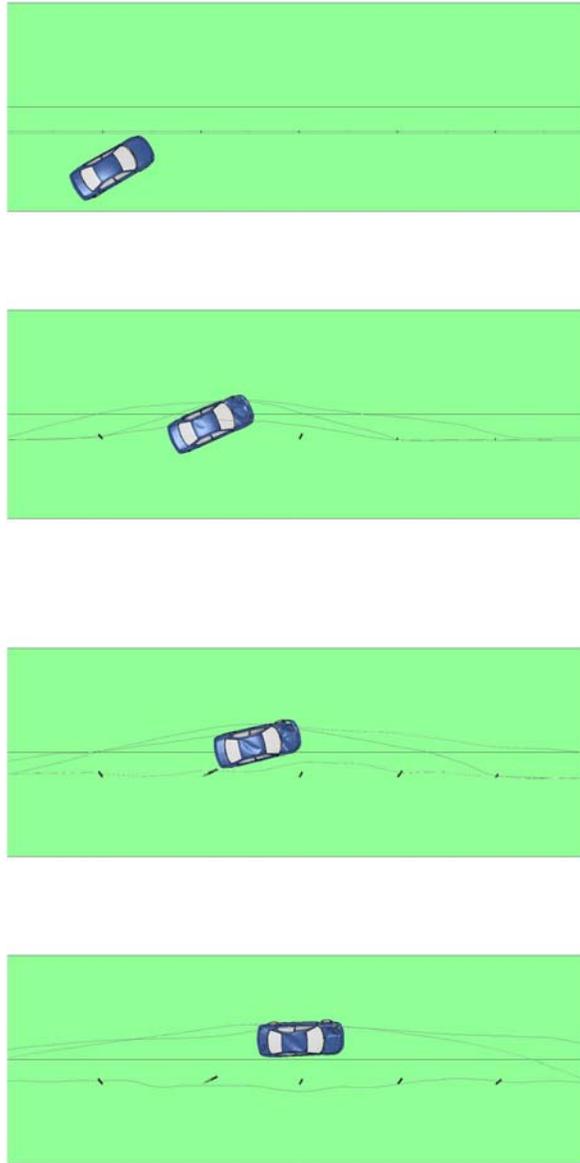


Fig. A.6: Front-side impact by Dodge Neon at 30° and 65 mph for the current design.

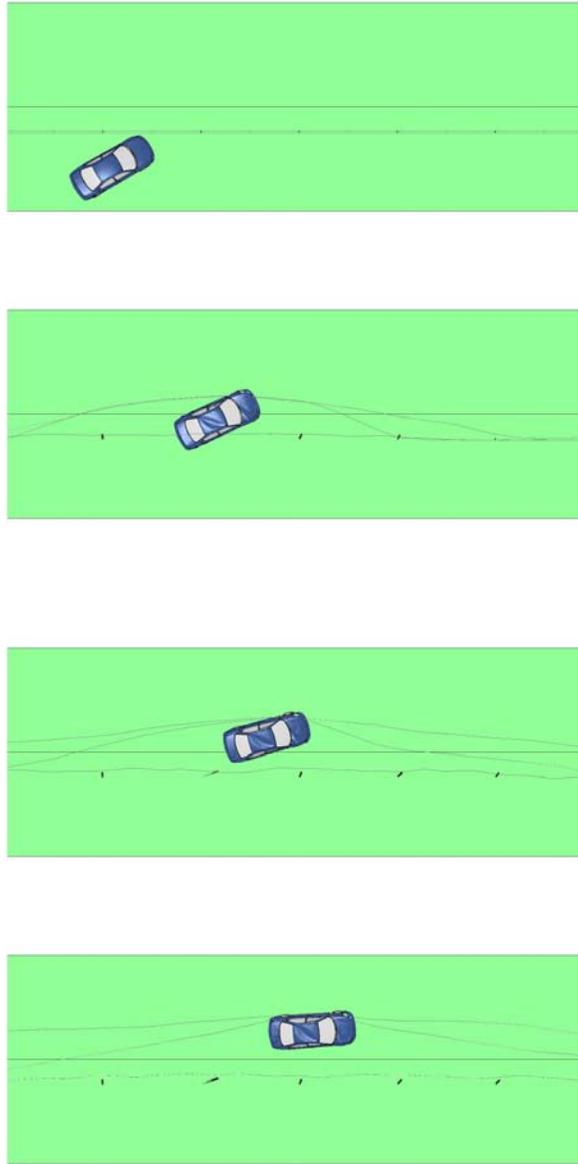


Fig. A.7: Front-side impact by Dodge Neon at 30° and 70 mph for the current design.

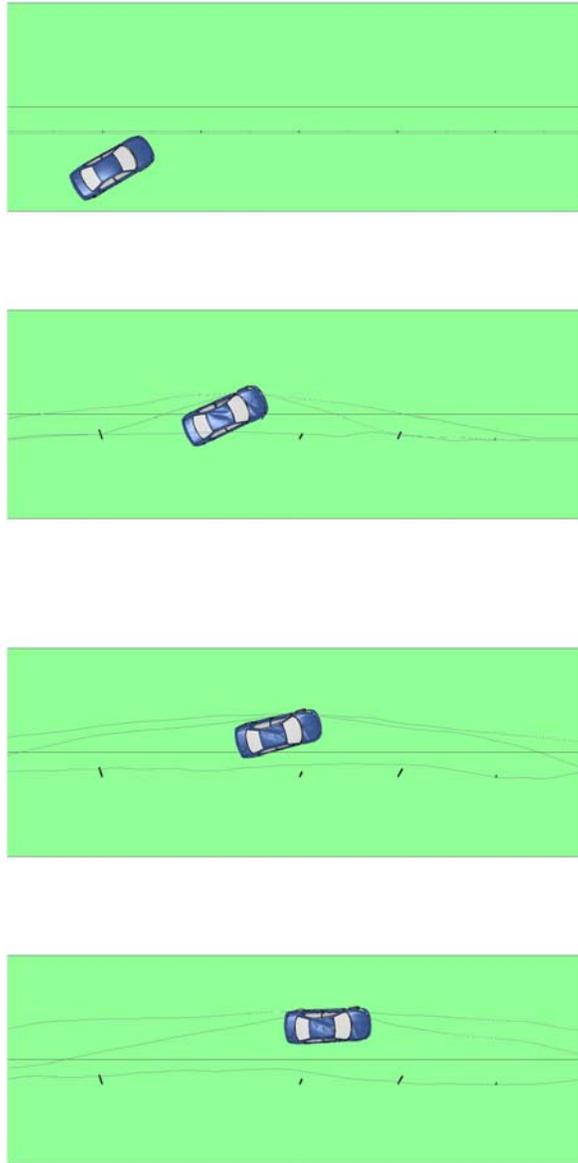


Fig. A.8: Front-side impact by Dodge Neon at 30° and 75 mph for the current design.

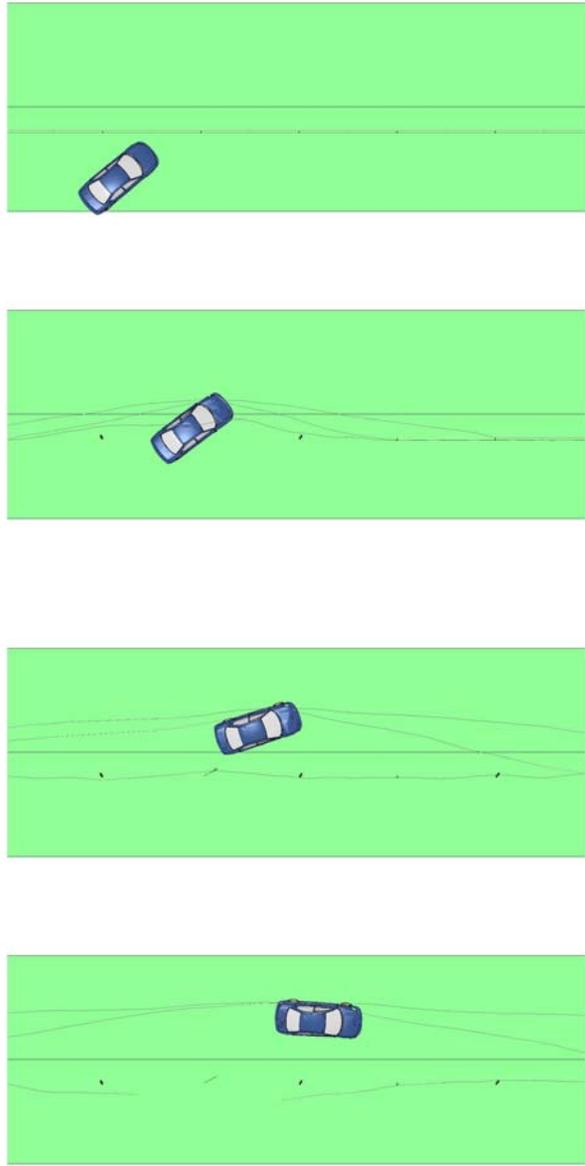


Fig. A.9: Front-side impact by Dodge Neon at 40° and 55 mph for the current design.

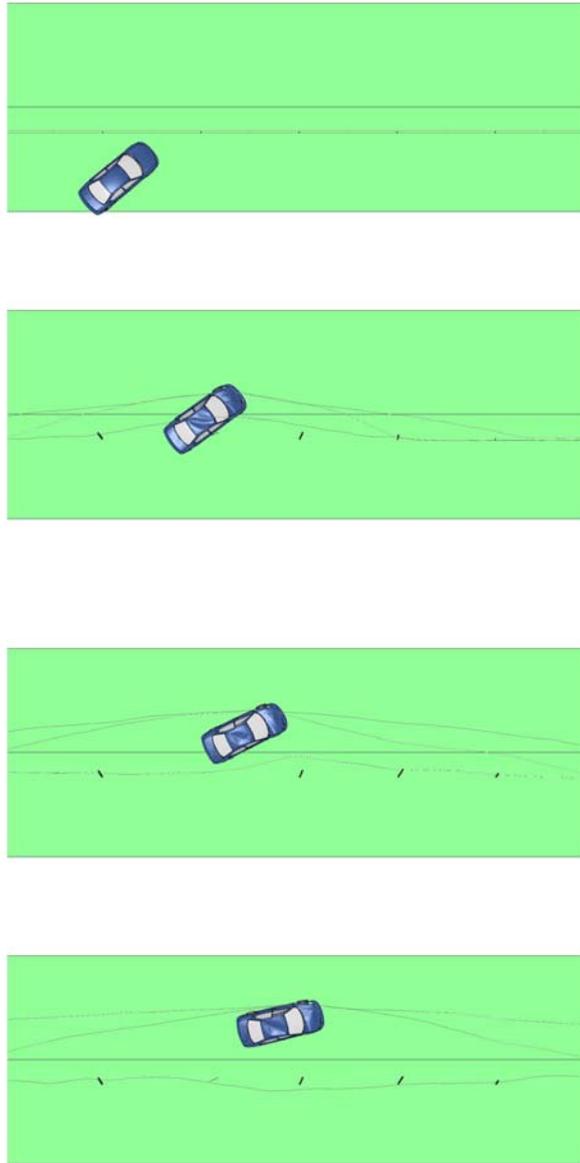


Fig. A.10: Front-side impact by Dodge Neon at 40° and 65 mph for the current design.

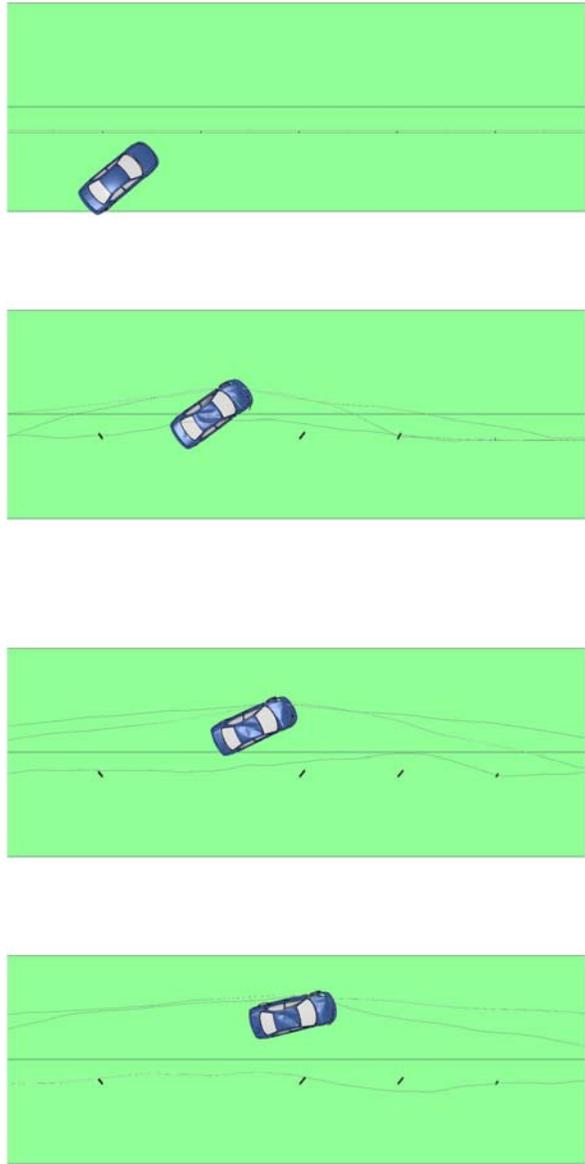


Fig. A.11: Front-side impact by Dodge Neon at 40° and 70 mph for the current design.

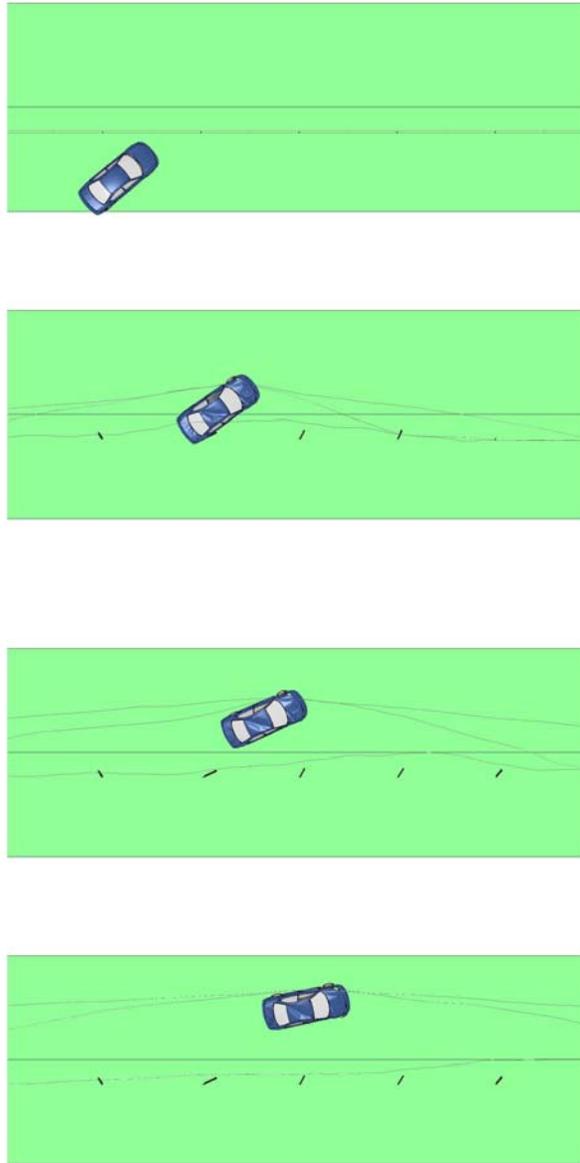


Fig. A.12: Front-side impact by Dodge Neon at 40° and 75 mph for the current design.

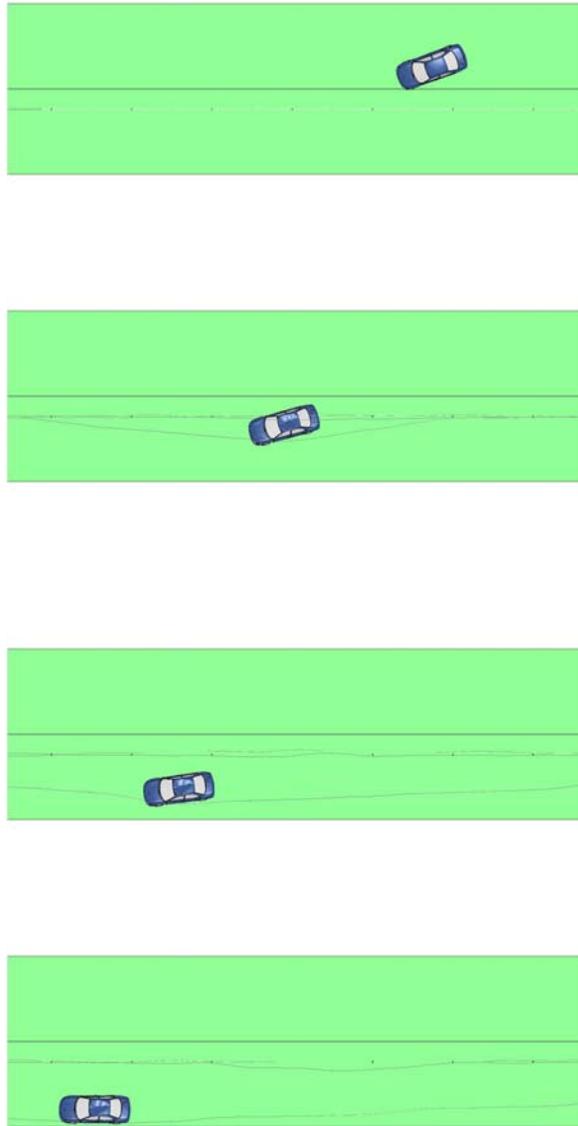


Fig. A.13: Back-side impact by Dodge Neon at 20° and 55 mph for the current design.

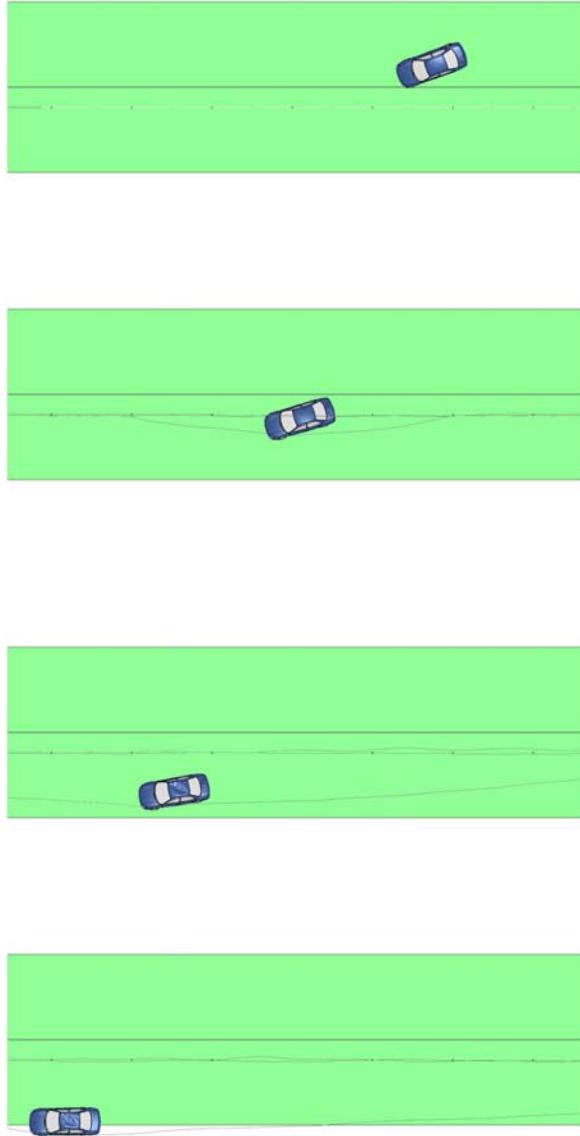


Fig. A.14: Back-side impact by Dodge Neon at 20° and 65 mph for the current design.

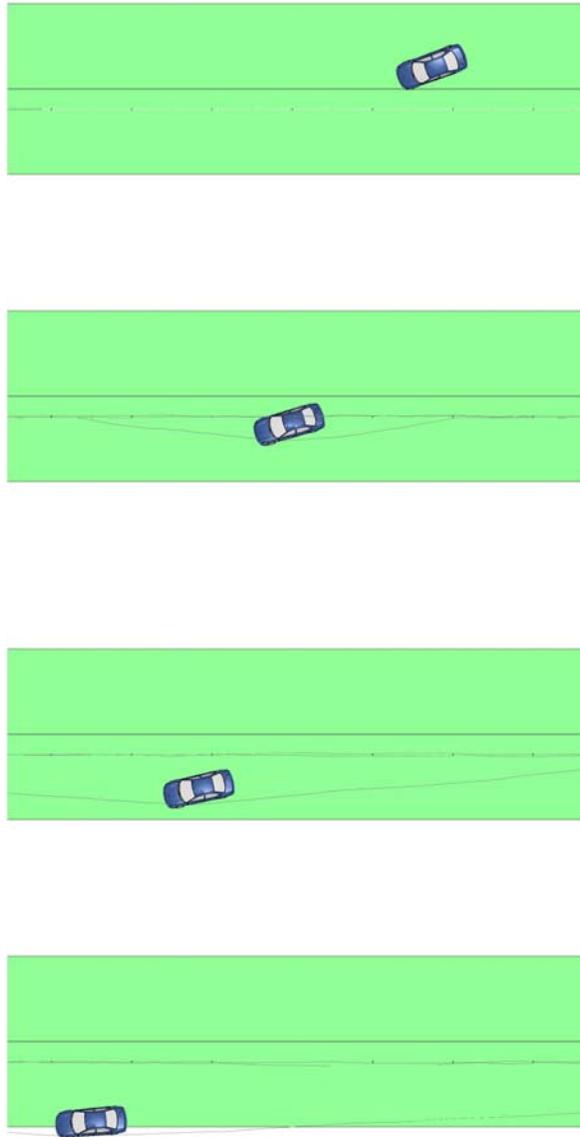


Fig. A.15: Back-side impact by Dodge Neon at 20° and 70 mph for the current design.

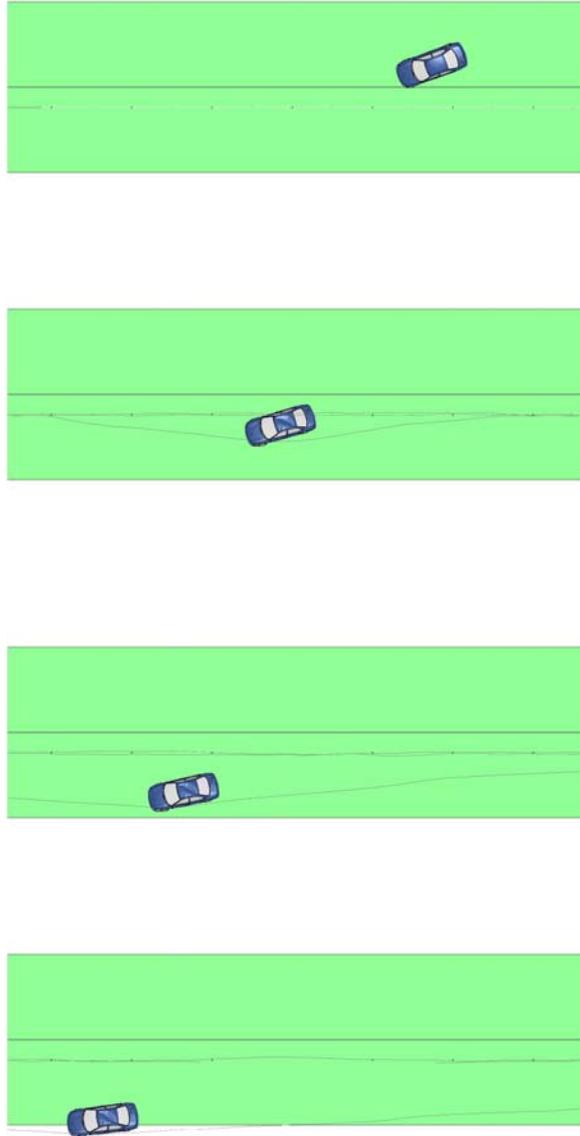


Fig. A.16: Back-side impact by Dodge Neon at 20° and 75 mph for the current design.

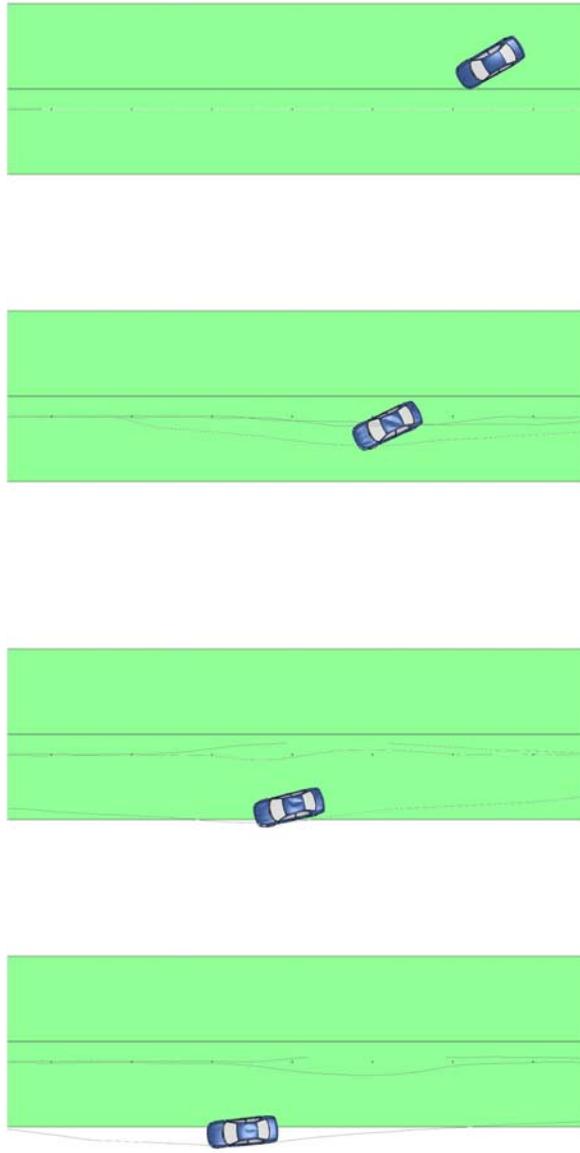


Fig. A.17: Back-side impact by Dodge Neon at 30° and 55 mph for the current design.

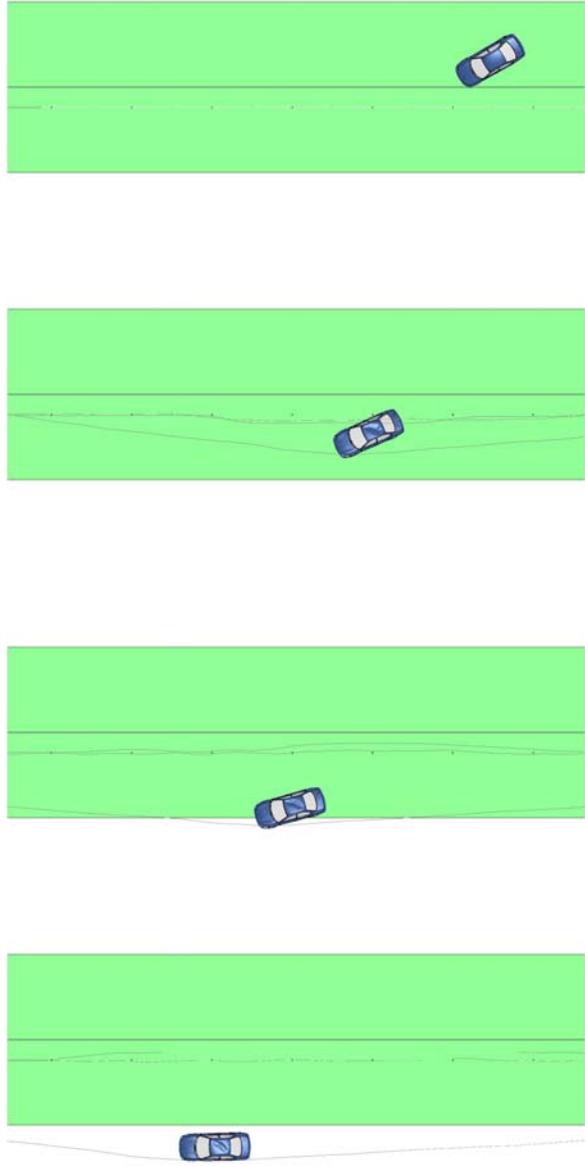


Fig. A.18: Back-side impact by Dodge Neon at 30° and 65 mph for the current design.

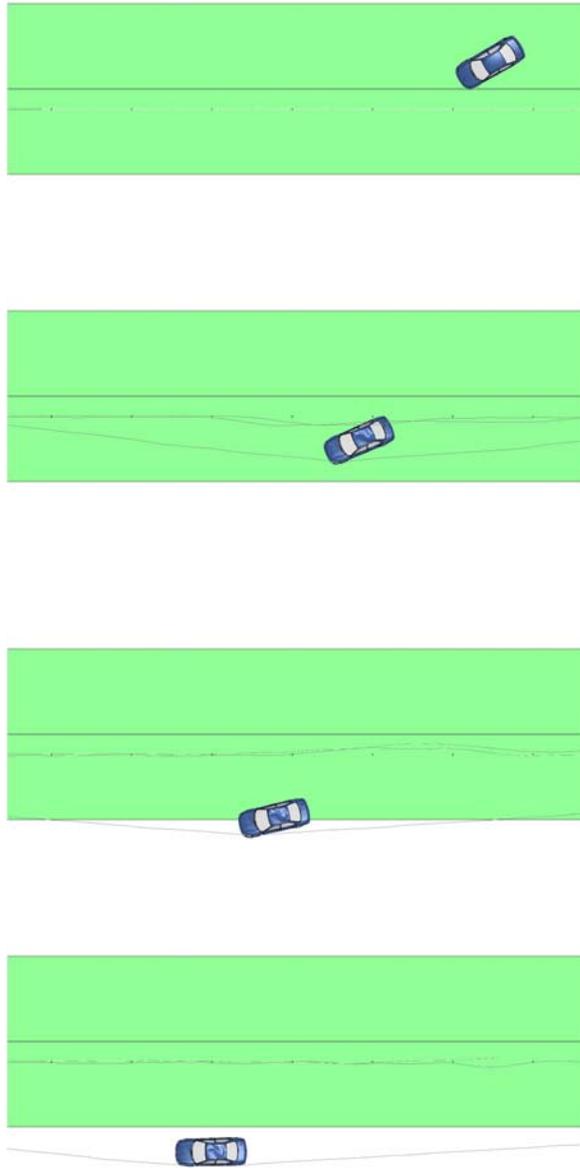


Fig. A.19: Back-side impact by Dodge Neon at 30° and 70 mph for the current design.

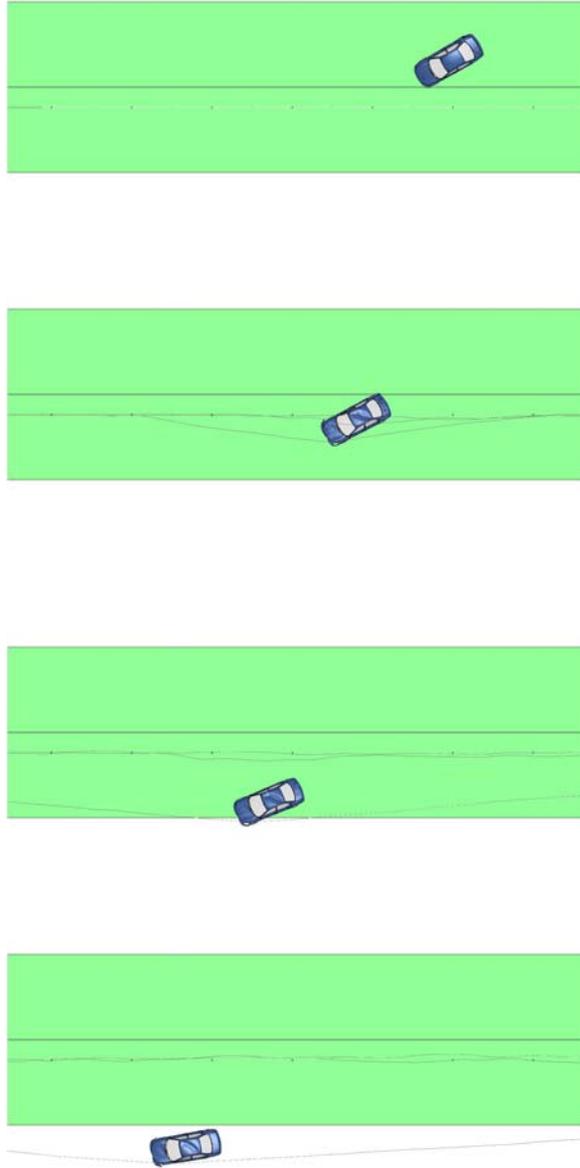


Fig. A.20: Back-side impact by Dodge Neon at 30° and 75 mph for the current design.

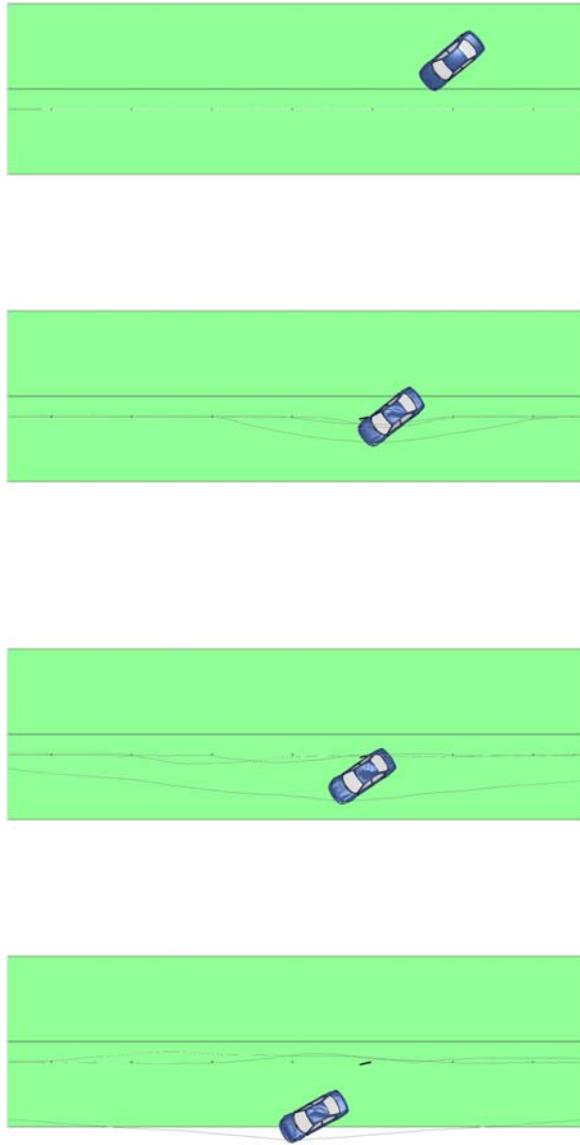


Fig. A.21: Back-side impact by Dodge Neon at 40° and 55 mph for the current design.

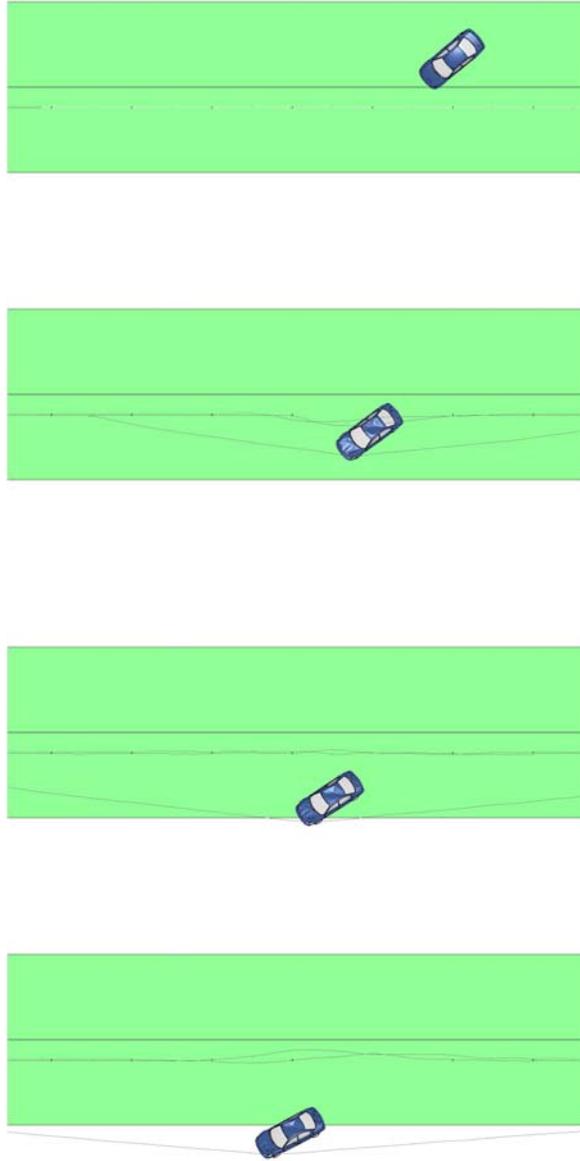


Fig. A.22: Back-side impact by Dodge Neon at 40° and 65 mph for the current design.

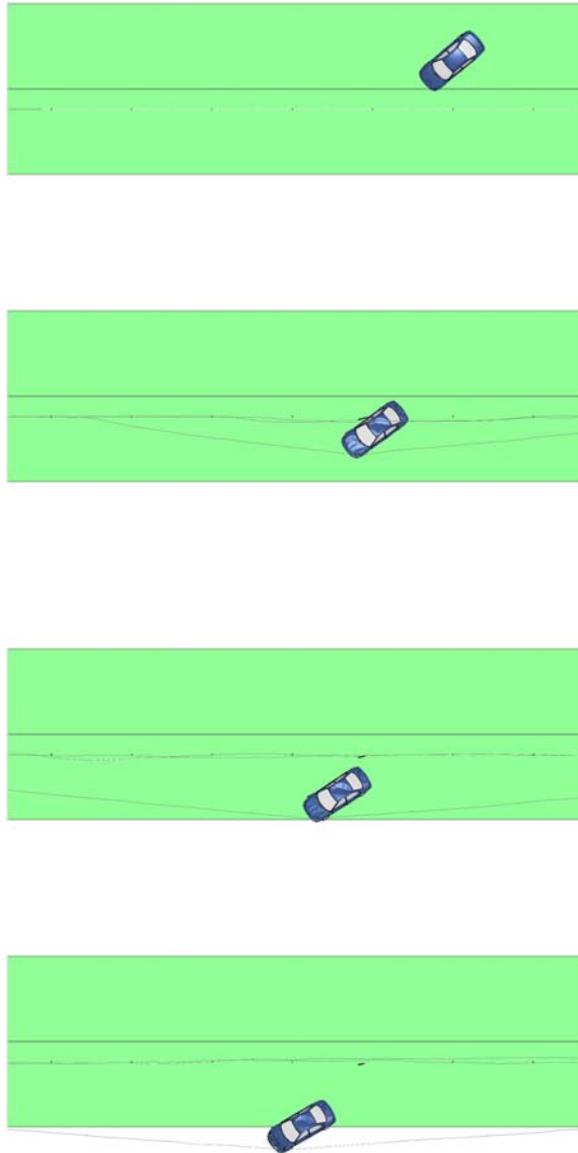


Fig. A.23: Back-side impact by Dodge Neon at 40° and 70 mph for the current design.

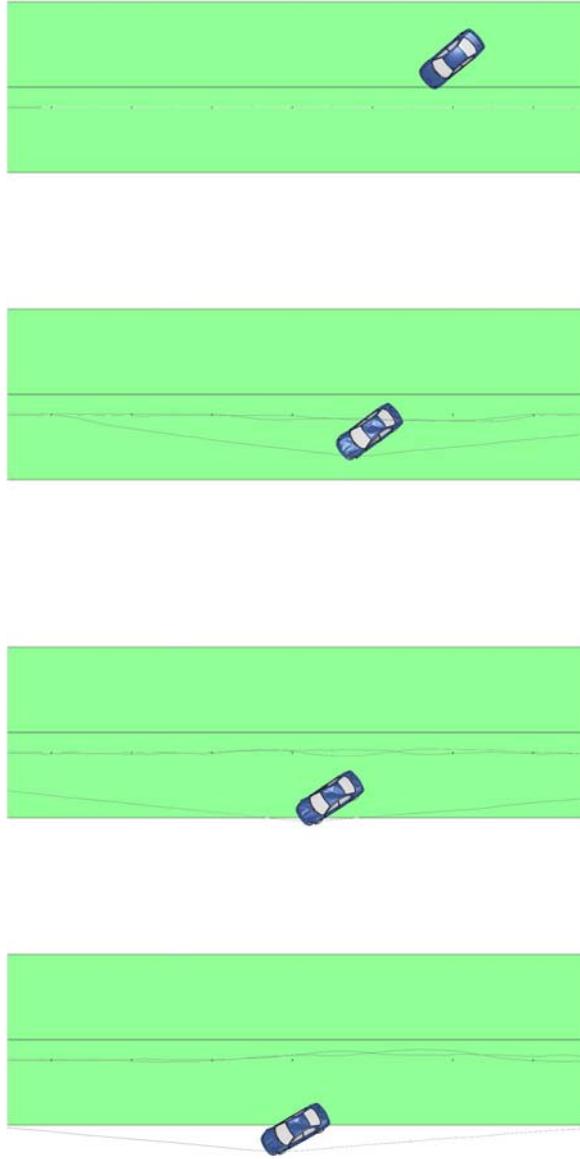


Fig. A.24: Back-side impact by Dodge Neon at 40° and 75 mph for the current design.

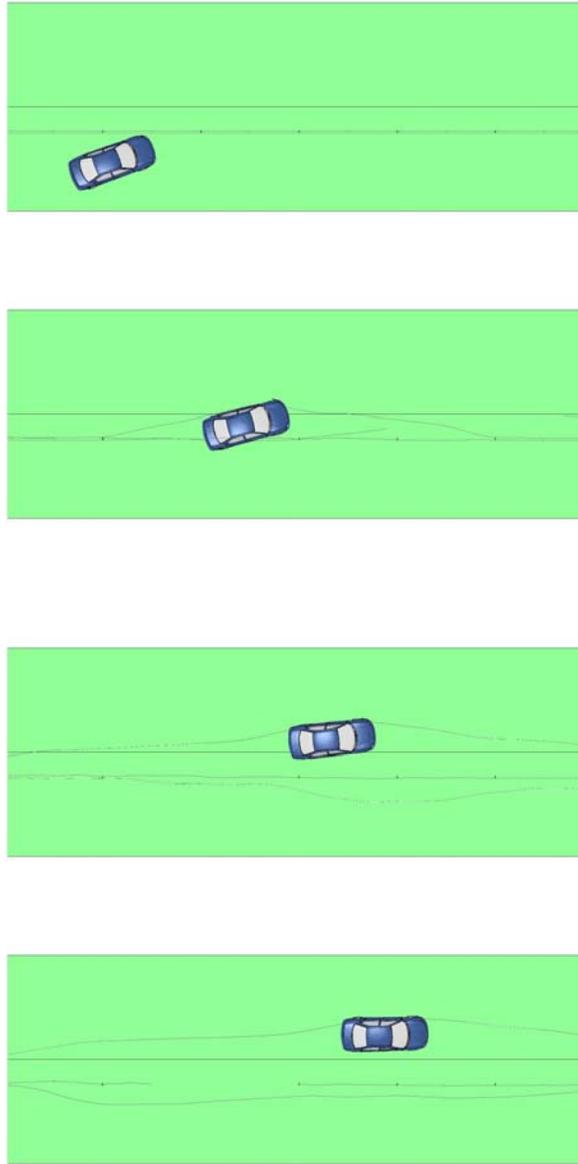


Fig. A.25: Front-side impact by Dodge Neon at 20° and 55 mph for the first design of Retrofit Option 1.

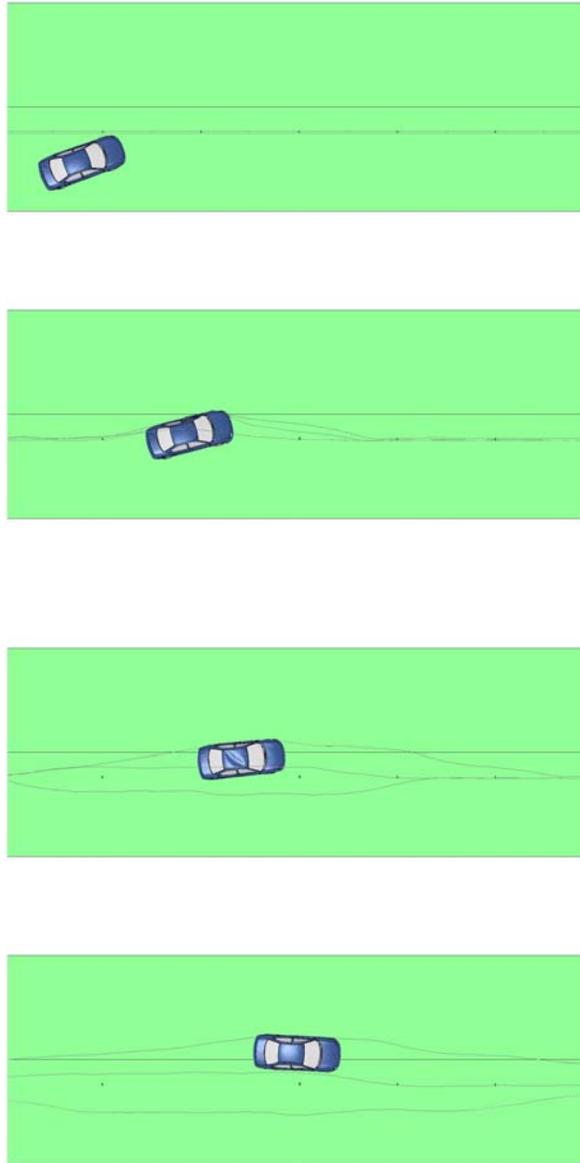


Fig. A.26: Front-side impact by Dodge Neon at 20° and 65 mph for the first design of Retrofit Option 1.

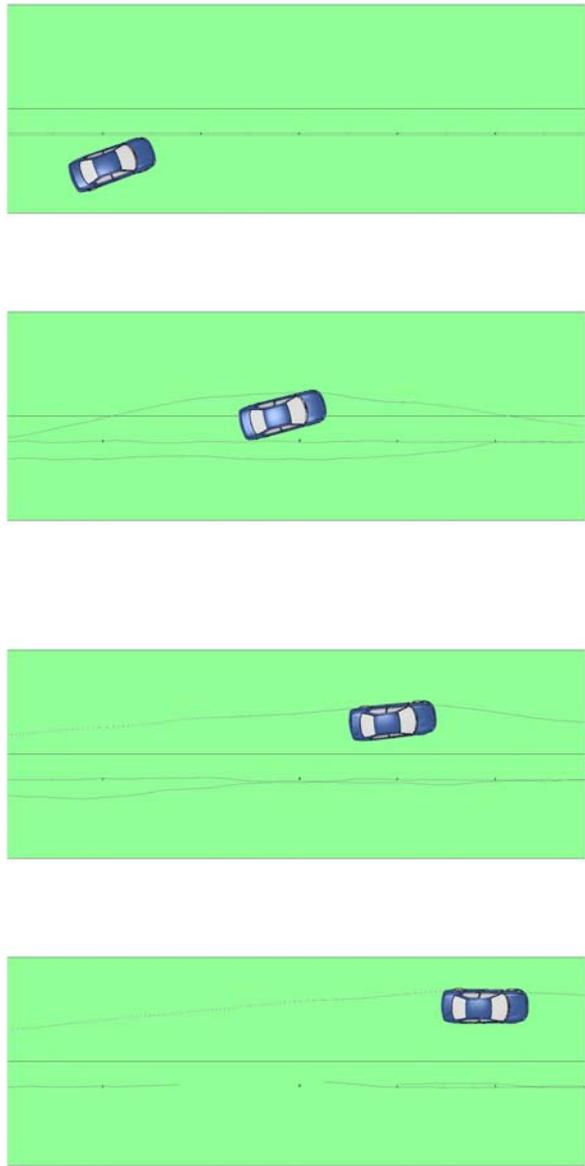


Fig. A.27: Front-side impact by Dodge Neon at 20° and 70 mph for the first design of Retrofit Option 1.

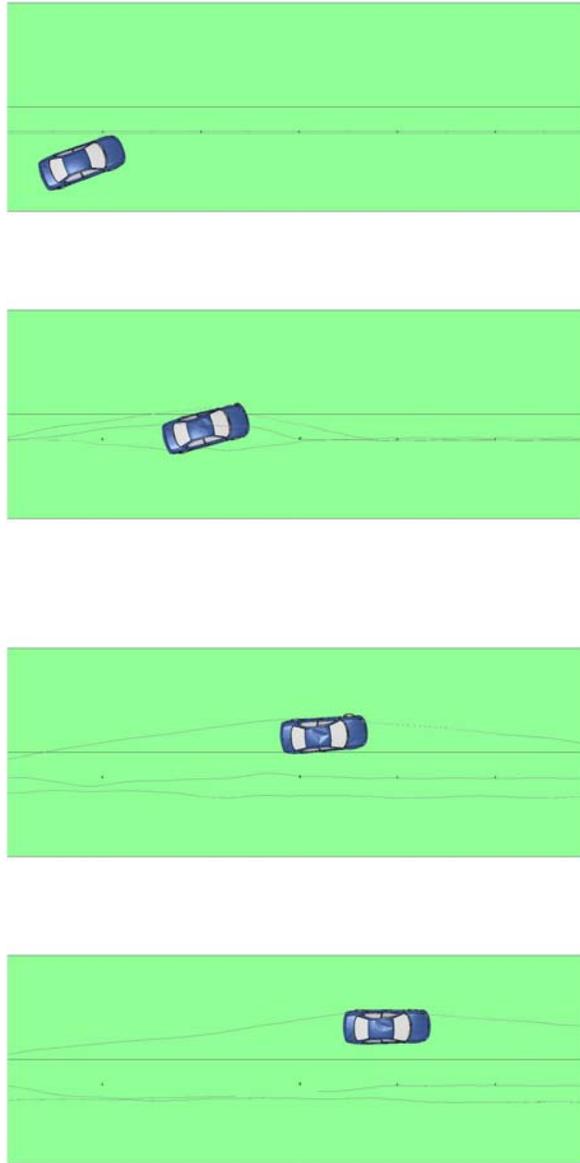


Fig. A.28: Front-side impact by Dodge Neon at 20° and 75 mph for the first design of Retrofit Option 1.

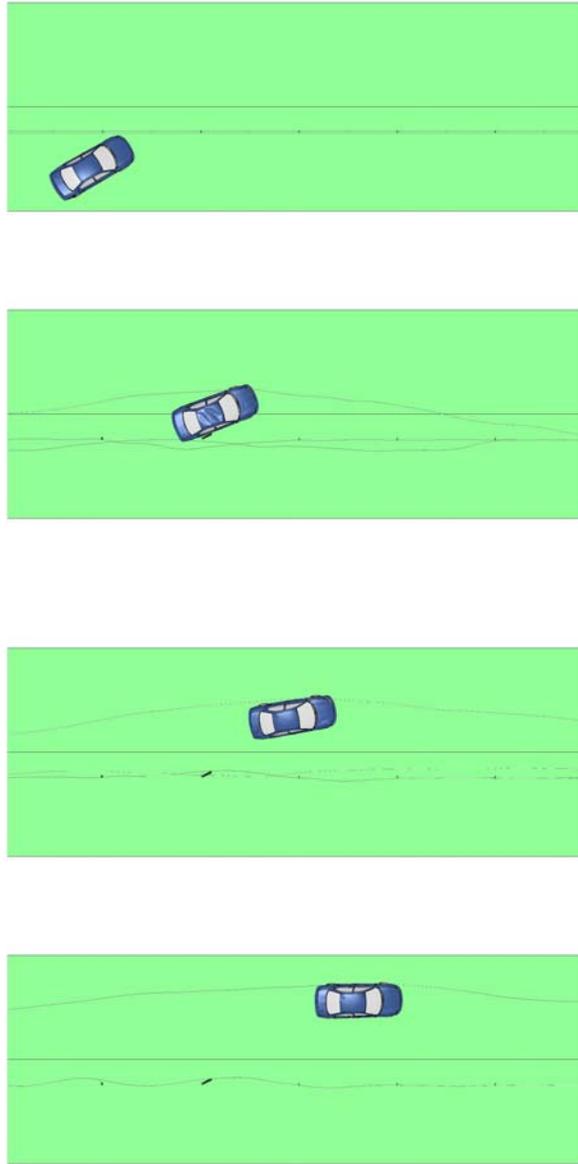


Fig. A.29: Front-side impact by Dodge Neon at 30° and 55 mph for the first design of Retrofit Option 1.

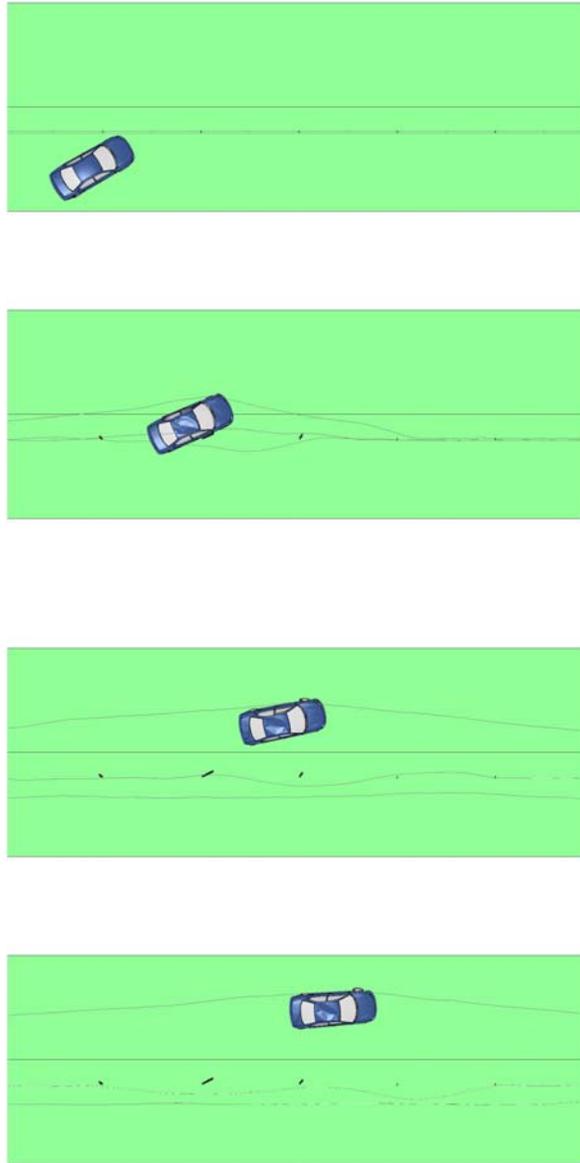


Fig. A.30: Front-side impact by Dodge Neon at 30° and 65 mph for the first design of Retrofit Option 1.

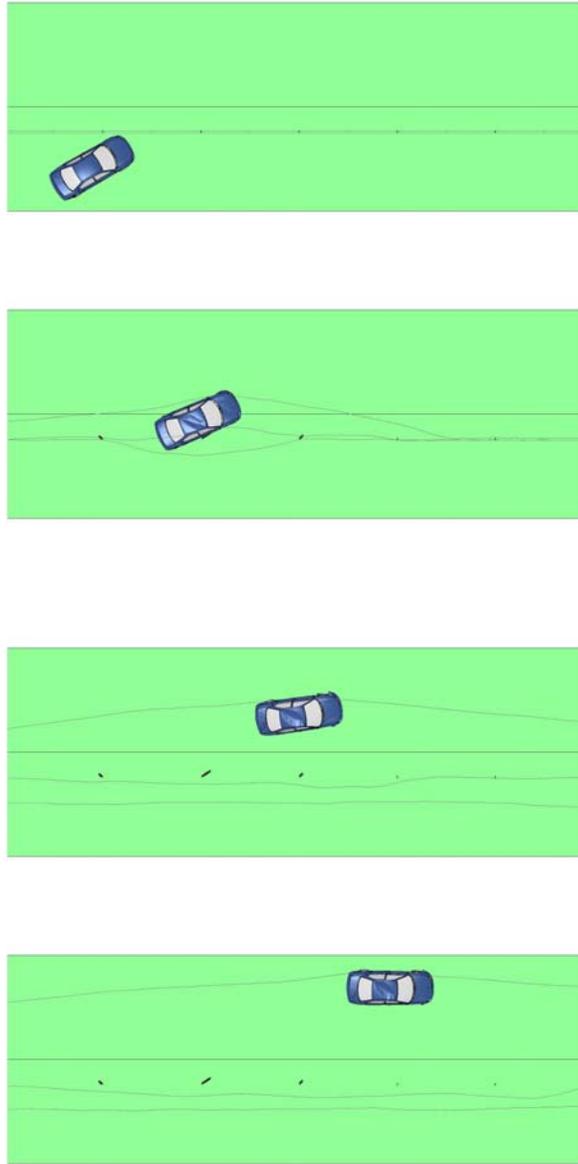


Fig. A.31: Front-side impact by Dodge Neon at 30° and 70 mph for the first design of Retrofit Option 1.

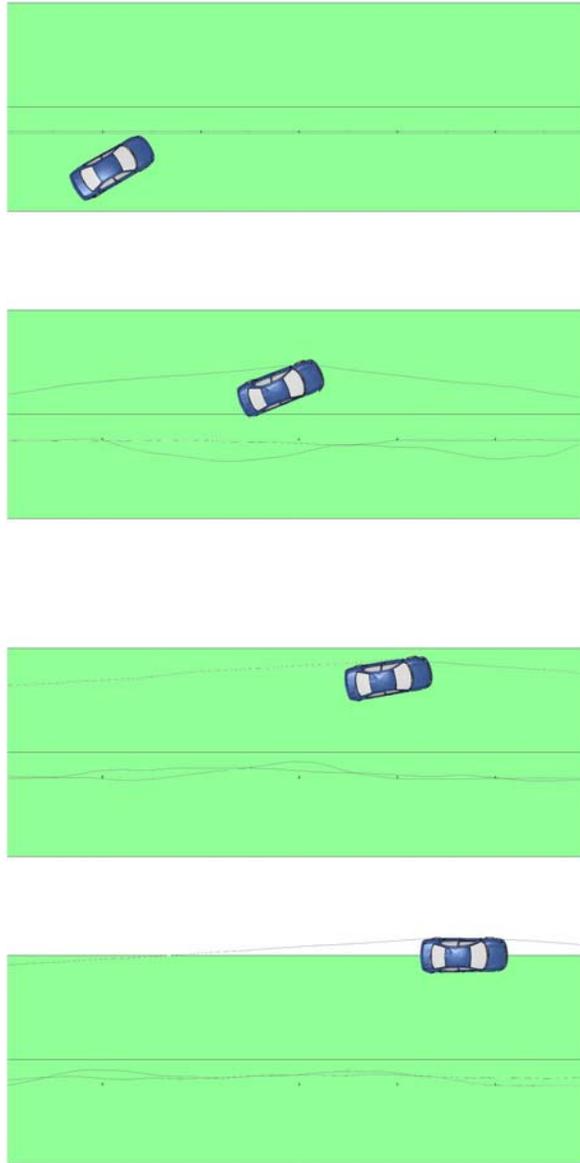


Fig. A.32: Front-side impact by Dodge Neon at 30° and 75 mph for the first design of Retrofit Option 1.

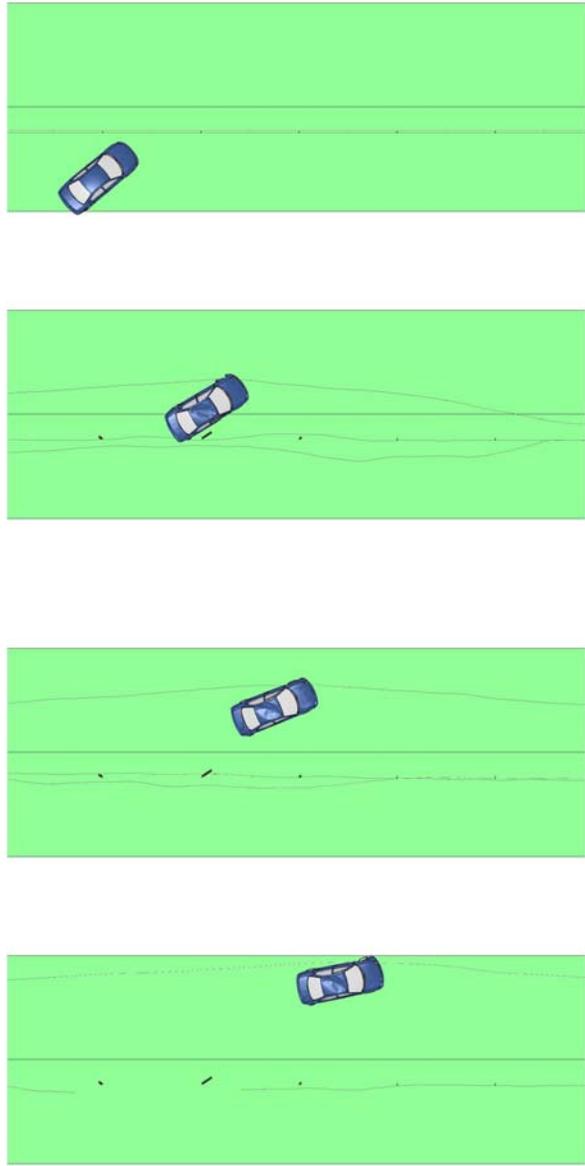


Fig. A.33: Front-side impact by Dodge Neon at 40° and 55 mph for the first design of Retrofit Option 1.

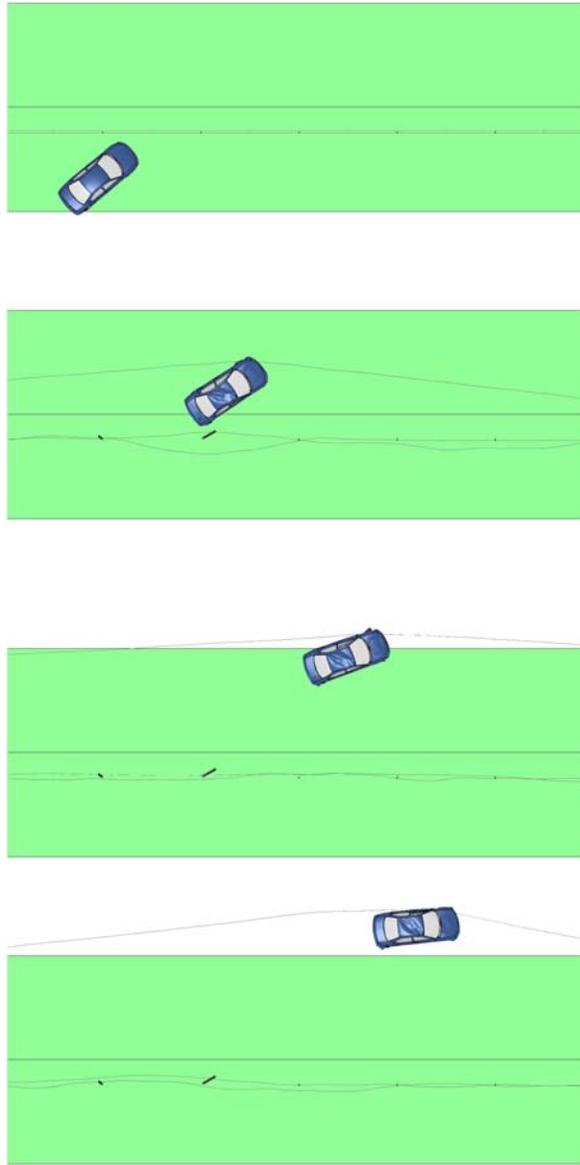


Fig. A.34: Front-side impact by Dodge Neon at 40° and 65 mph for the first design of Retrofit Option 1.

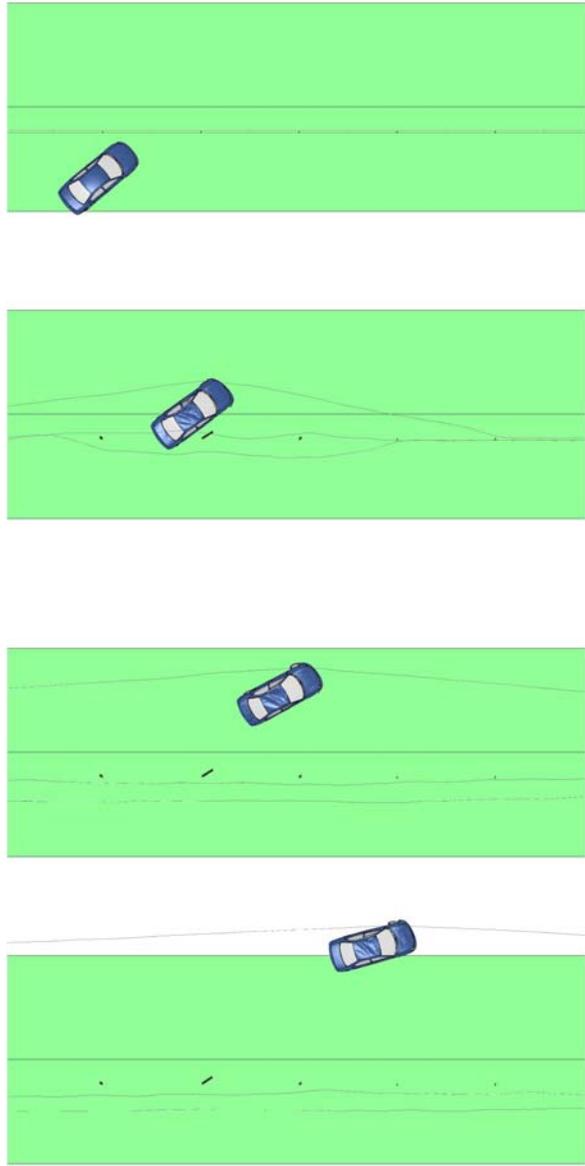


Fig. A.35: Front-side impact by Dodge Neon at 40° and 70 mph for the first design of Retrofit Option 1.

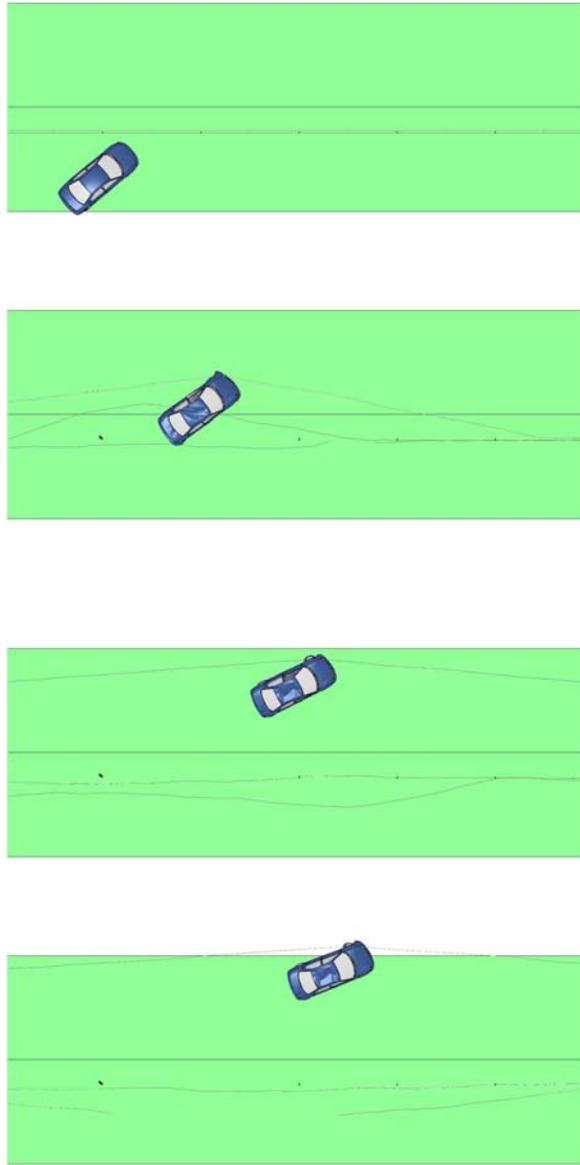


Fig. A.36: Front-side impact by Dodge Neon at 40° and 75 mph for the first design of Retrofit Option 1.

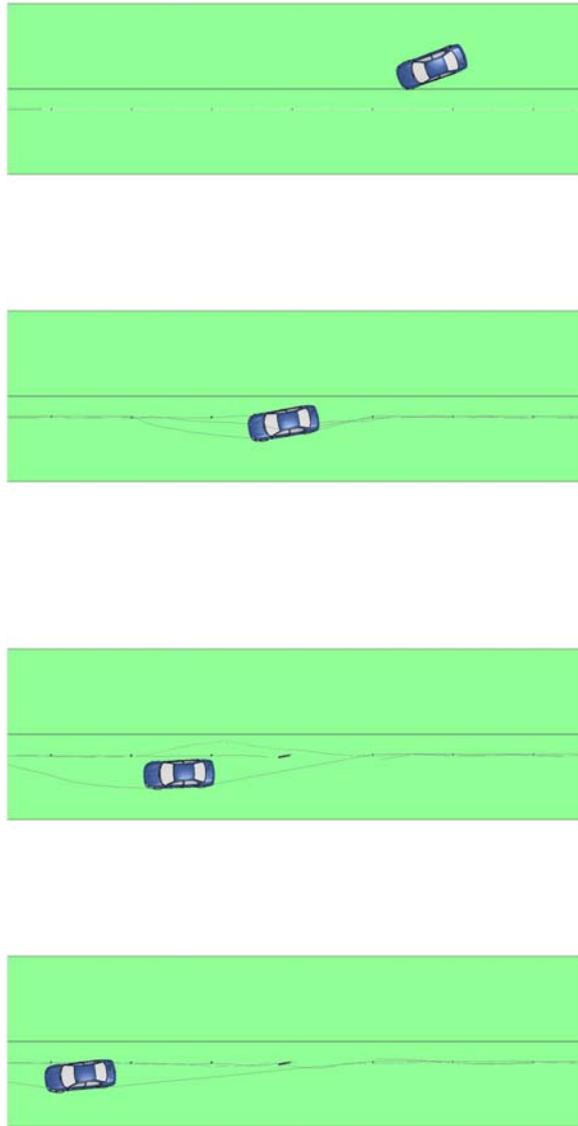


Fig. A.37: Back-side impact by Dodge Neon at 20° and 55 mph for the first design of Retrofit Option 1.

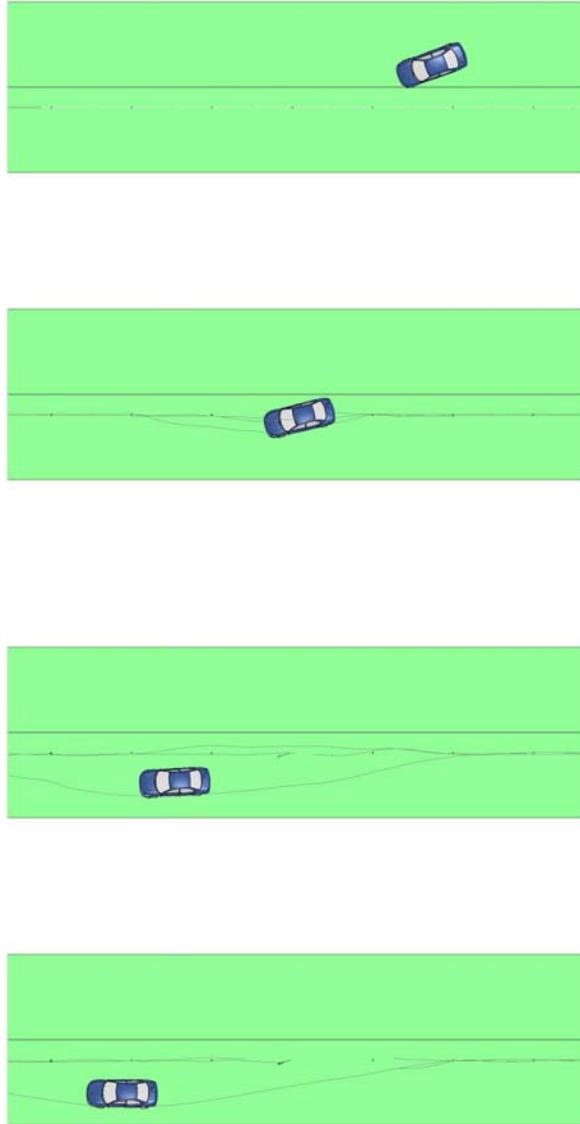


Fig. A.38: Back-side impact by Dodge Neon at 20° and 65 mph for the first design of Retrofit Option 1.

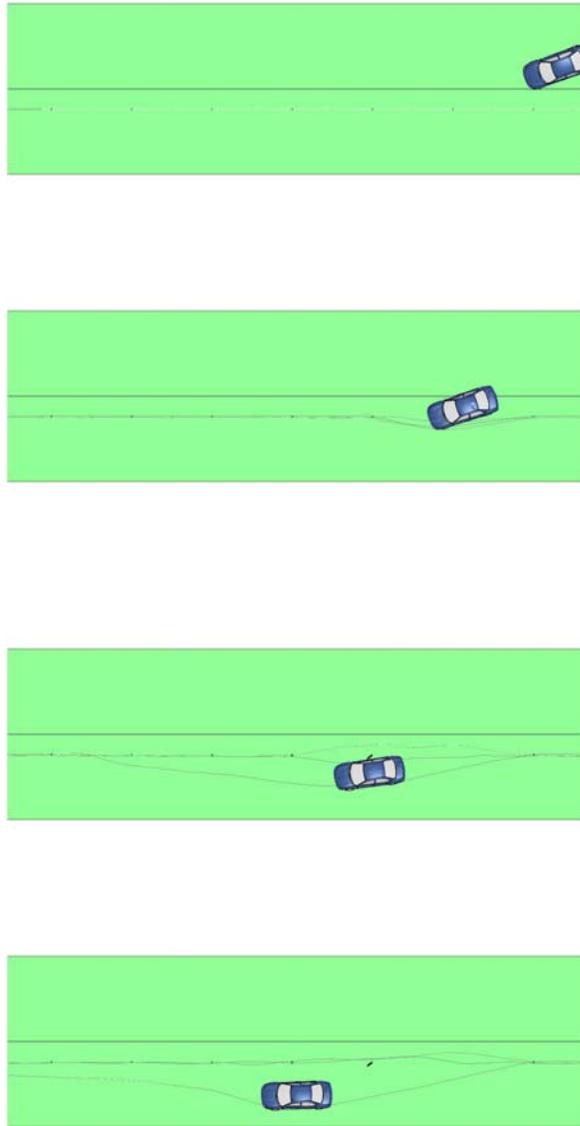


Fig. A.39: Back-side impact by Dodge Neon at 20° and 70 mph for the first design of Retrofit Option 1.

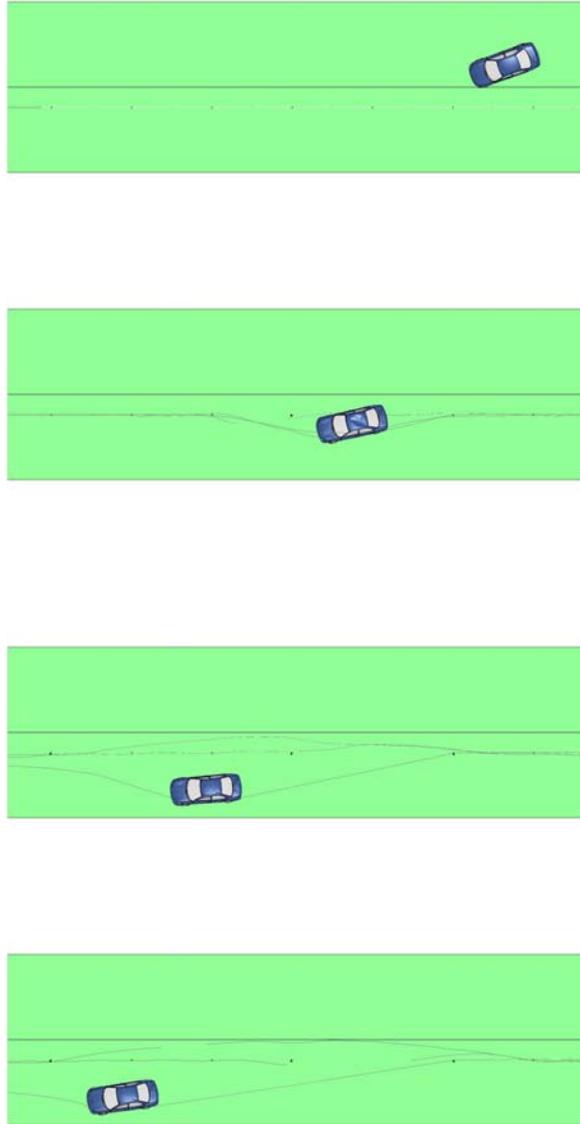


Fig. A.40: Back-side impact by Dodge Neon at 20° and 75 mph for the first design of Retrofit Option 1.

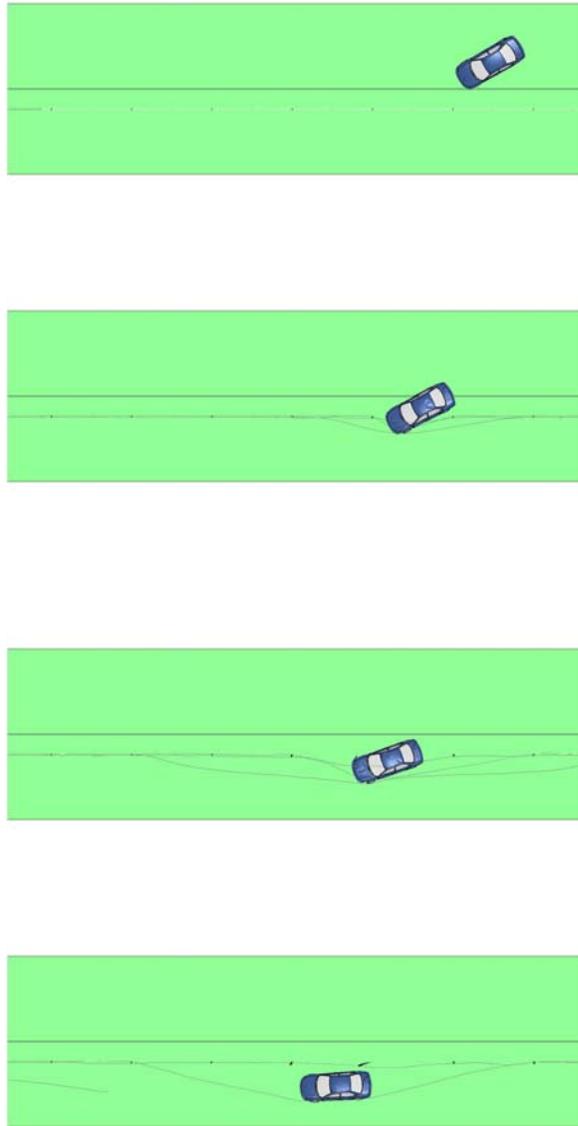


Fig. A.41: Back-side impact by Dodge Neon at 30° and 55 mph for the first design of Retrofit Option 1.

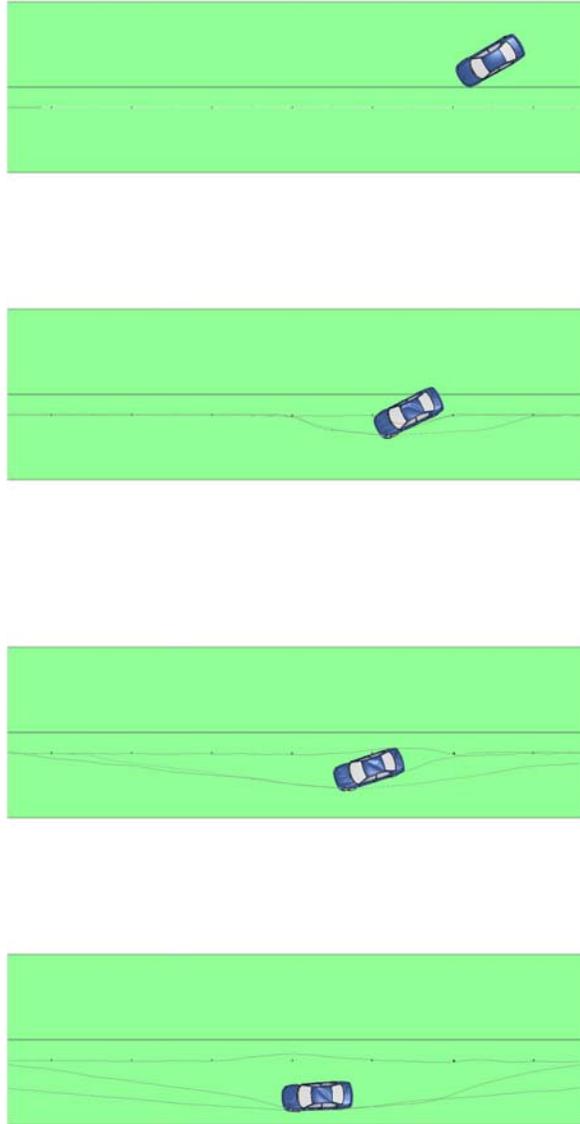


Fig. A.42: Back-side impact by Dodge Neon at 30° and 65 mph for the first design of Retrofit Option 1.

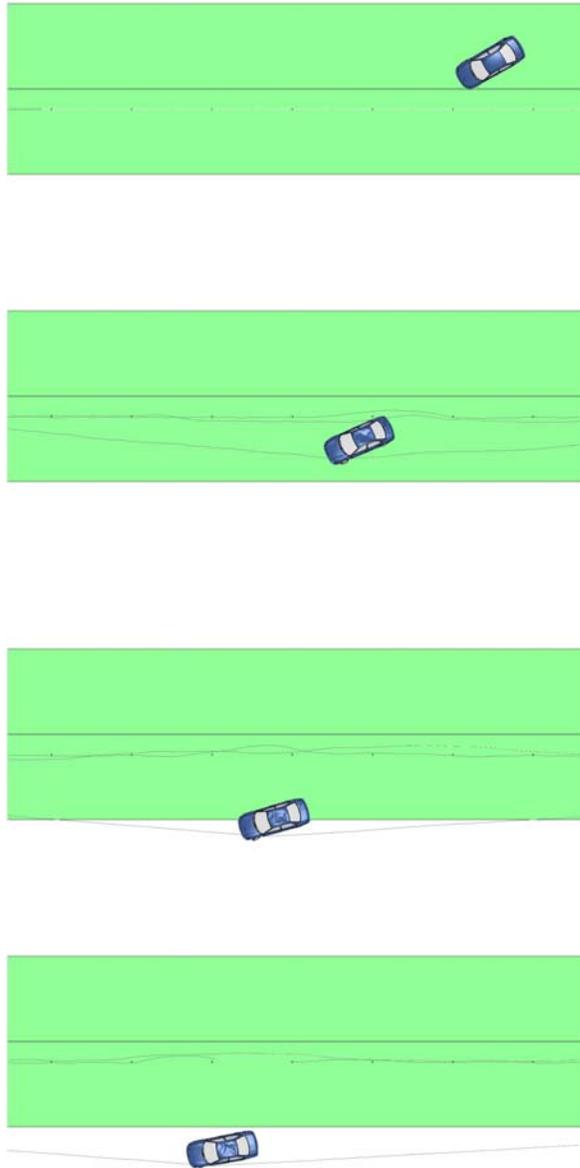


Fig. A.43: Back-side impact by Dodge Neon at 30° and 70 mph for the first design of Retrofit Option 1.

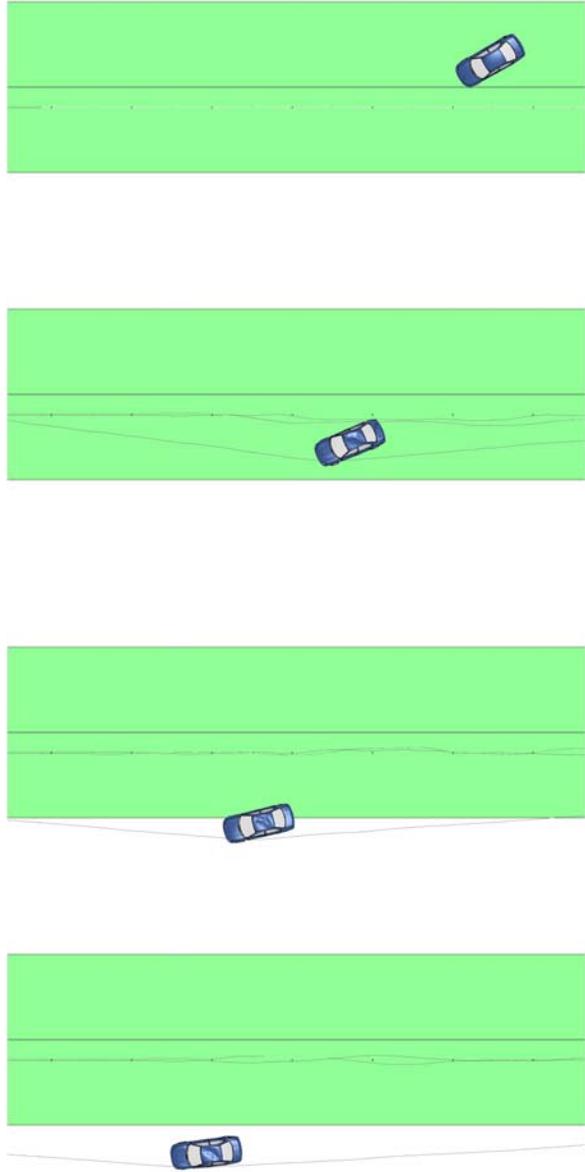


Fig. A.44: Back-side impact by Dodge Neon at 30° and 75 mph for the first design of Retrofit Option 1.

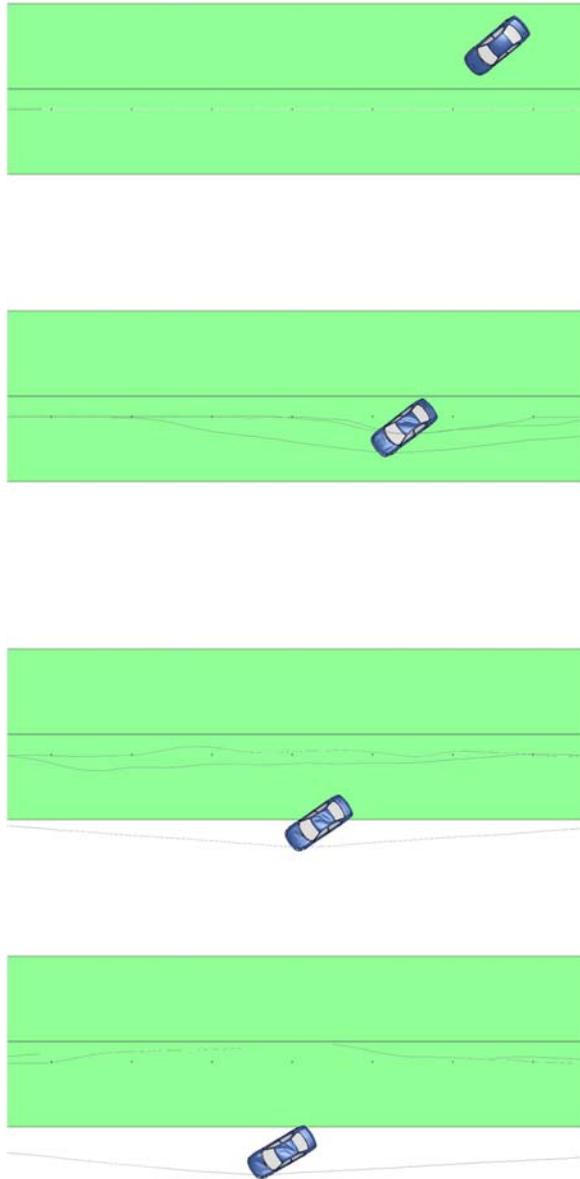


Fig. A.45: Back-side impact by Dodge Neon at 40° and 55 mph for the first design of Retrofit Option 1.

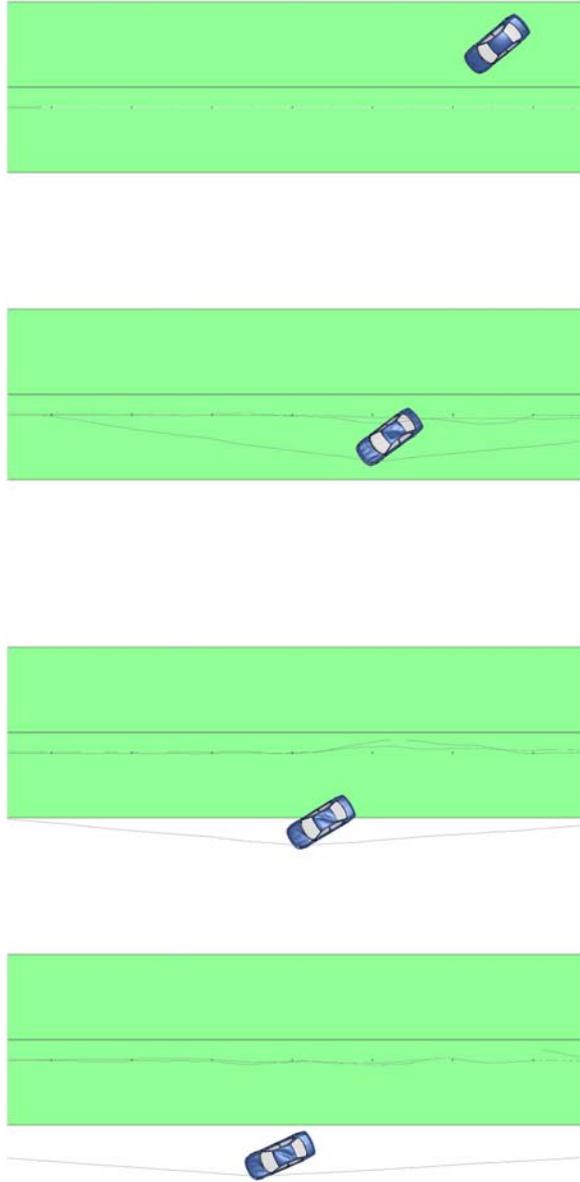


Fig. A.46: Back-side impact by Dodge Neon at 40° and 65 mph for the first design of Retrofit Option 1.

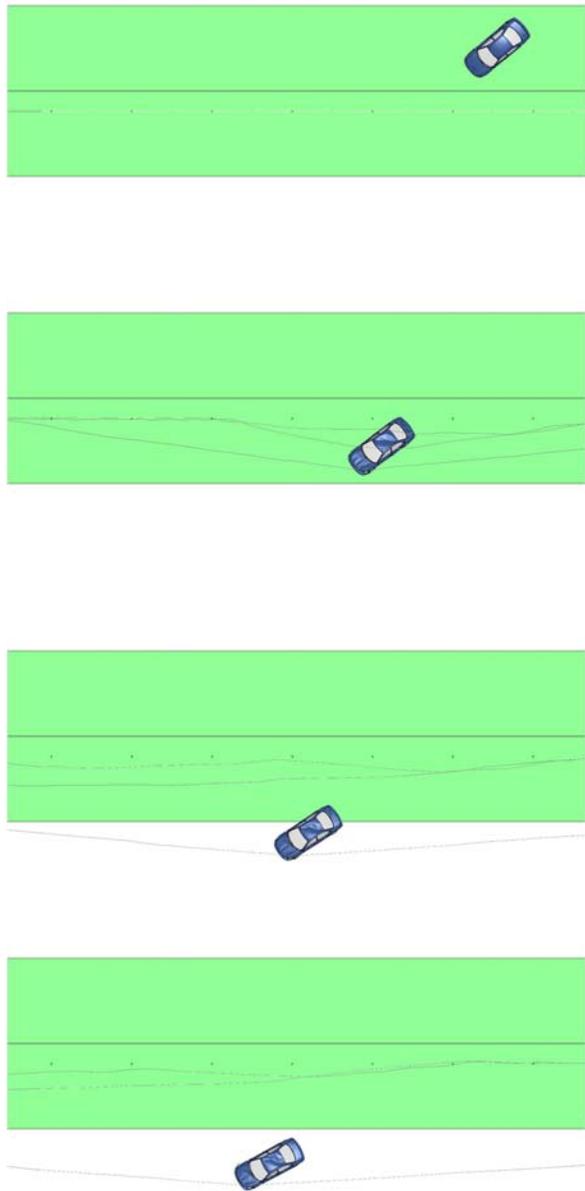


Fig. A.47: Back-side impact by Dodge Neon at 40° and 70 mph for the first design of Retrofit Option 1.

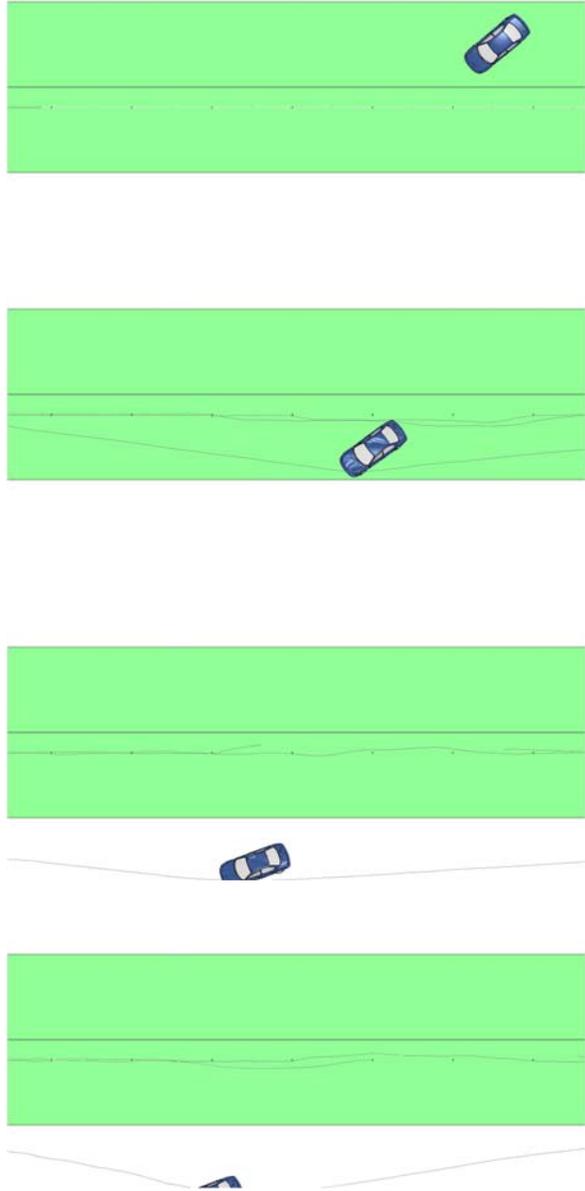


Fig. A.48: Back-side impact by Dodge Neon at 40° and 75 mph for the first design of Retrofit Option 1.

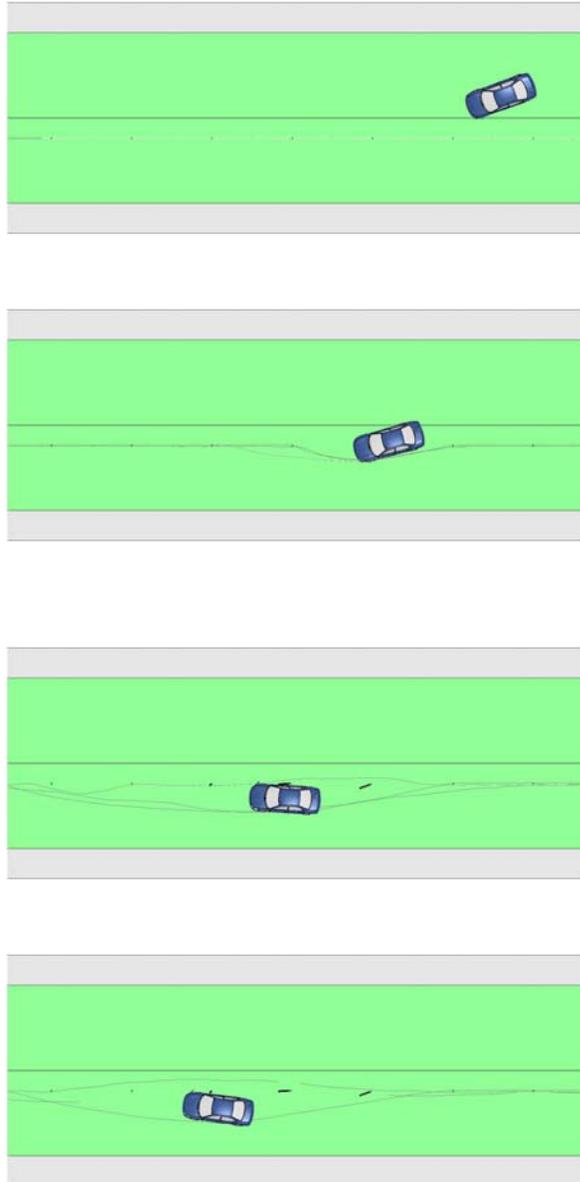


Fig. A.49: Back-side impact by Dodge Neon at 20° and 55 mph for the second design of Retrofit Option 1.

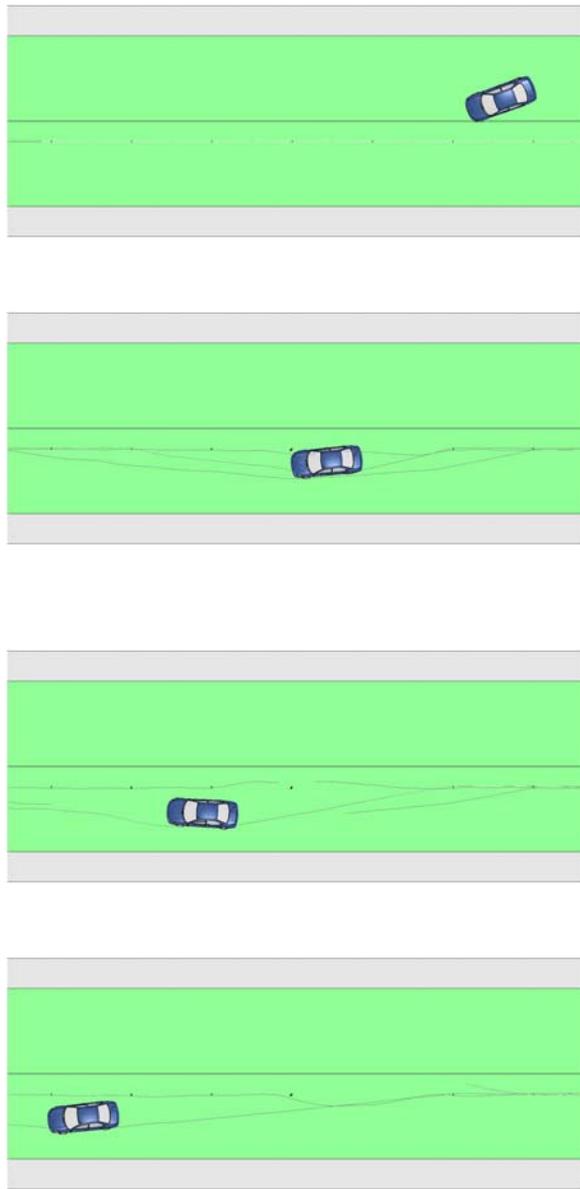


Fig. A.50: Back-side impact by Dodge Neon at 20° and 65 mph for the second design of Retrofit Option 1.

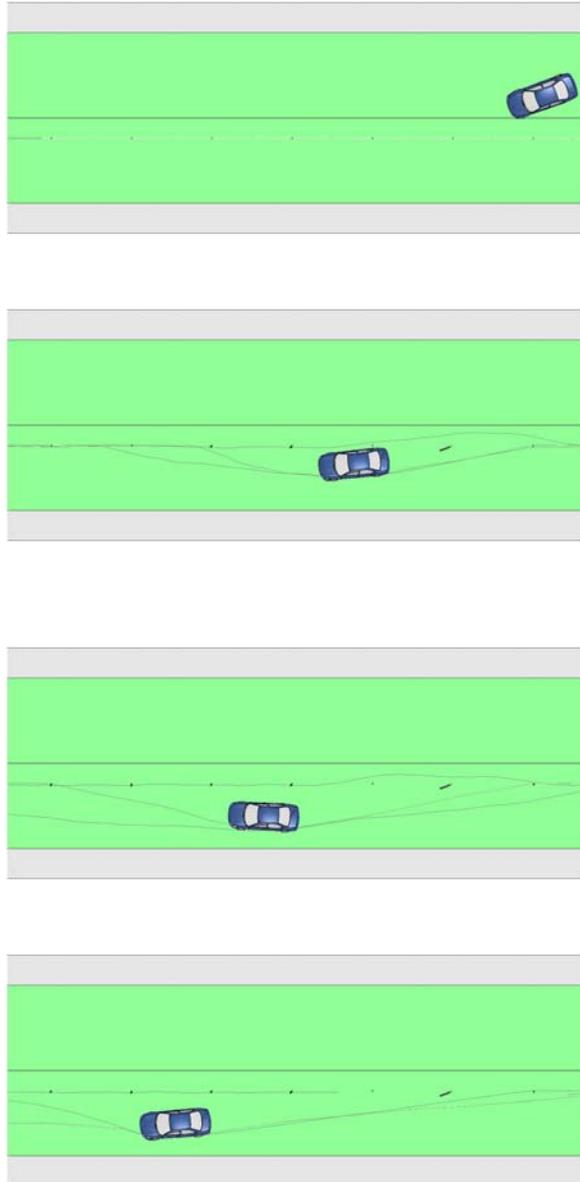


Fig. A.51: Back-side impact by Dodge Neon at 20° and 70 mph for the second design of Retrofit Option 1.

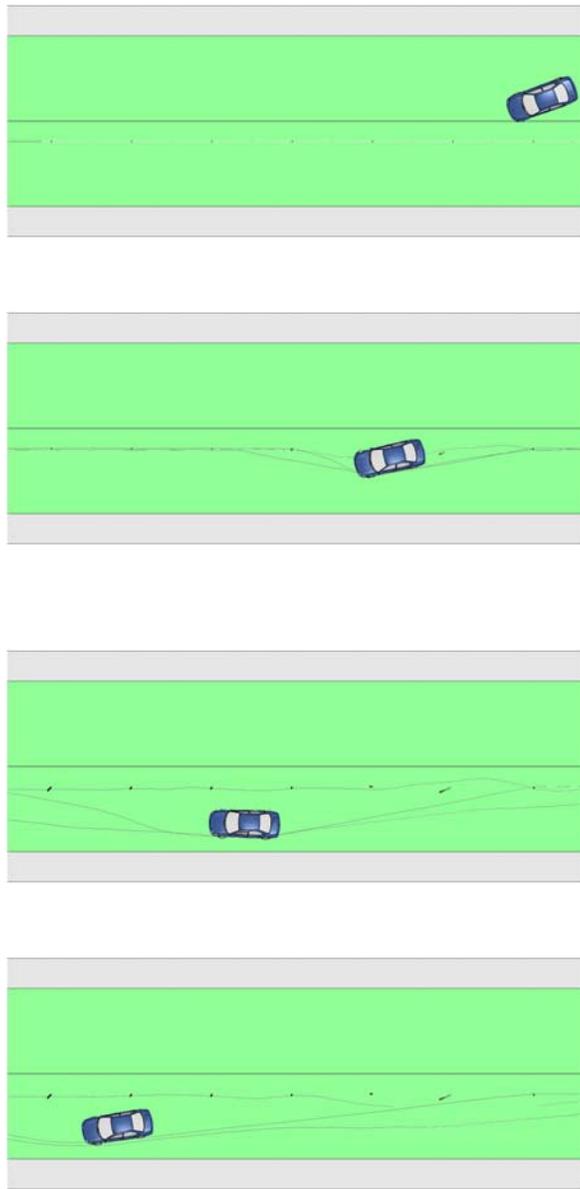


Fig. A.52: Back-side impact by Dodge Neon at 20° and 75 mph for the second design of Retrofit Option 1.

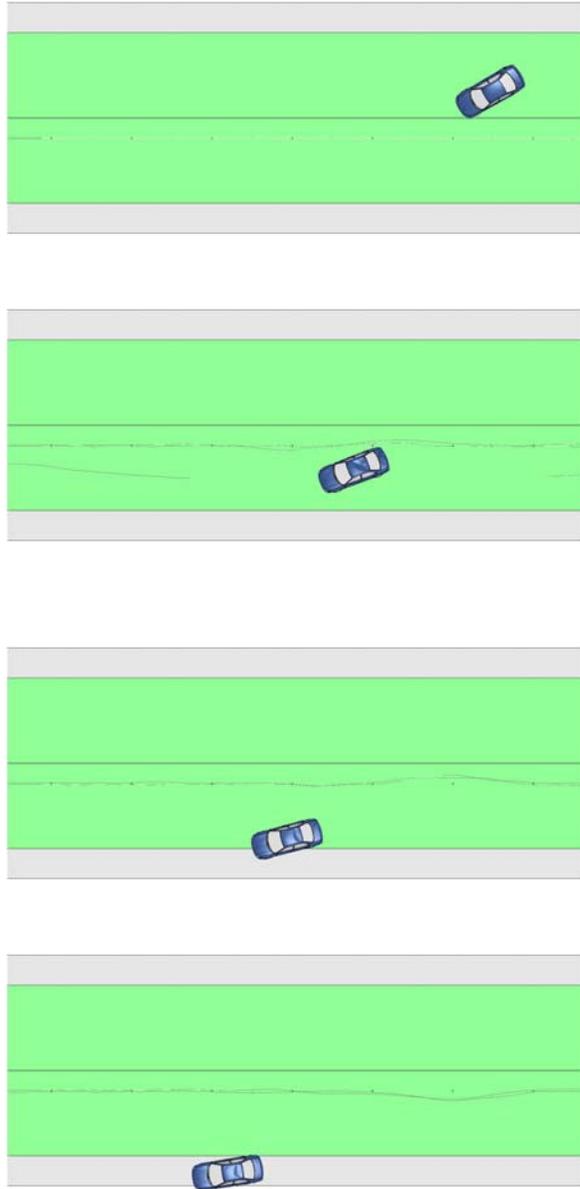


Fig. A.53: Back-side impact by Dodge Neon at 30° and 55 mph for the second design of Retrofit Option 1.

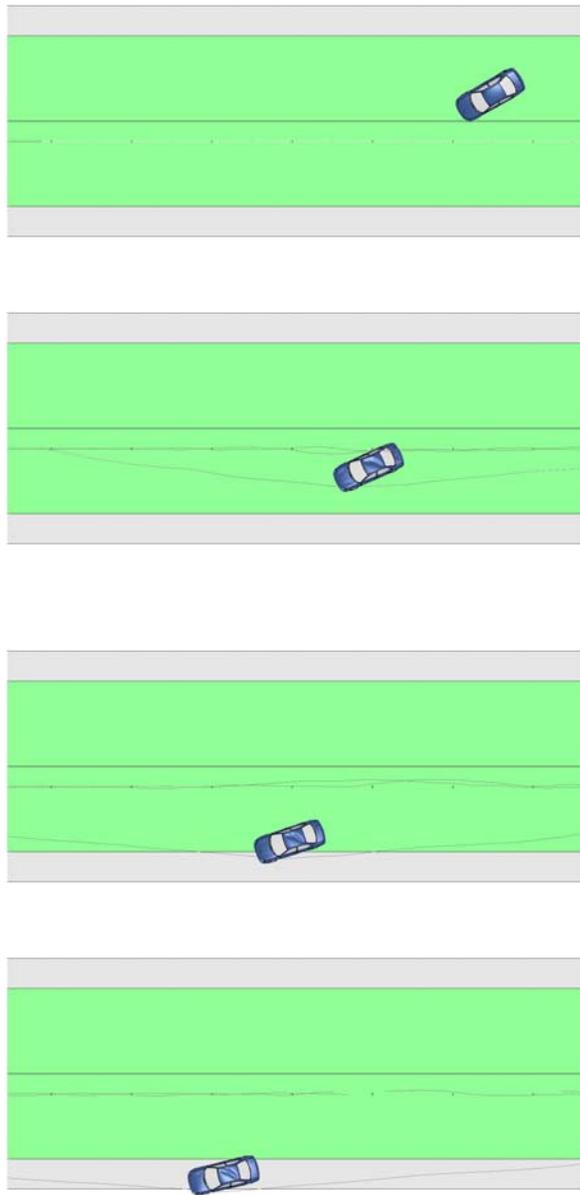


Fig. A.54: Back-side impact by Dodge Neon at 30° and 65 mph for the second design of Retrofit Option 1.

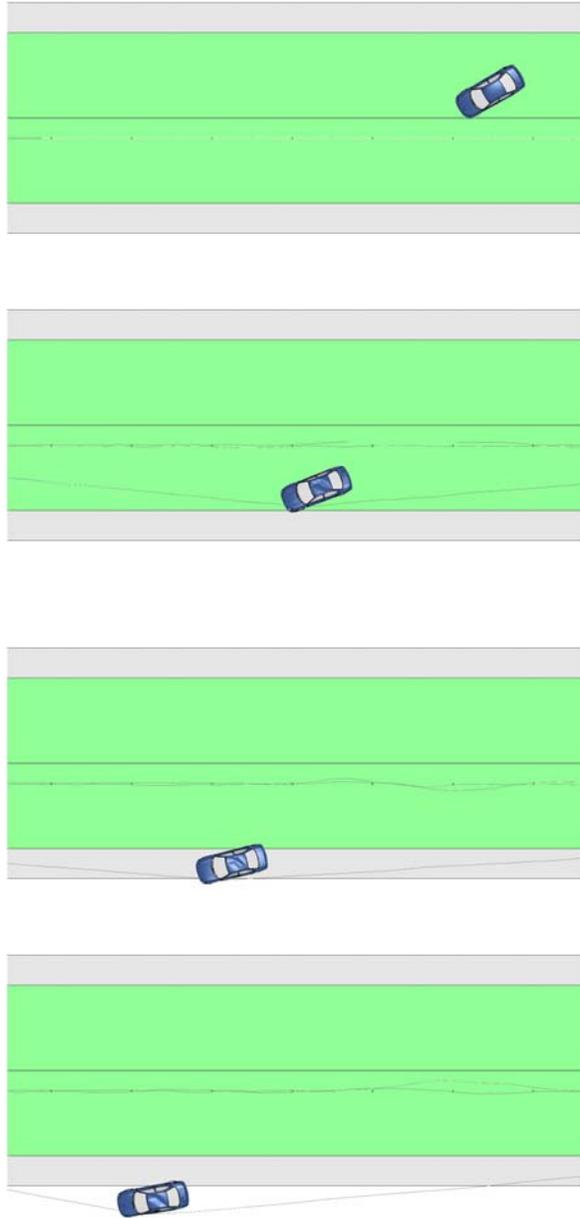


Fig. A.55: Back-side impact by Dodge Neon at 30° and 70 mph for the second design of Retrofit Option 1.

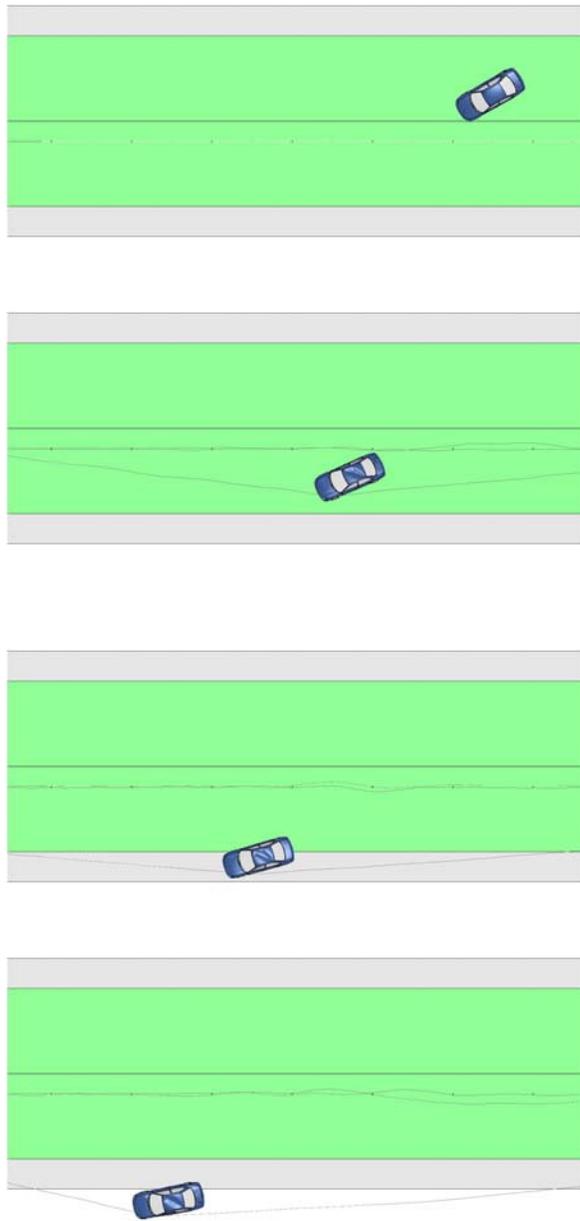


Fig. A.56: Back-side impact by Dodge Neon at 30° and 75 mph for the second design of Retrofit Option 1.



Fig. A.57: Back-side impact by Dodge Neon at 40° and 55 mph for the second design of Retrofit Option 1.

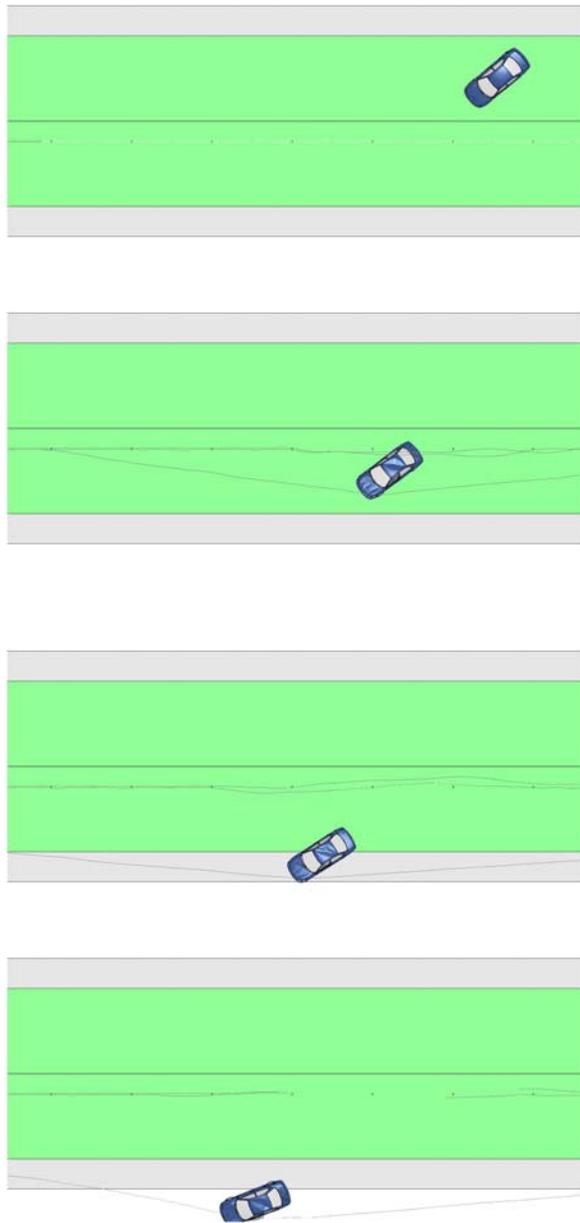


Fig. A.58: Back-side impact by Dodge Neon at 40° and 65 mph for the second design of Retrofit Option 1.

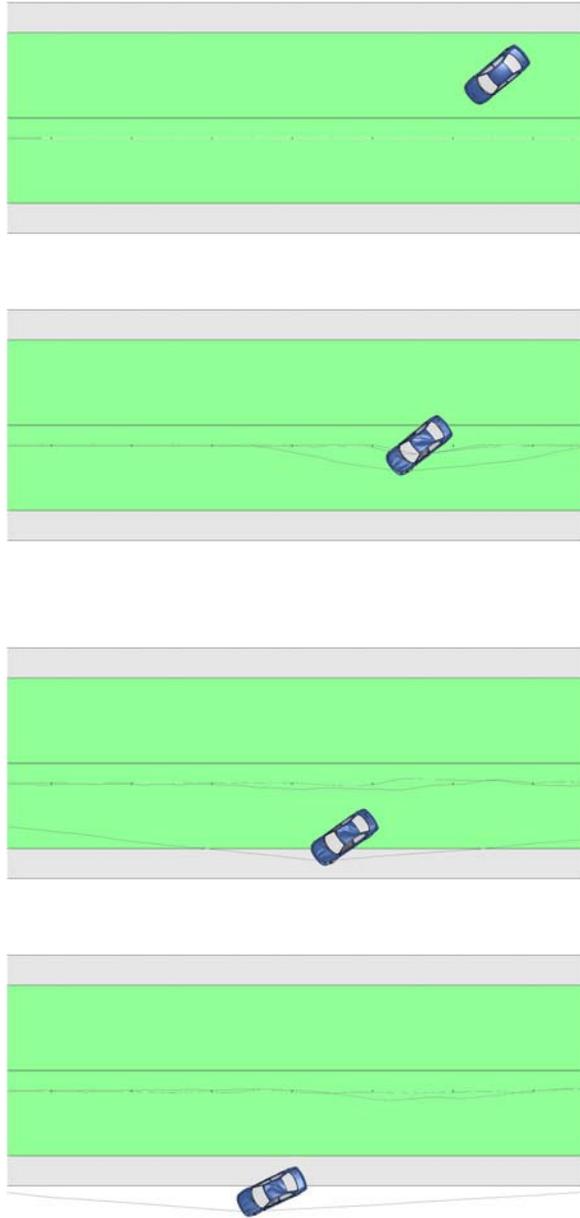


Fig. A.59: Back-side impact by Dodge Neon at 40° and 70 mph for the second design of Retrofit Option 1.

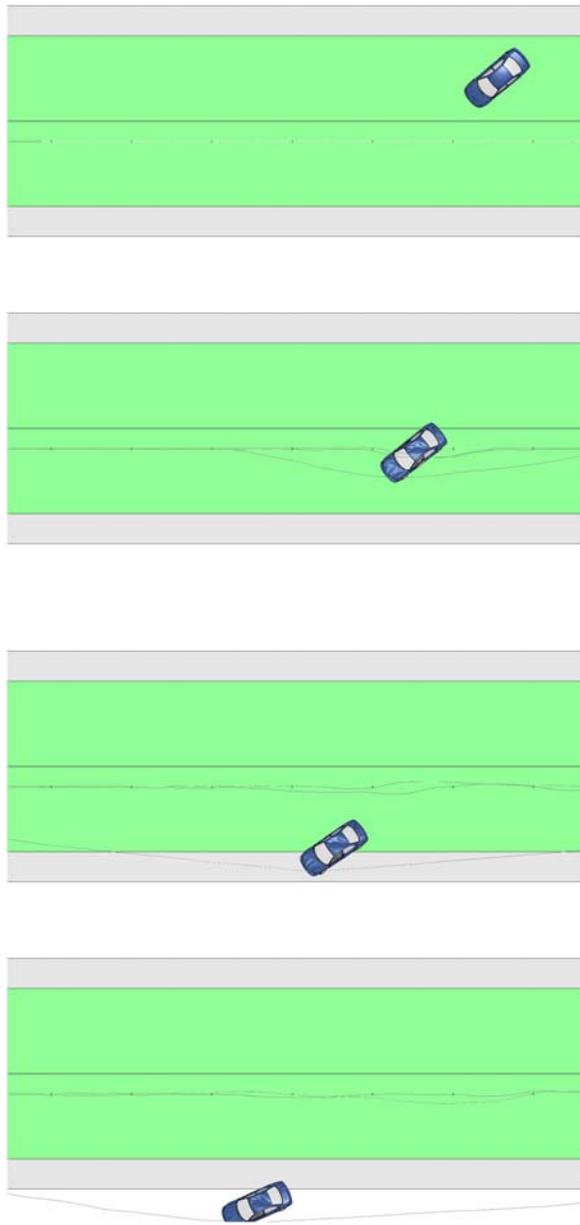


Fig. A.60: Back-side impact by Dodge Neon at 40° and 75 mph for the second design of Retrofit Option 1.

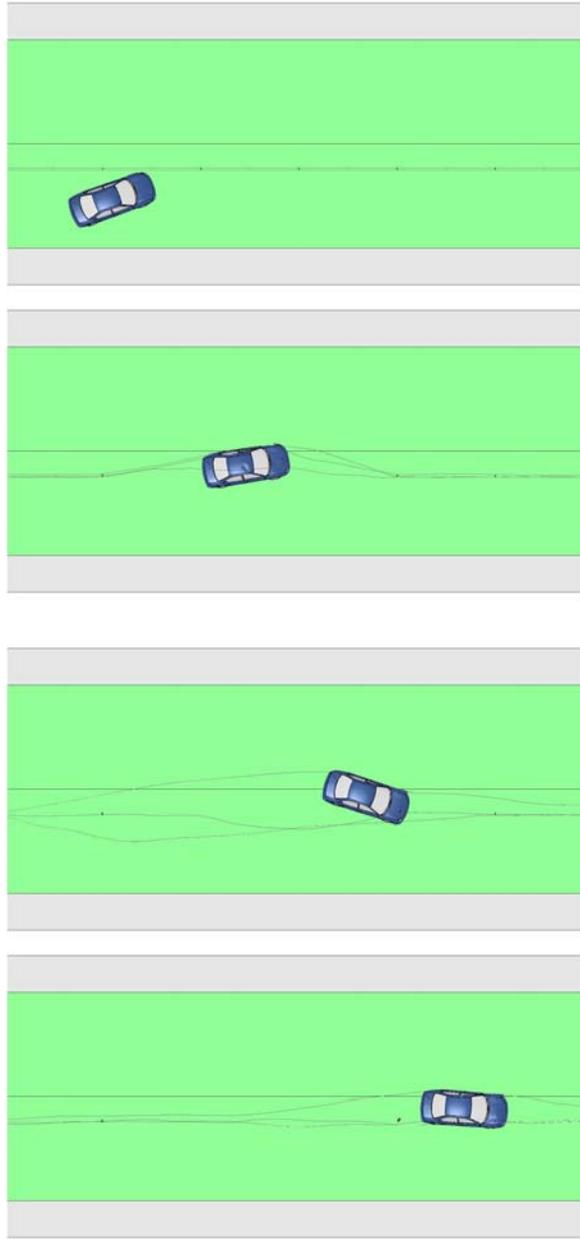


Fig. A.61: Front-side impact by Dodge Neon at 20° and 55 mph for the third design of Retrofit Option 1.

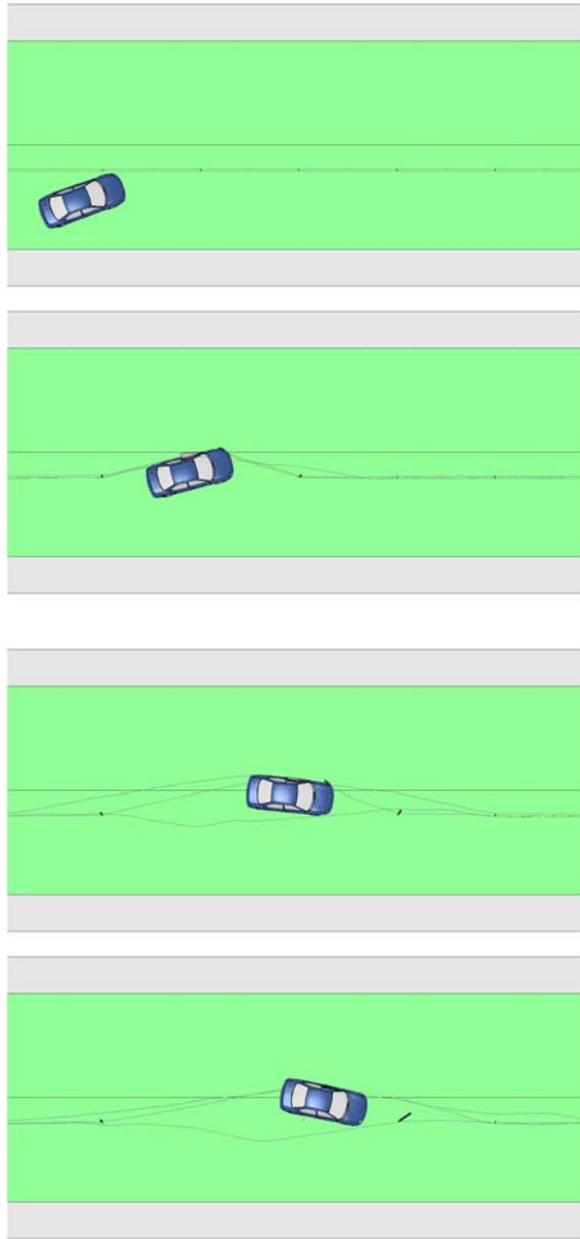


Fig. A.62: Front-side impact by Dodge Neon at 20° and 65 mph for the third design of Retrofit Option 1.

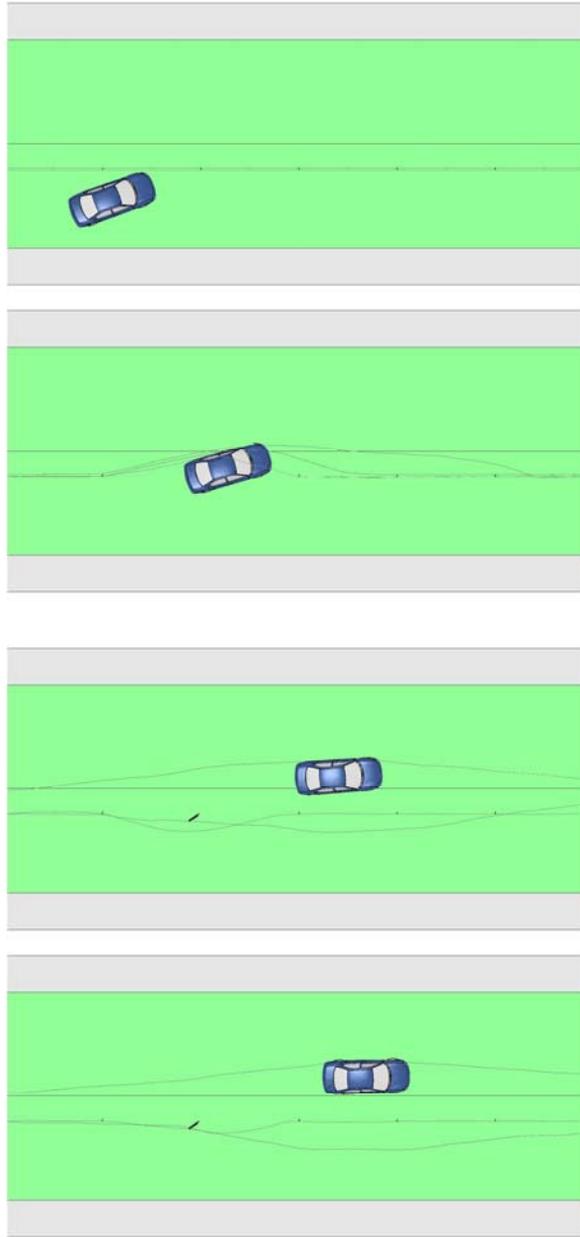


Fig. A.63: Front-side impact by Dodge Neon at 20° and 70 mph for the third design of Retrofit Option 1.

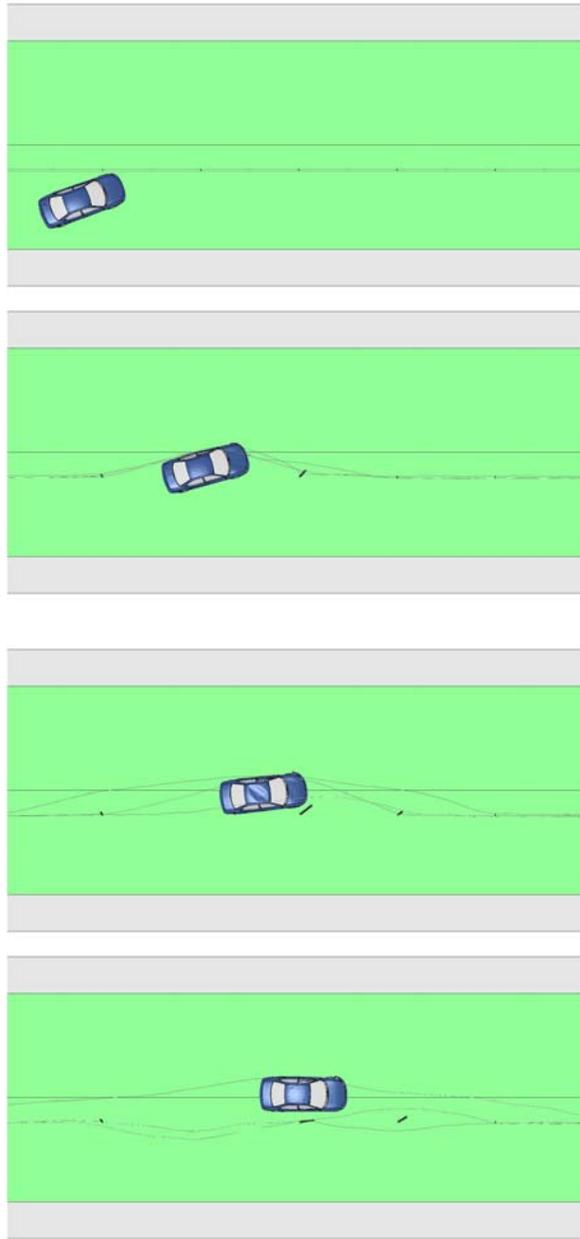


Fig. A.64: Front-side impact by Dodge Neon at 20° and 75 mph for the third design of Retrofit Option 1.

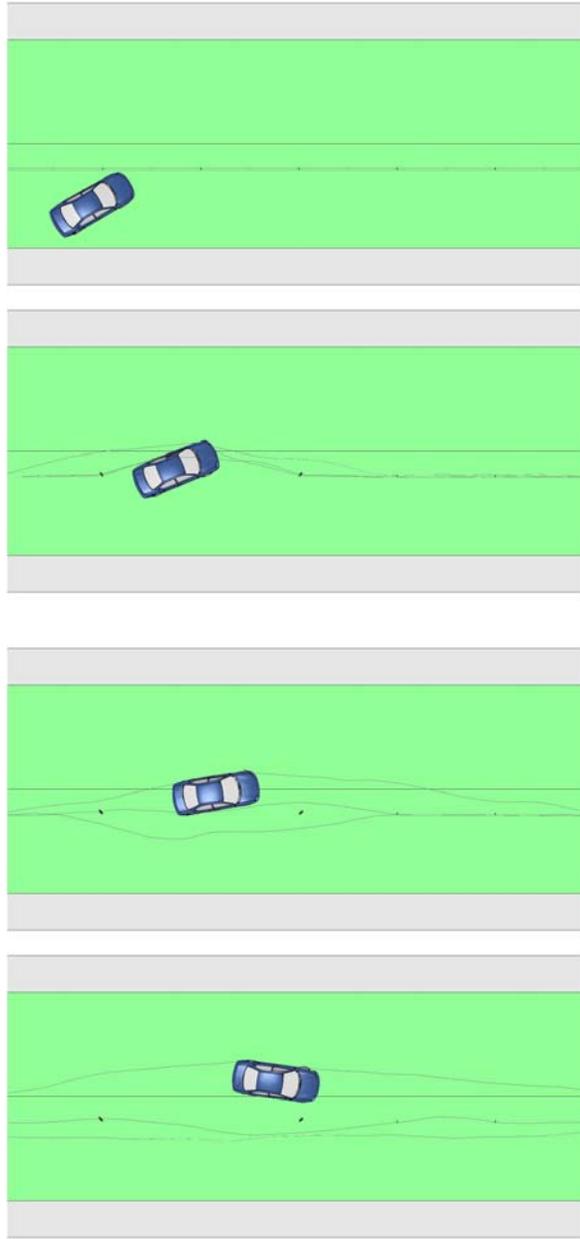


Fig. A.65: Front-side impact by Dodge Neon at 30° and 55 mph for the third design of Retrofit Option 1.

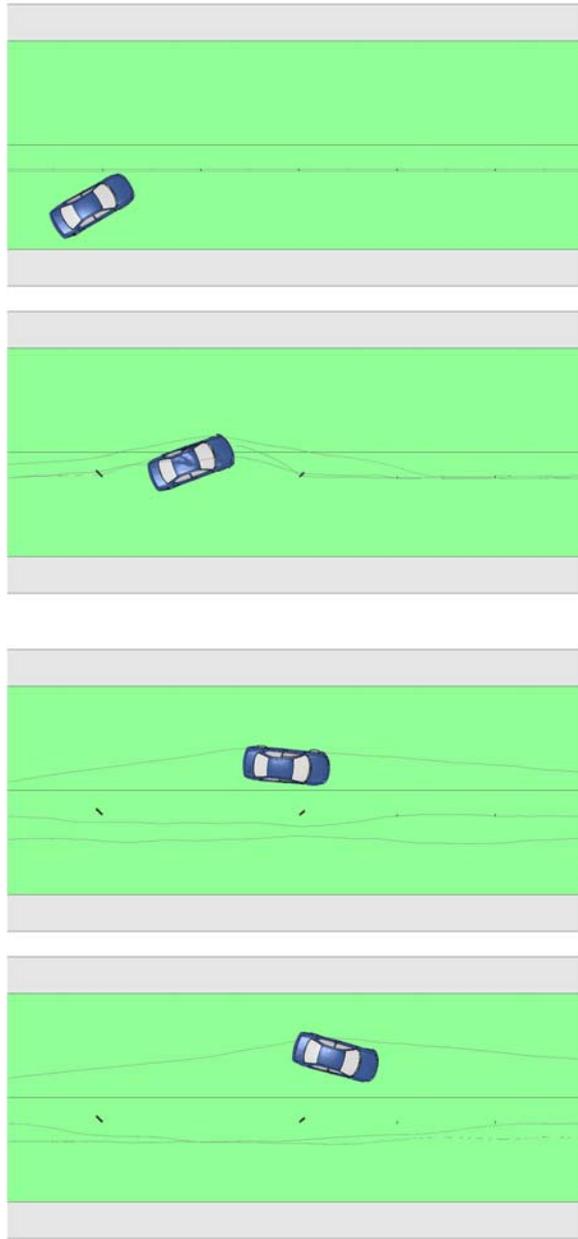


Fig. A.66: Front-side impact by Dodge Neon at 30° and 65 mph for the third design of Retrofit Option 1.

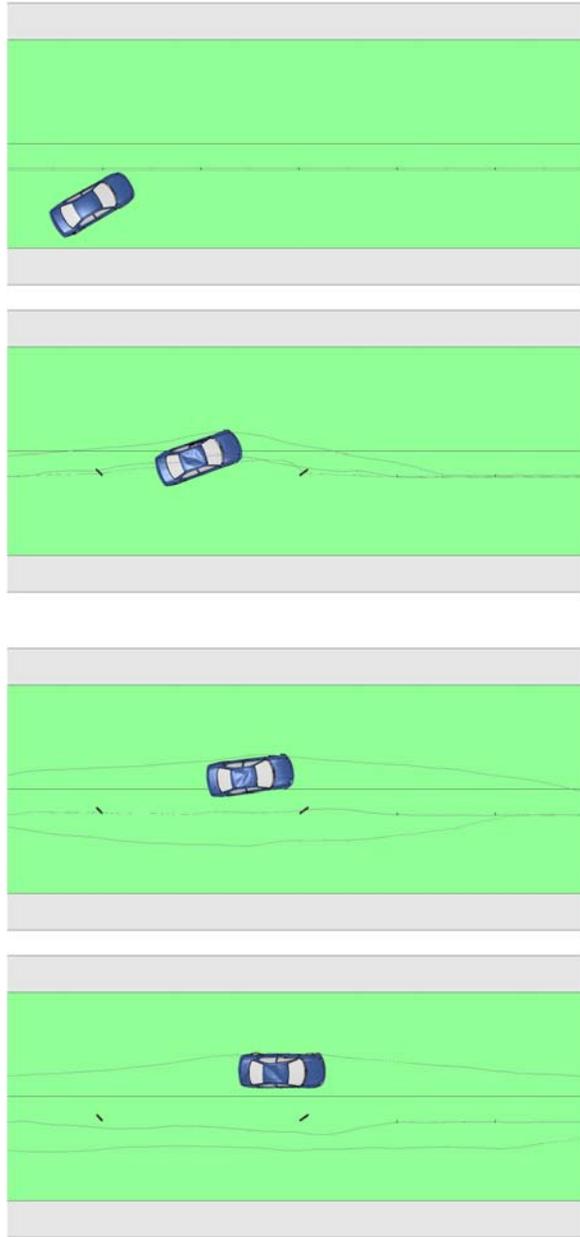


Fig. A.67: Front-side impact by Dodge Neon at 30° and 70 mph for the third design of Retrofit Option 1.

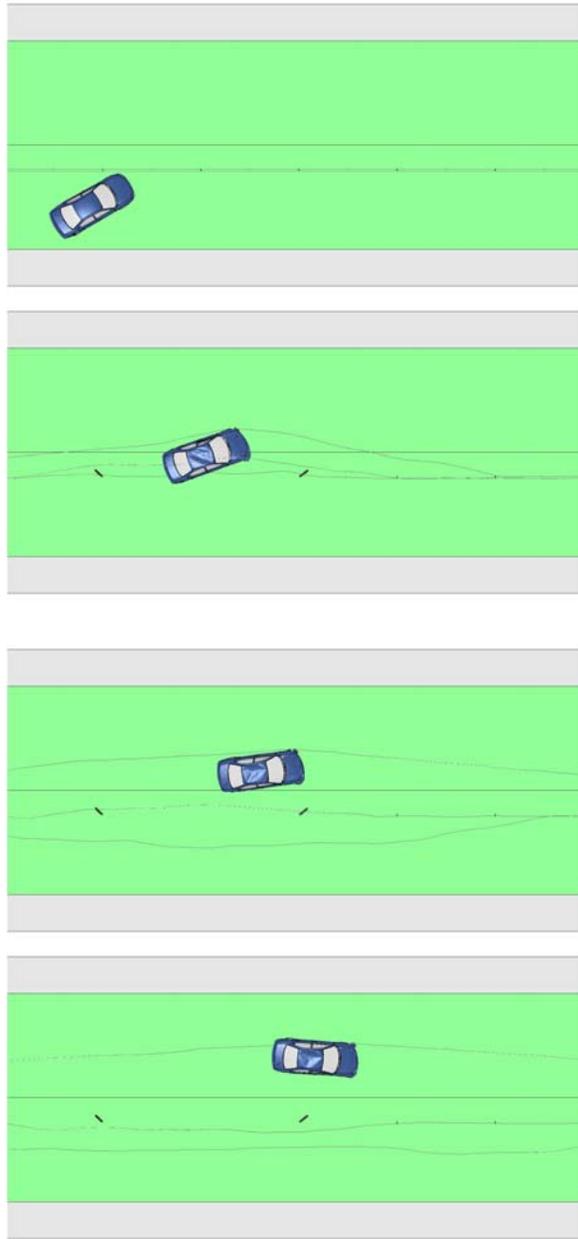


Fig. A.68: Front-side impact by Dodge Neon at 30° and 75 mph for the third design of Retrofit Option 1.

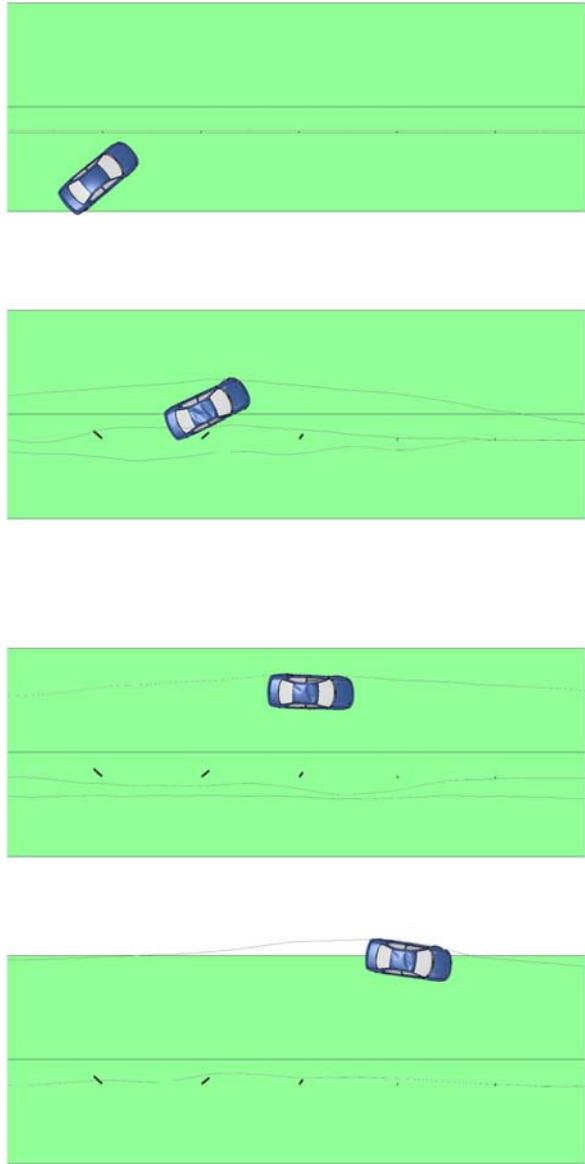


Fig. A.69: Front-side impact by Dodge Neon at 40° and 55 mph for the third design of Retrofit Option 1.

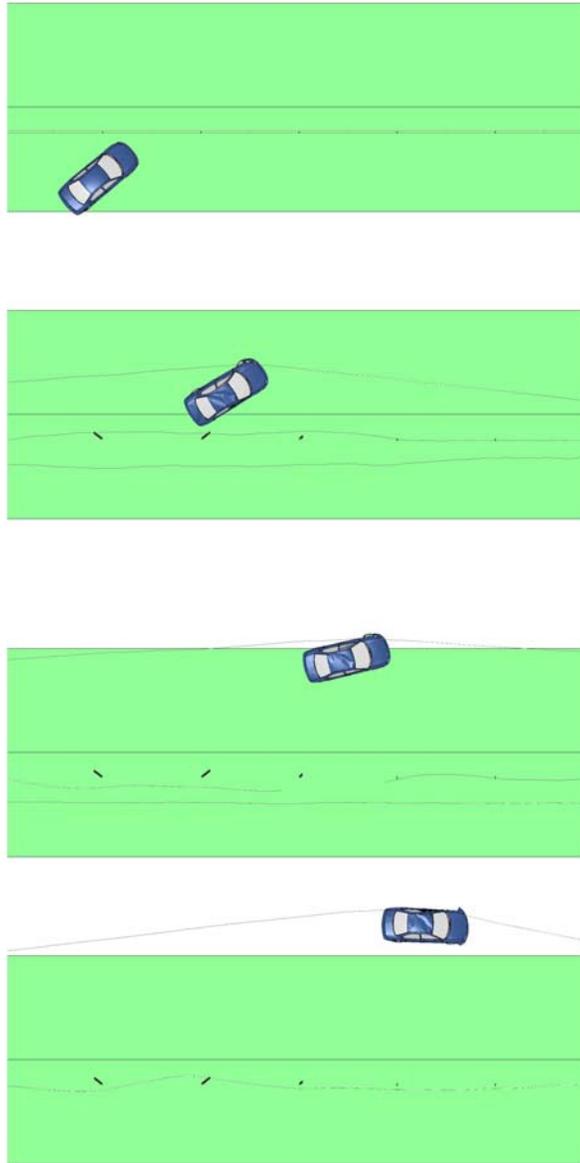


Fig. A.70: Front-side impact by Dodge Neon at 40° and 65 mph for the third design of Retrofit Option 1.

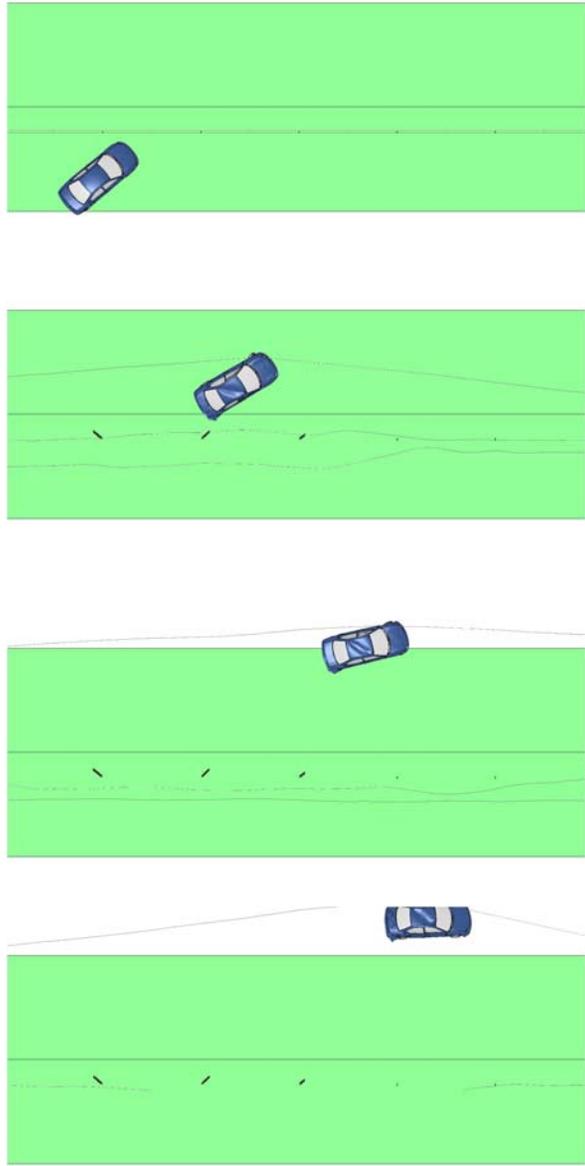


Fig. A.71: Front-side impact by Dodge Neon at 40° and 70 mph for the third design of Retrofit Option 1.

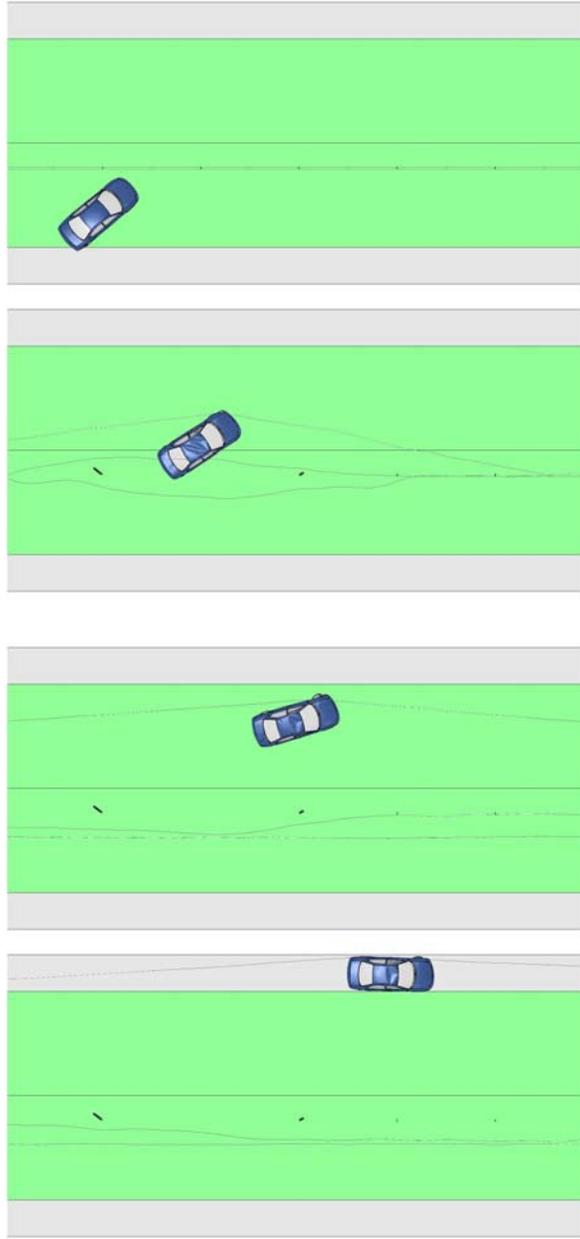


Fig. A.72: Front-side impact by Dodge Neon at 40° and 75 mph for the third design of Retrofit Option 1.

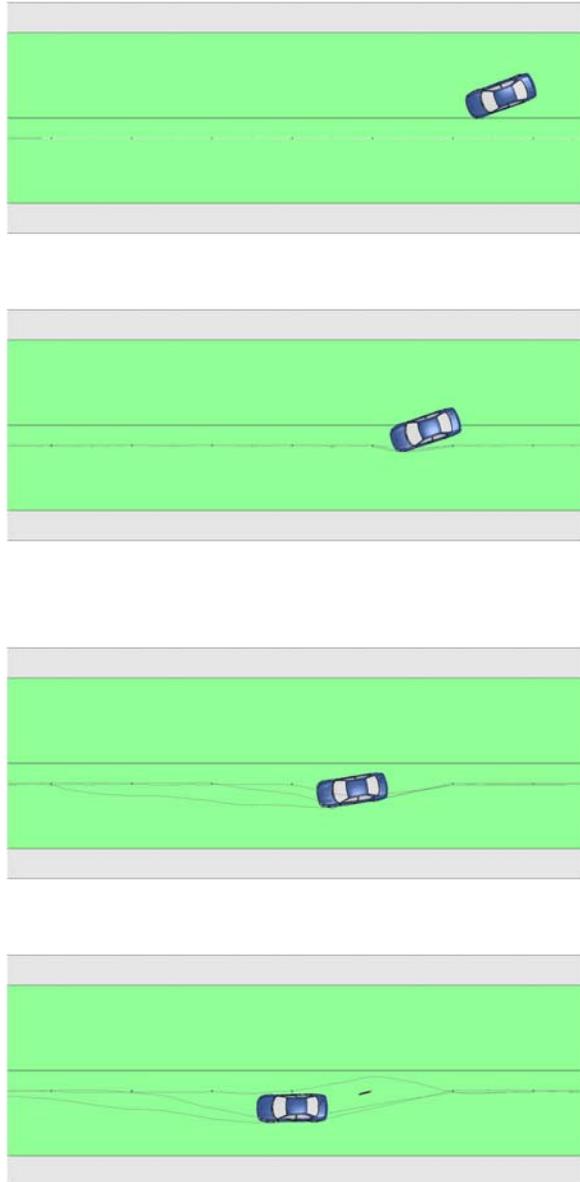


Fig. A.73: Back-side impact by Dodge Neon at 20° and 55 mph for the third design of Retrofit Option 1.

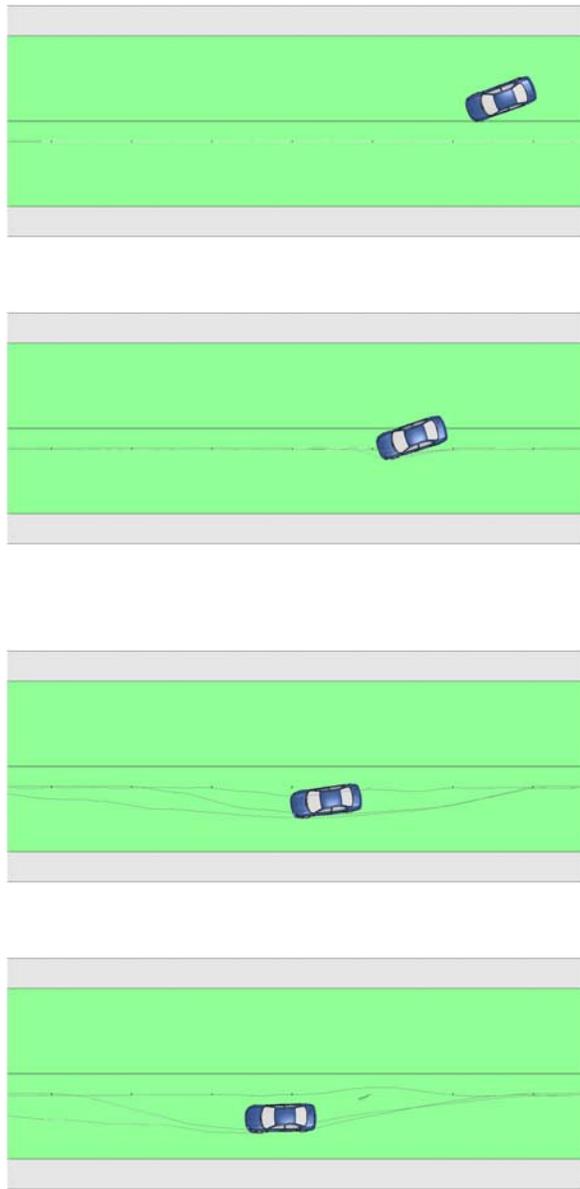


Fig. A.74: Back-side impact by Dodge Neon at 20° and 65 mph for the third design of Retrofit Option 1.



Fig. A.75: Back-side impact by Dodge Neon at 20° and 70 mph for the third design of Retrofit Option 1.

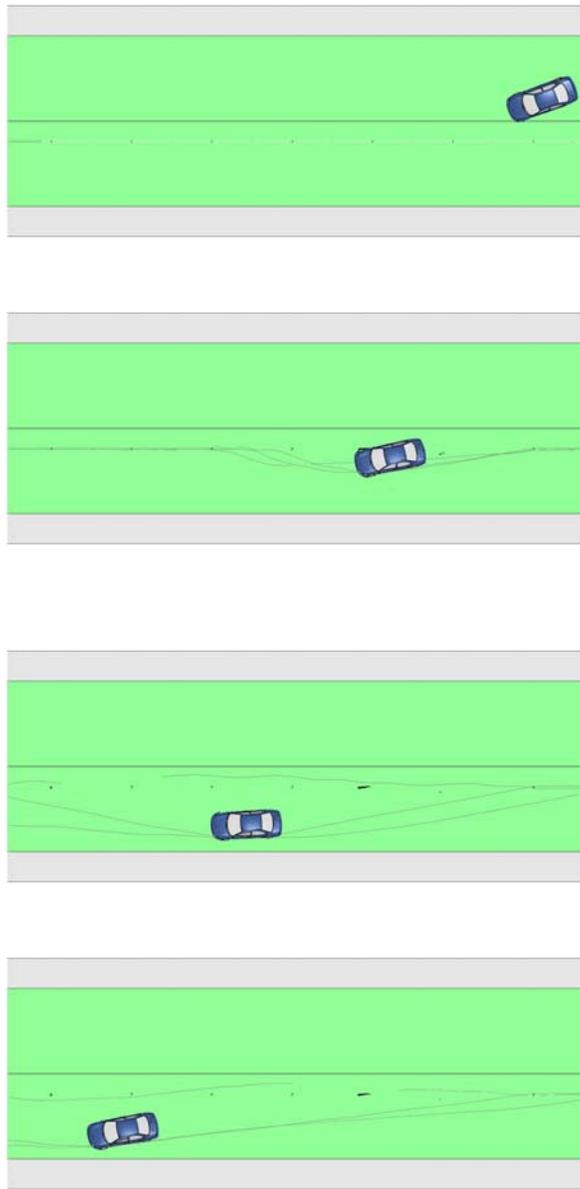


Fig. A.76: Back-side impact by Dodge Neon at 20° and 75 mph for the third design of Retrofit Option 1.

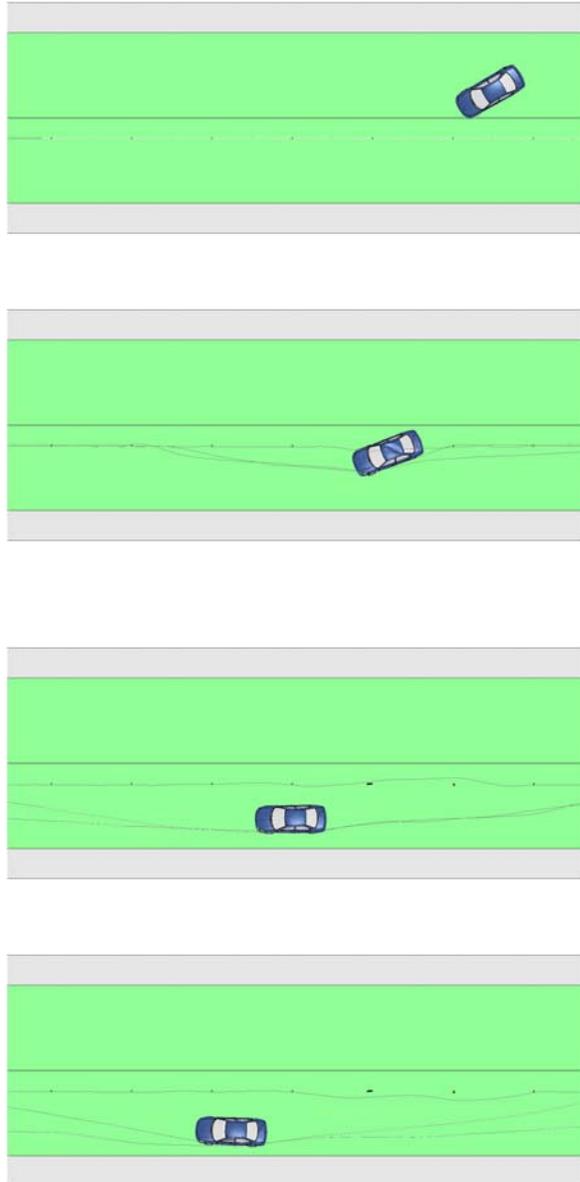


Fig. A.77: Back-side impact by Dodge Neon at 30° and 55 mph for the third design of Retrofit Option 1.

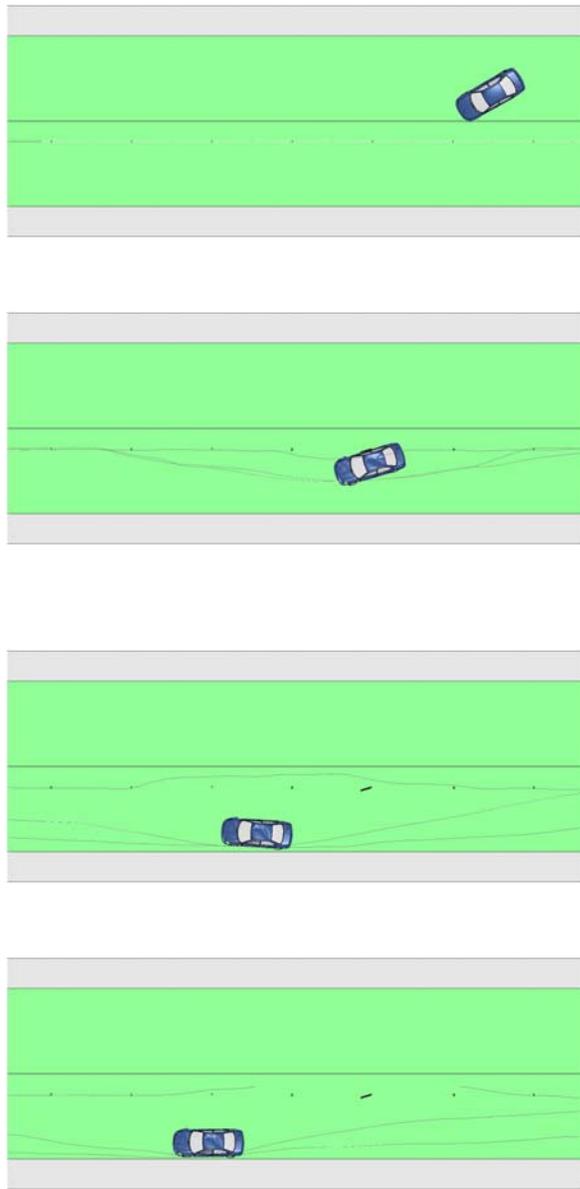


Fig. A.78: Back-side impact by Dodge Neon at 30° and 65 mph for the third design of Retrofit Option 1.

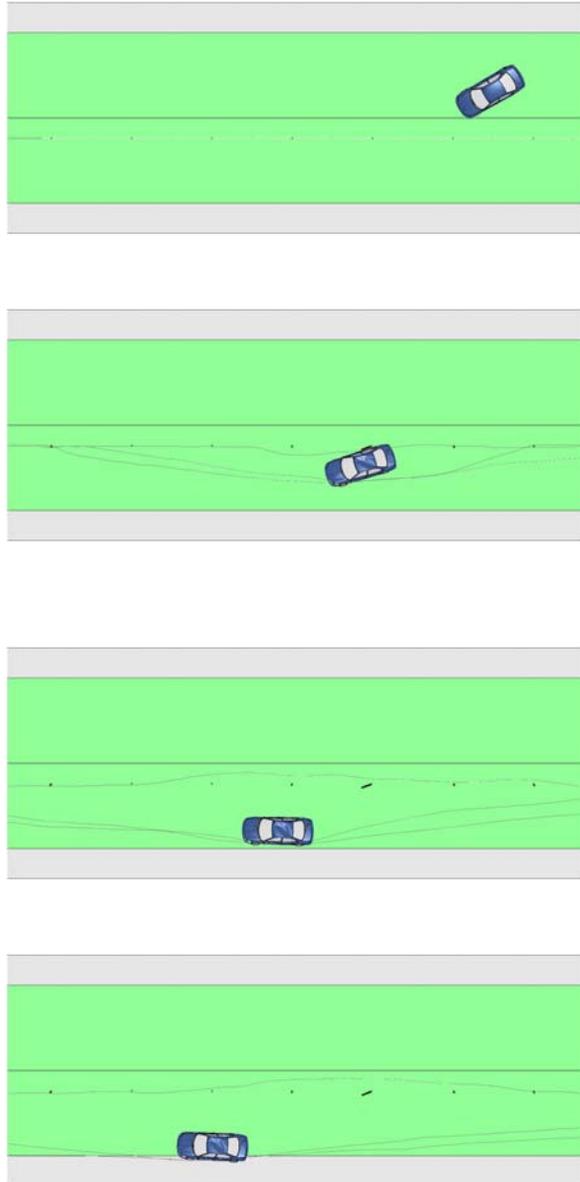


Fig. A.79: Back-side impact by Dodge Neon at 30° and 70 mph for the third design of Retrofit Option 1.

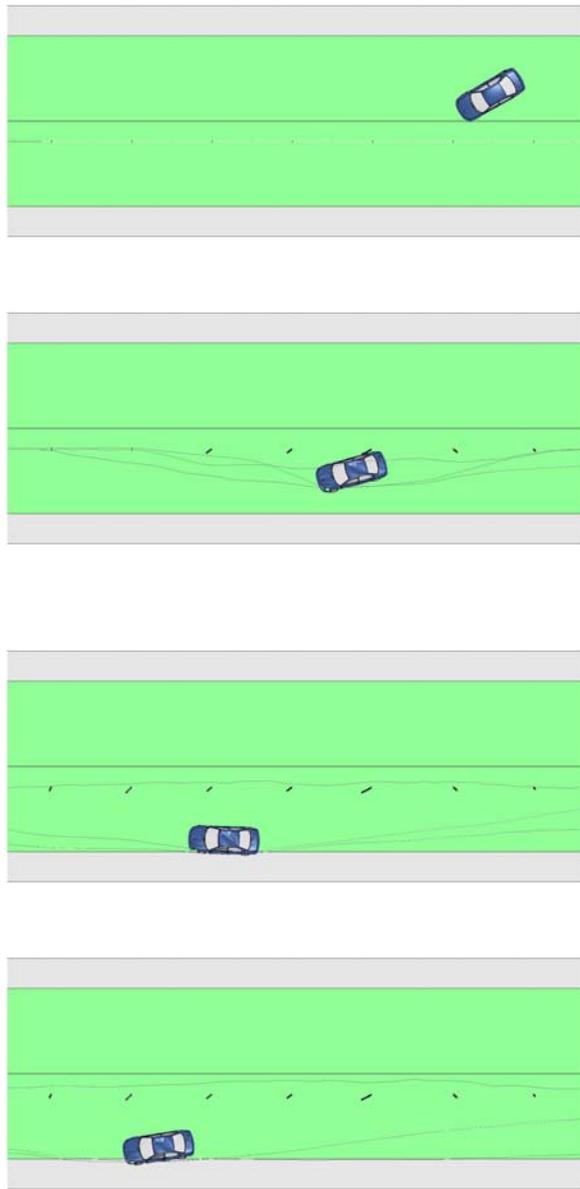


Fig. A.80: Back-side impact by Dodge Neon at 30° and 75 mph for the third design of Retrofit Option 1.

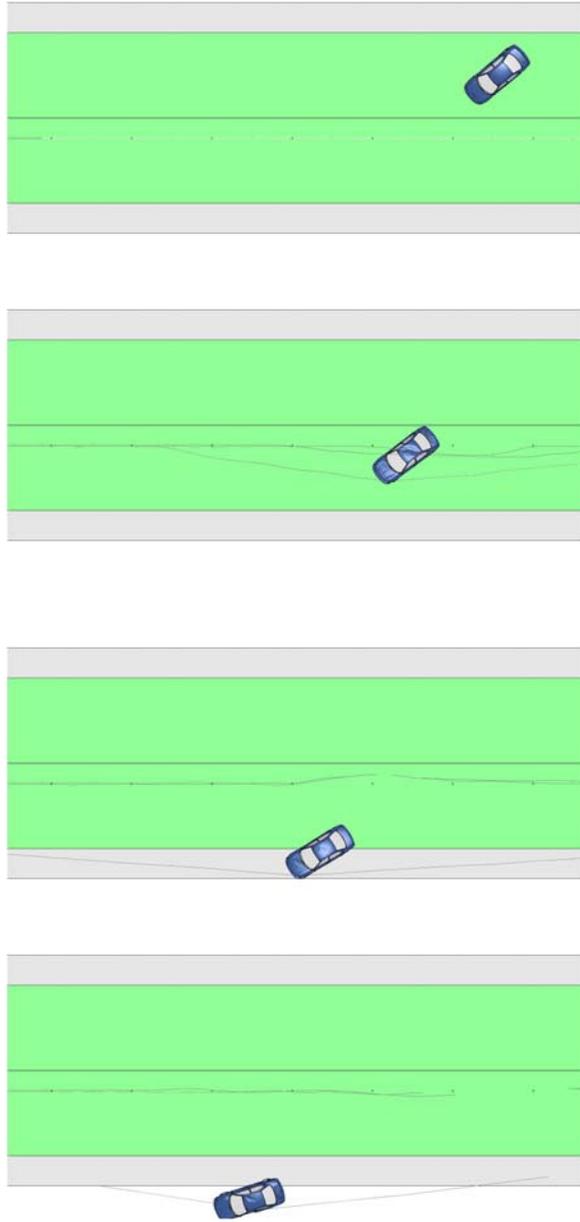


Fig. A.81: Back-side impact by Dodge Neon at 40° and 55 mph for the third design of Retrofit Option 1.

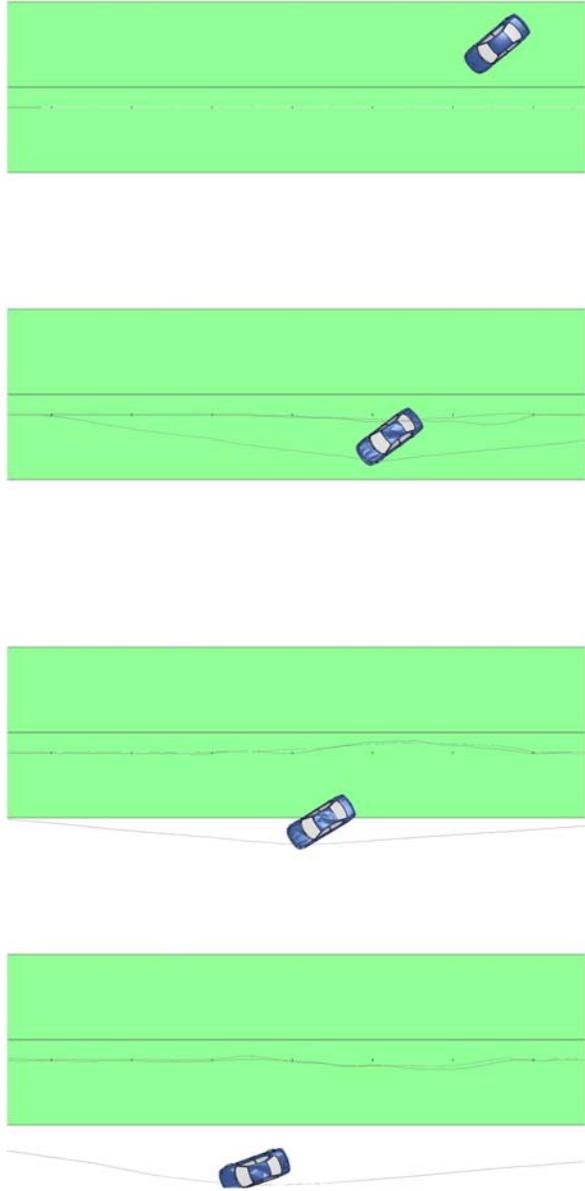


Fig. A.82: Back-side impact by Dodge Neon at 40° and 65 mph for the third design of Retrofit Option 1.

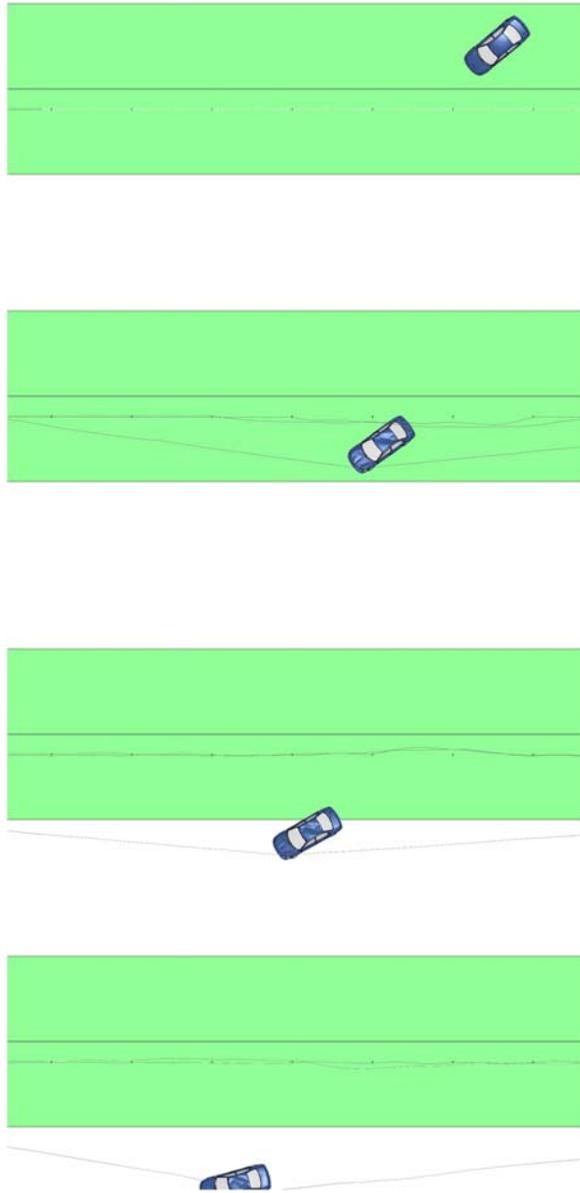


Fig. A.83: Back-side impact by Dodge Neon at 40° and 70 mph for the third design of Retrofit Option 1.

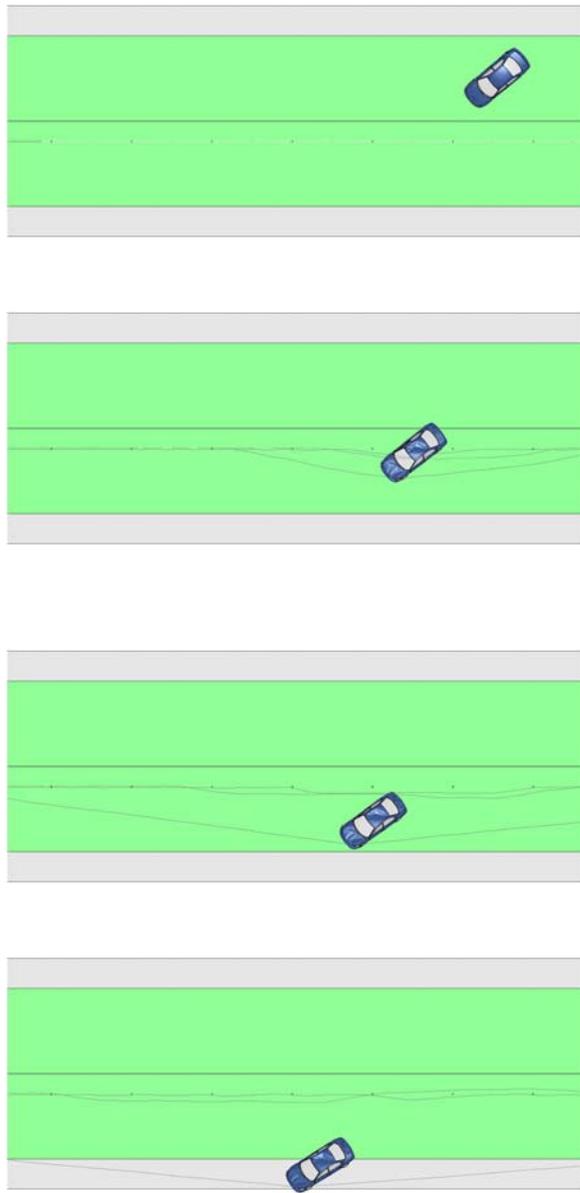


Fig. A.84: Back-side impact by Dodge Neon at 40° and 75 mph for the third design of Retrofit Option 1.

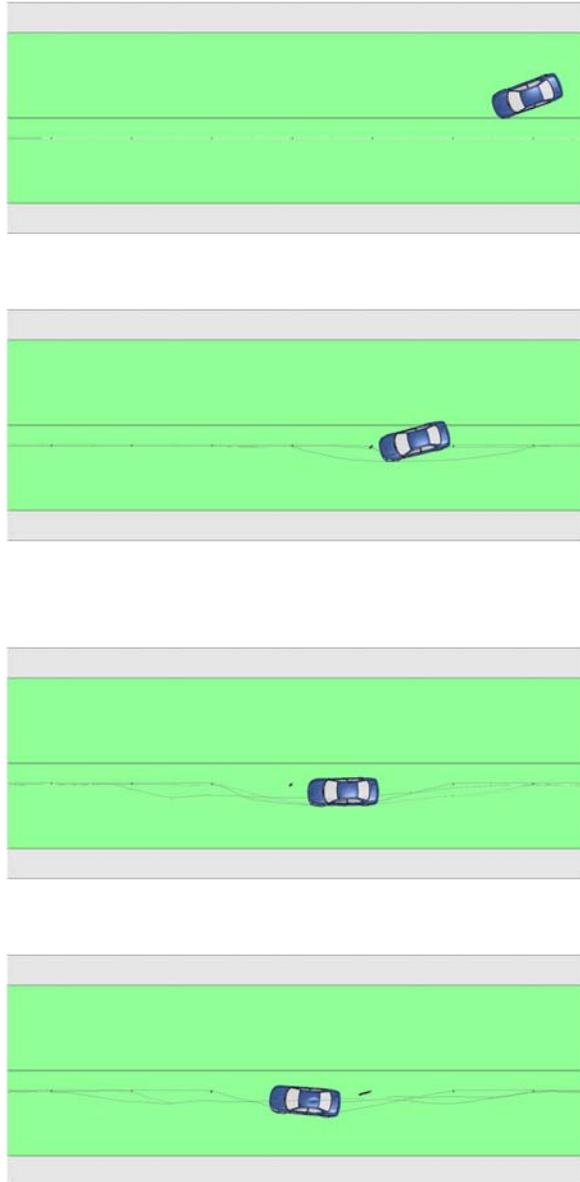


Fig. A.85: Back-side impact by Dodge Neon at 20° and 55 mph for the fourth design of Retrofit Option 1.

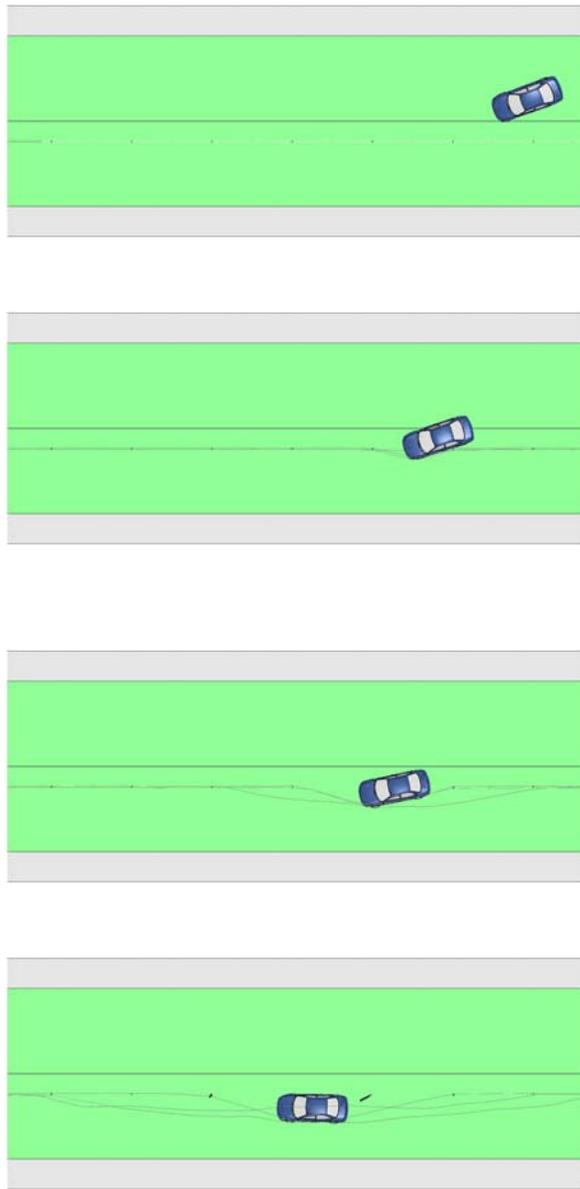


Fig. A.86: Back-side impact by Dodge Neon at 20° and 65 mph for the fourth design of Retrofit Option 1.

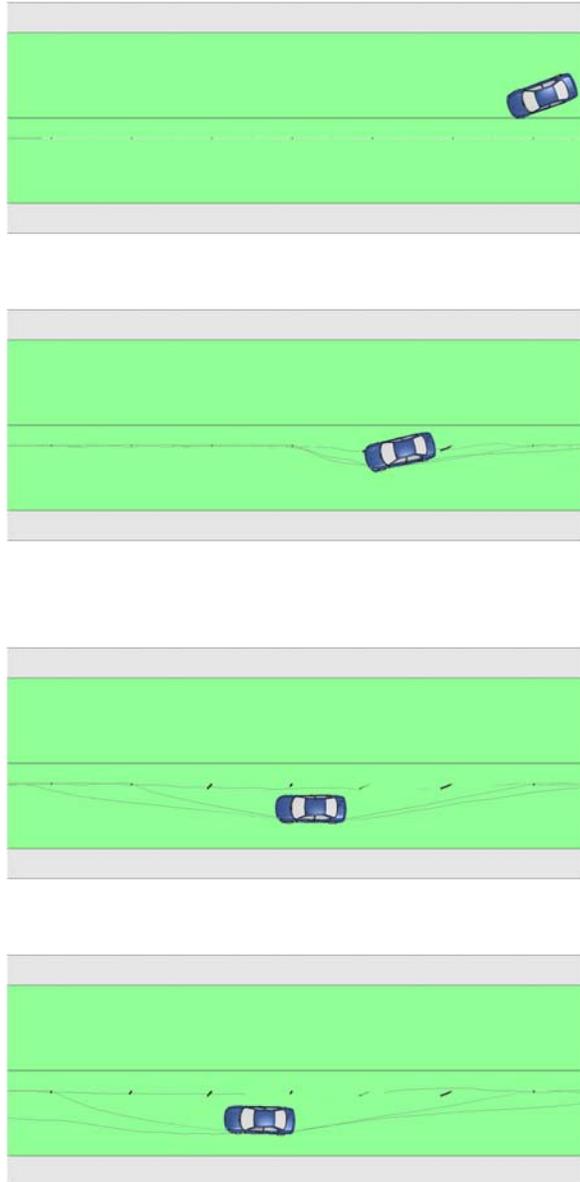


Fig. A.87: Back-side impact by Dodge Neon at 20° and 70 mph for the fourth design of Retrofit Option 1.

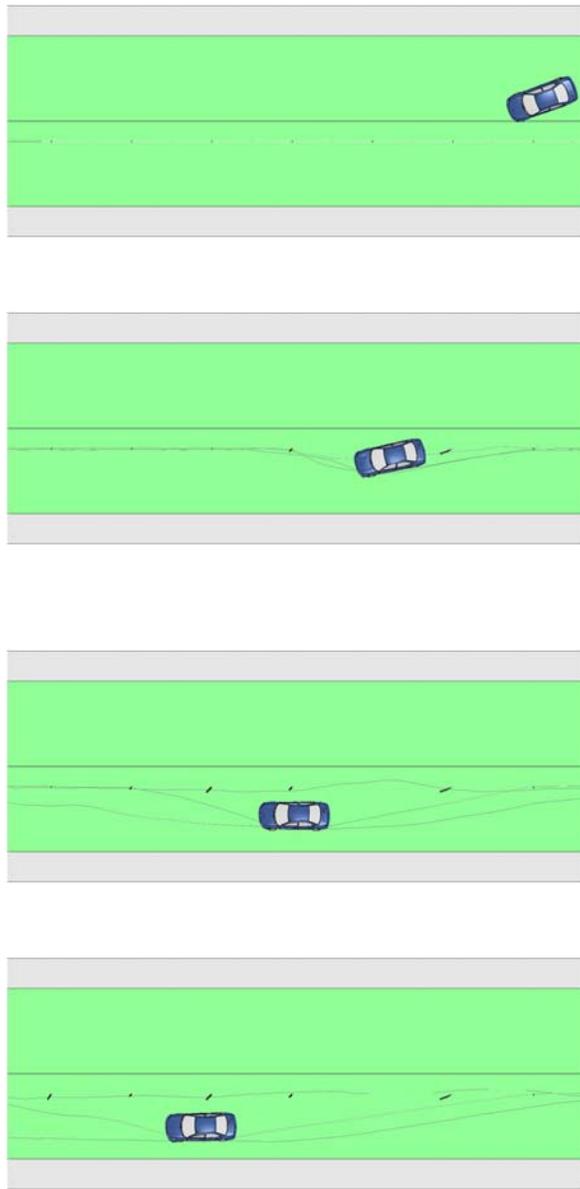


Fig. A.88: Back-side impact by Dodge Neon at 20° and 75 mph for the fourth design of Retrofit Option 1.

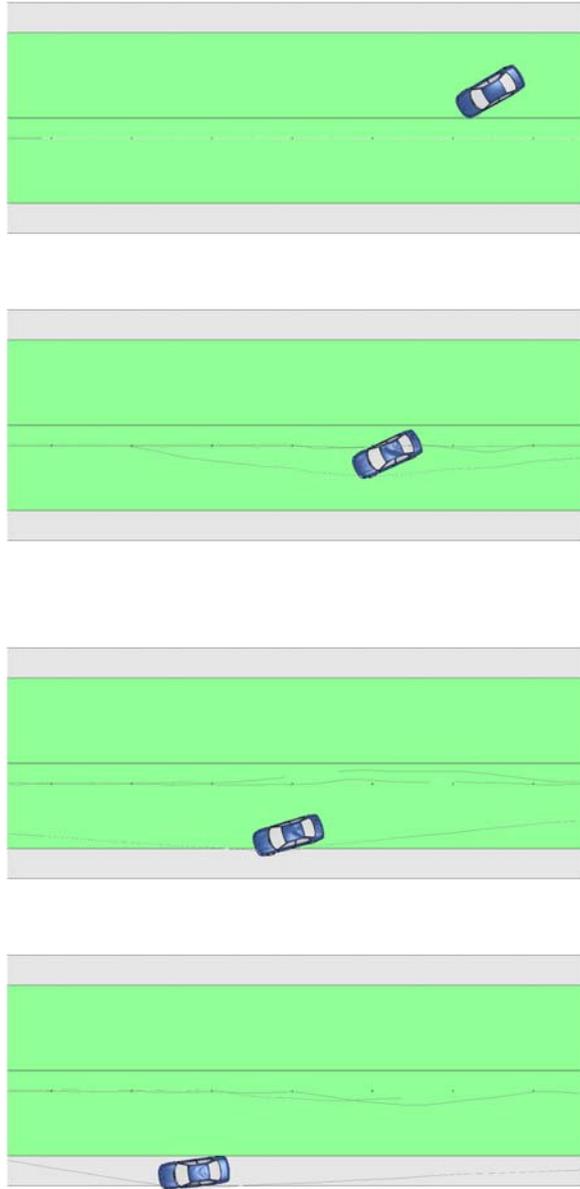


Fig. A.89: Back-side impact by Dodge Neon at 30° and 55 mph for the fourth design of Retrofit Option 1.

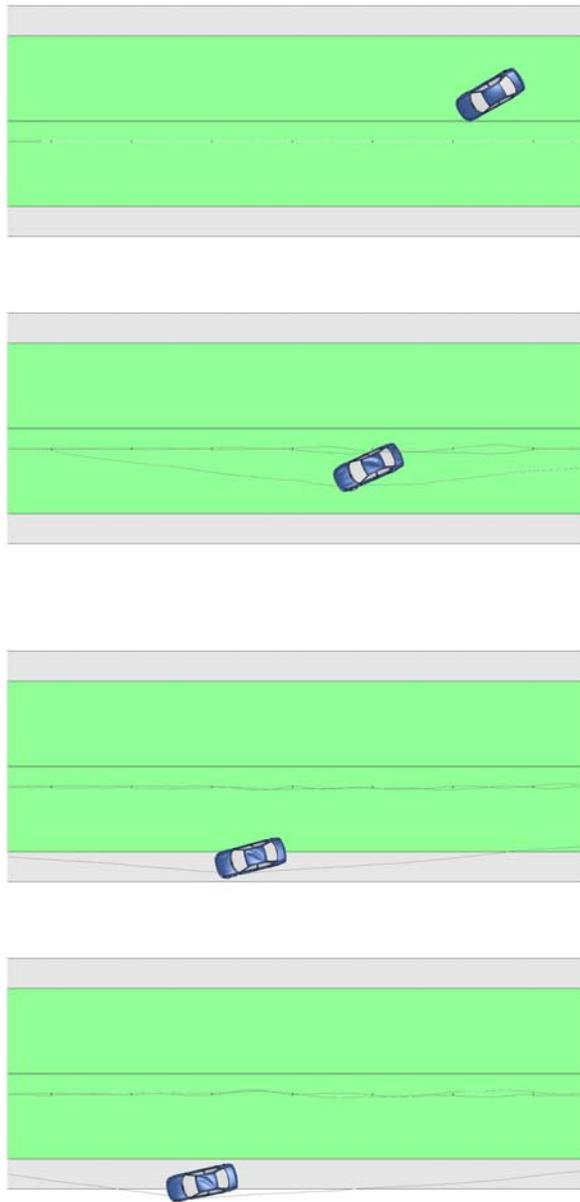


Fig. A.90: Back-side impact by Dodge Neon at 30° and 65 mph for the fourth design of Retrofit Option 1.

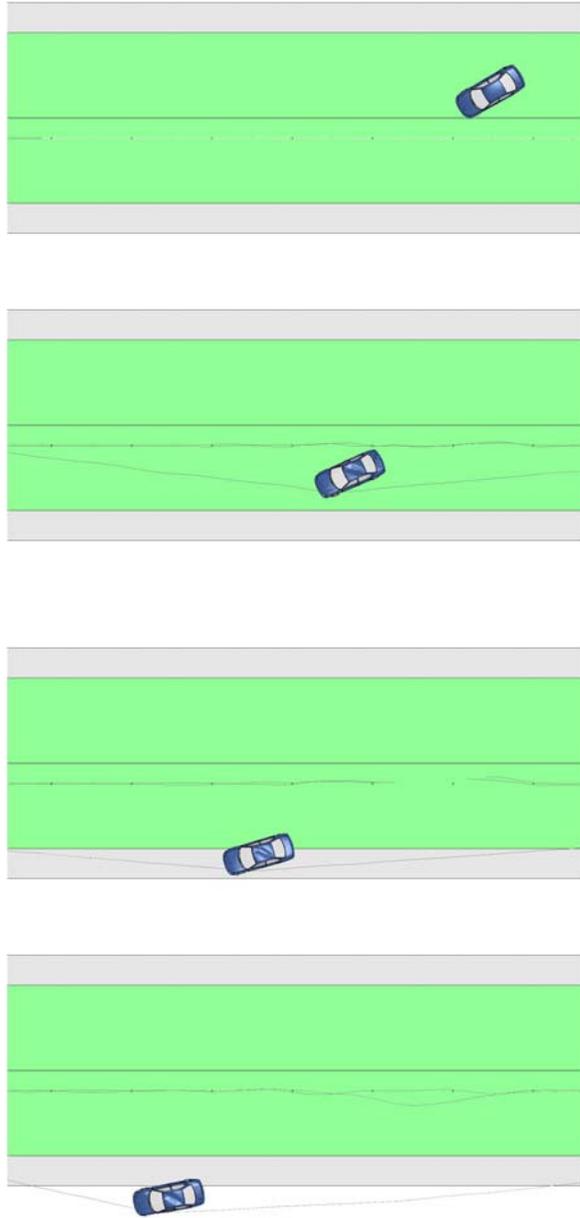


Fig. A.91: Back-side impact by Dodge Neon at 30° and 70 mph for the fourth design of Retrofit Option 1.

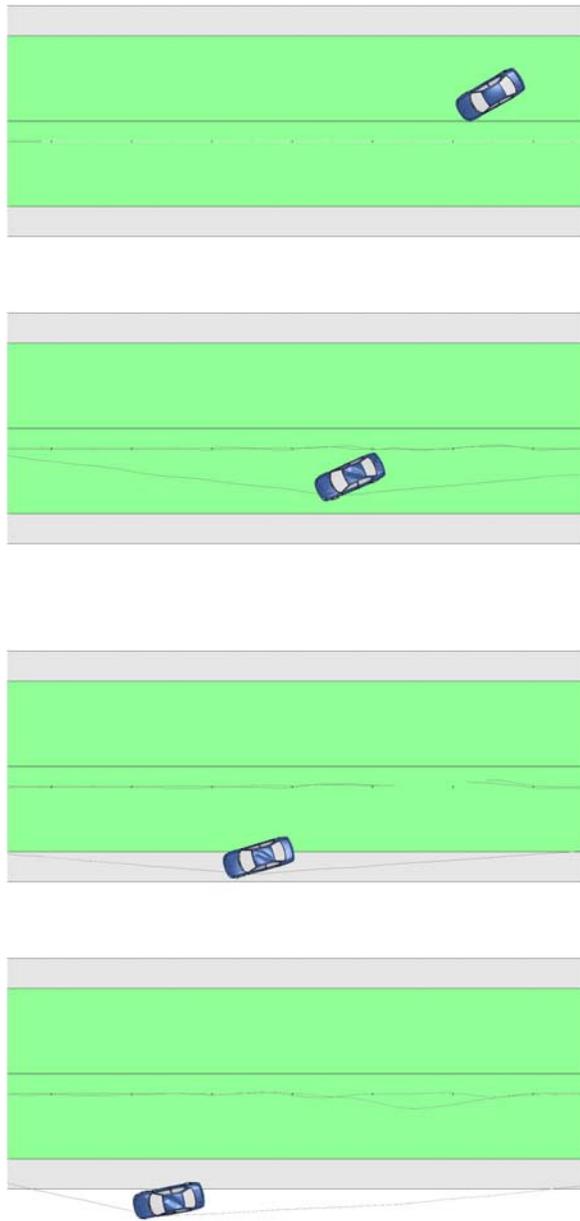


Fig. A.92: Back-side impact by Dodge Neon at 30° and 75 mph for the fourth design of Retrofit Option 1.



Fig. A.93: Back-side impact by Dodge Neon at 40° and 55 mph for the fourth design of Retrofit Option 1.



Fig. A.94: Back-side impact by Dodge Neon at 40° and 65 mph for the fourth design of Retrofit Option 1.

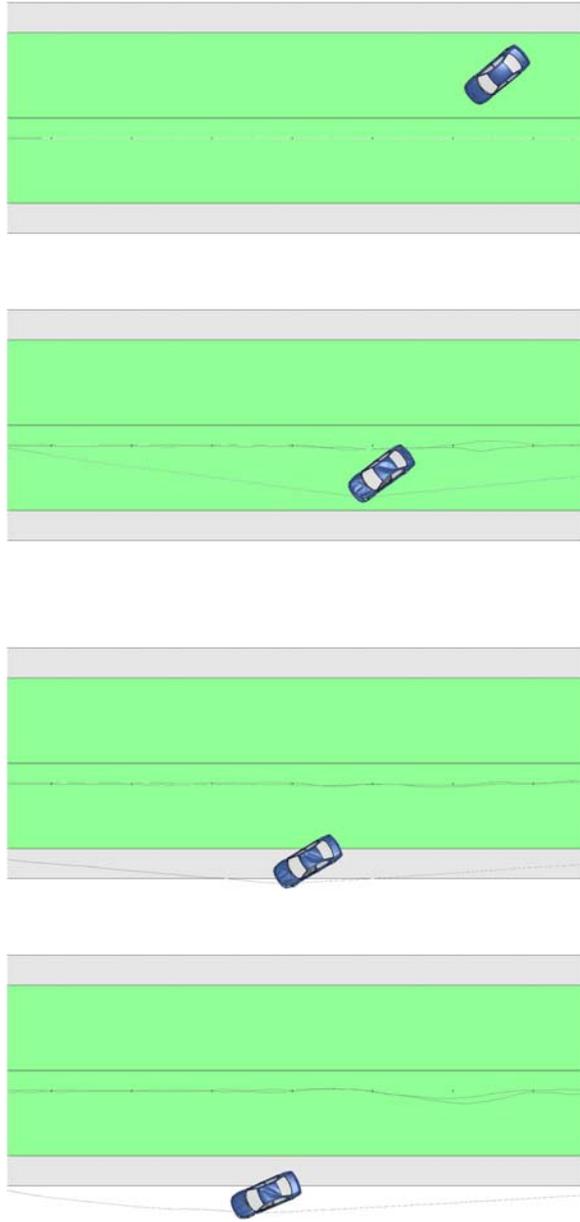


Fig. A.95: Back-side impact by Dodge Neon at 40° and 70 mph for the fourth design of Retrofit Option 1.



Fig. A.96: Back-side impact by Dodge Neon at 40° and 75 mph for the fourth design of Retrofit Option 1.

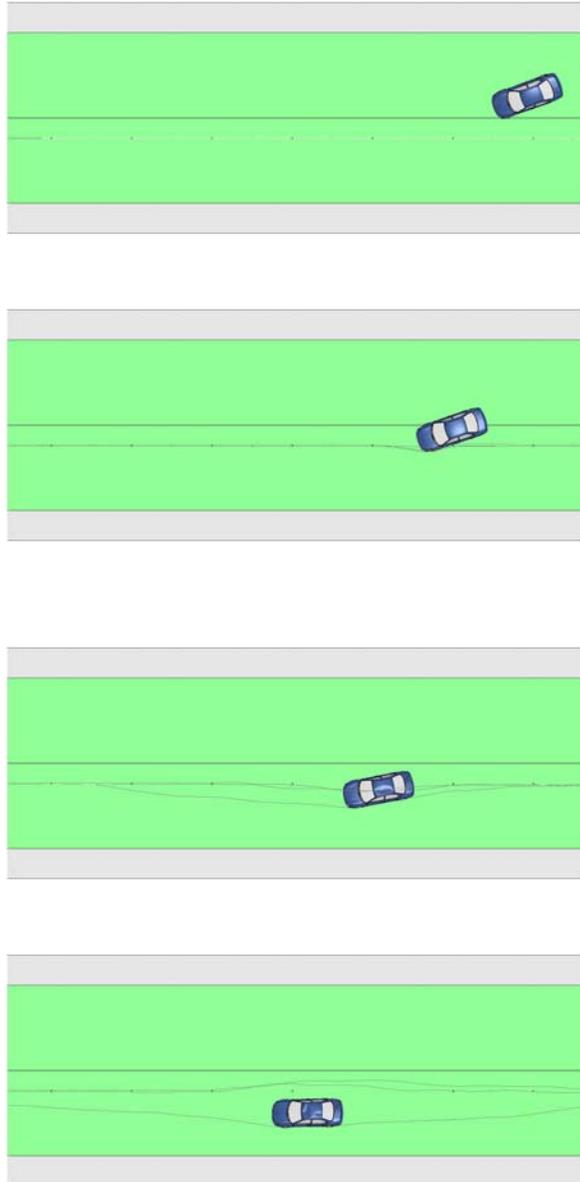


Fig. A.97: Back-side impact by Dodge Neon at 20° and 55 mph for the fifth design of Retrofit Option 1.

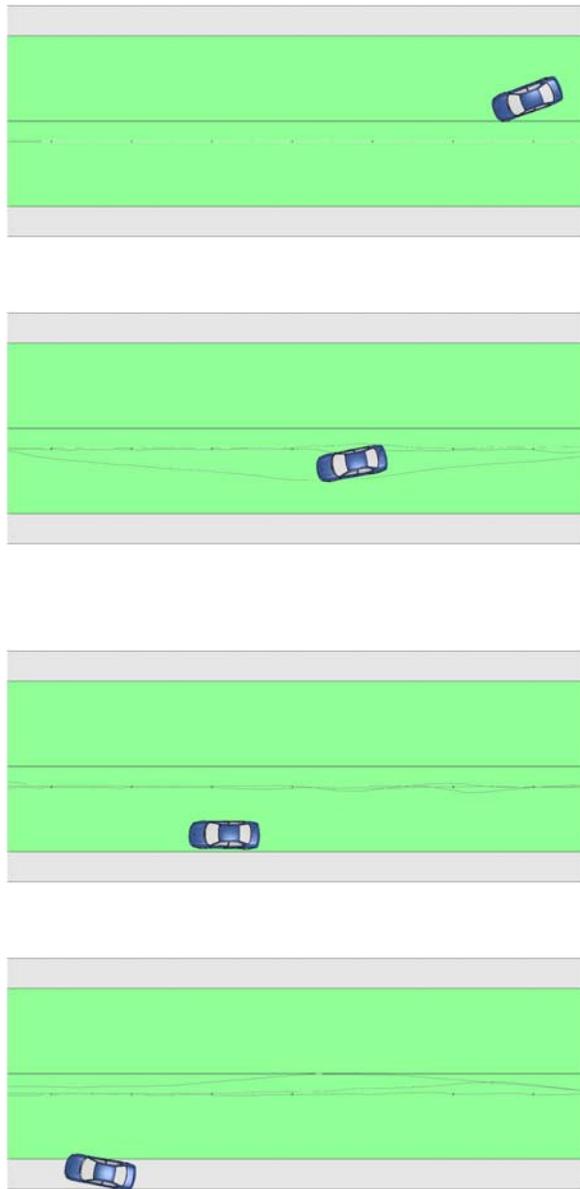


Fig. A.98: Back-side impact by Dodge Neon at 20° and 65 mph for the fifth design of Retrofit Option 1.

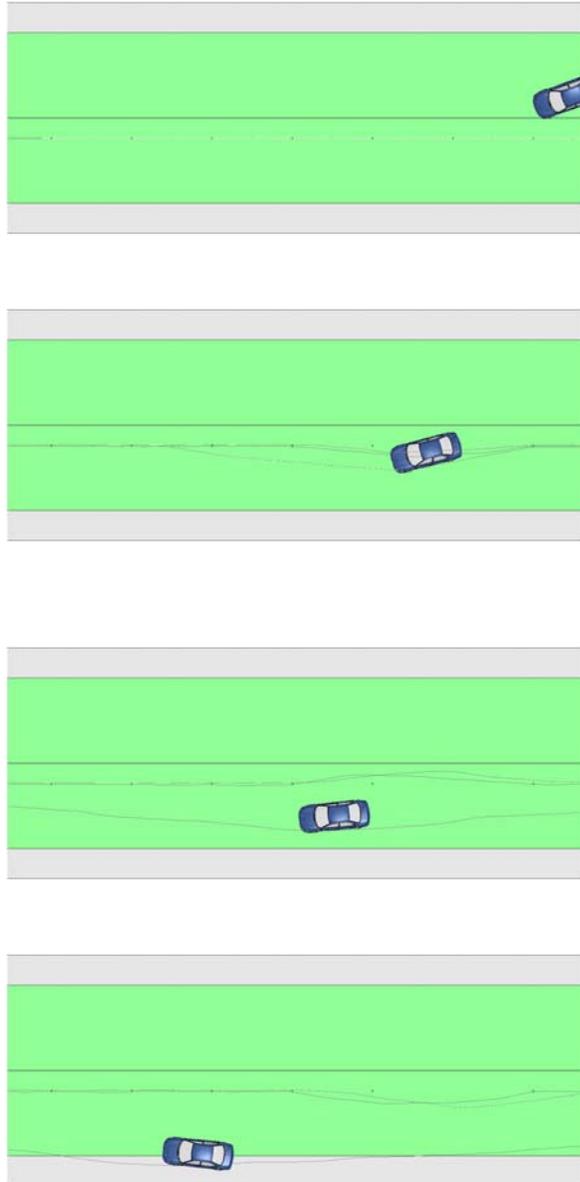


Fig. A.99: Back-side impact by Dodge Neon at 20° and 70 mph for the fifth design of Retrofit Option 1.



Fig. A.100: Back-side impact by Dodge Neon at 20° and 75 mph for the fifth design of Retrofit Option 1.

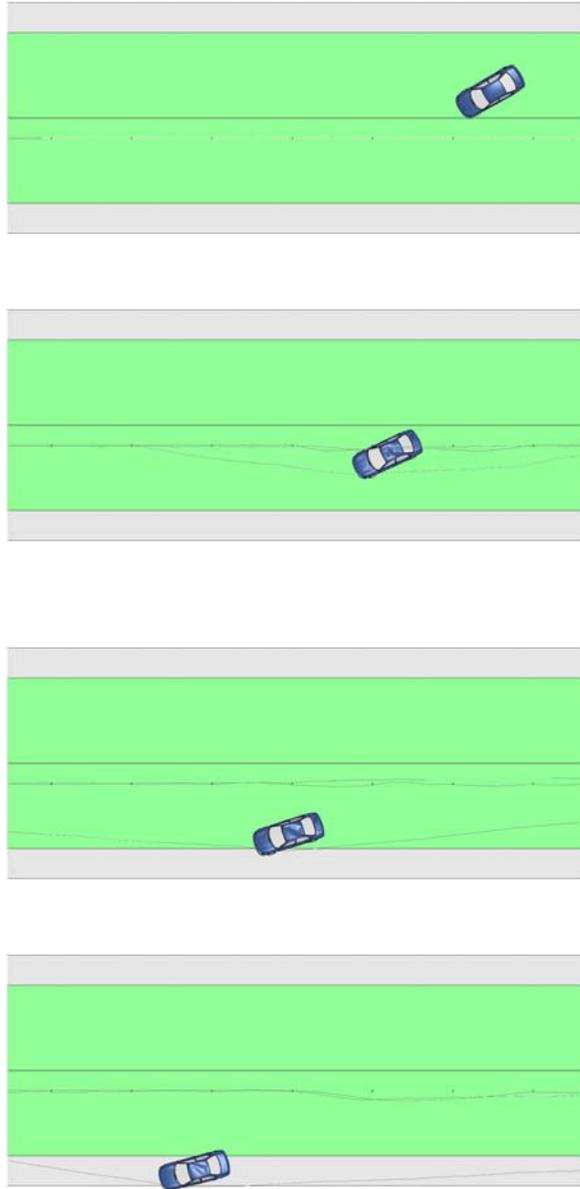


Fig. A.101: Back-side impact by Dodge Neon at 30° and 55 mph for the fifth design of Retrofit Option 1.

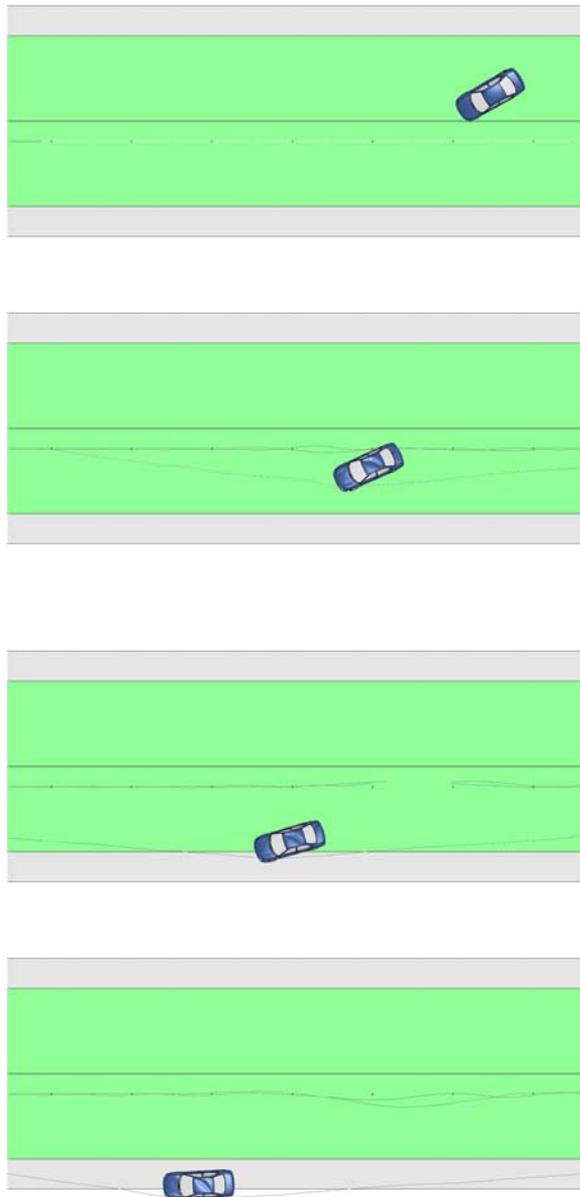


Fig. A.102: Back-side impact by Dodge Neon at 30° and 65 mph for the fifth design of Retrofit Option 1.

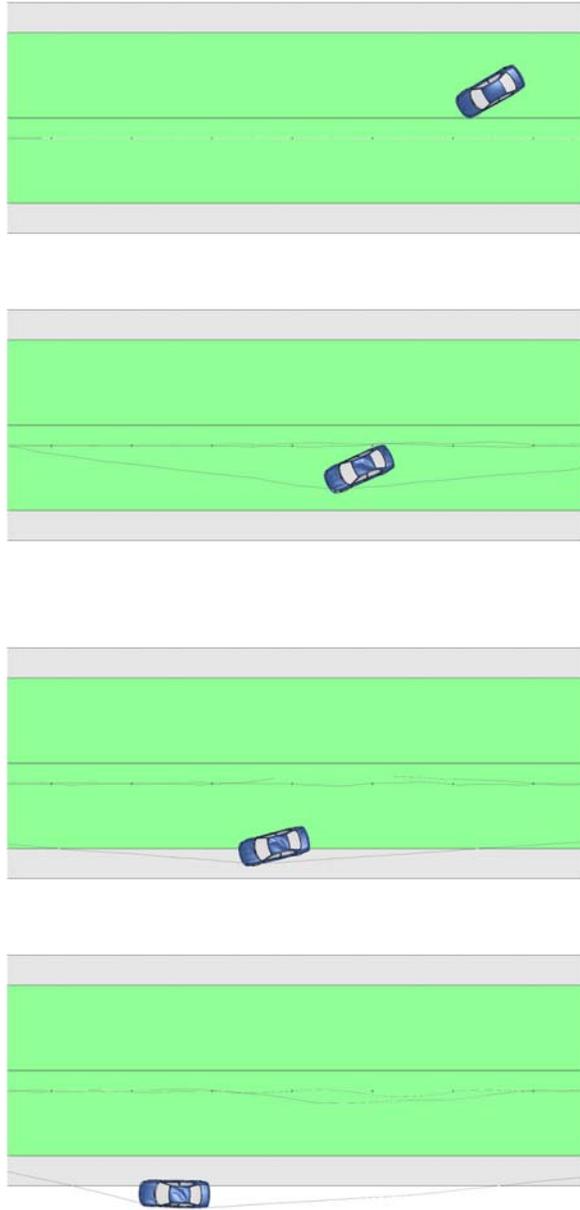


Fig. A.103: Back-side impact by Dodge Neon at 30° and 70 mph for the fifth design of Retrofit Option 1.

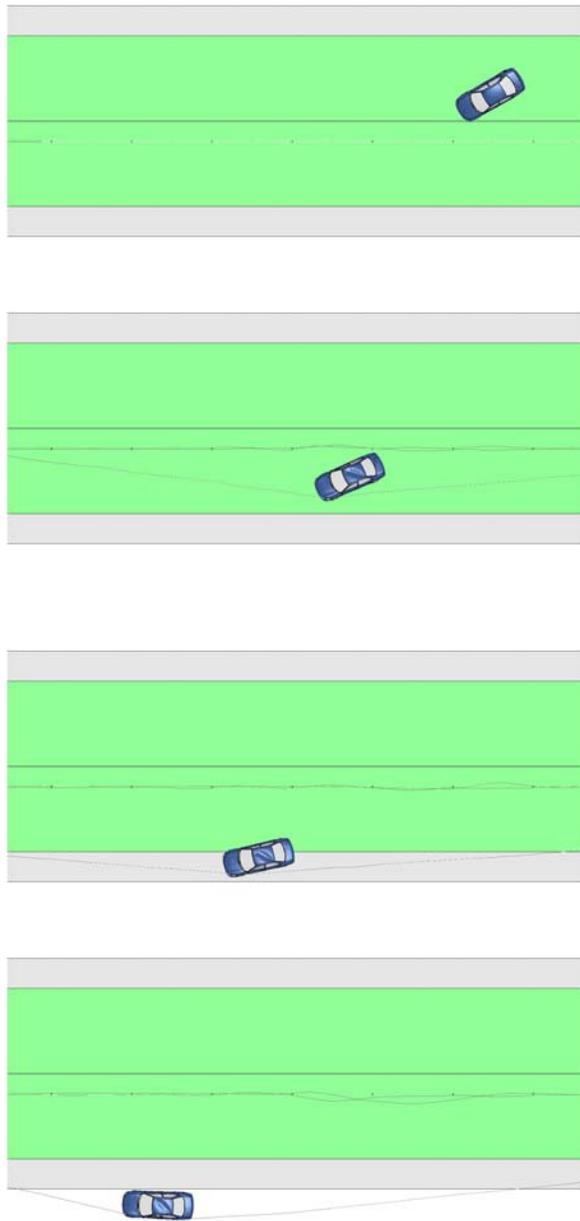


Fig. A.104: Back-side impact by Dodge Neon at 30° and 75 mph for the fifth design of Retrofit Option 1.

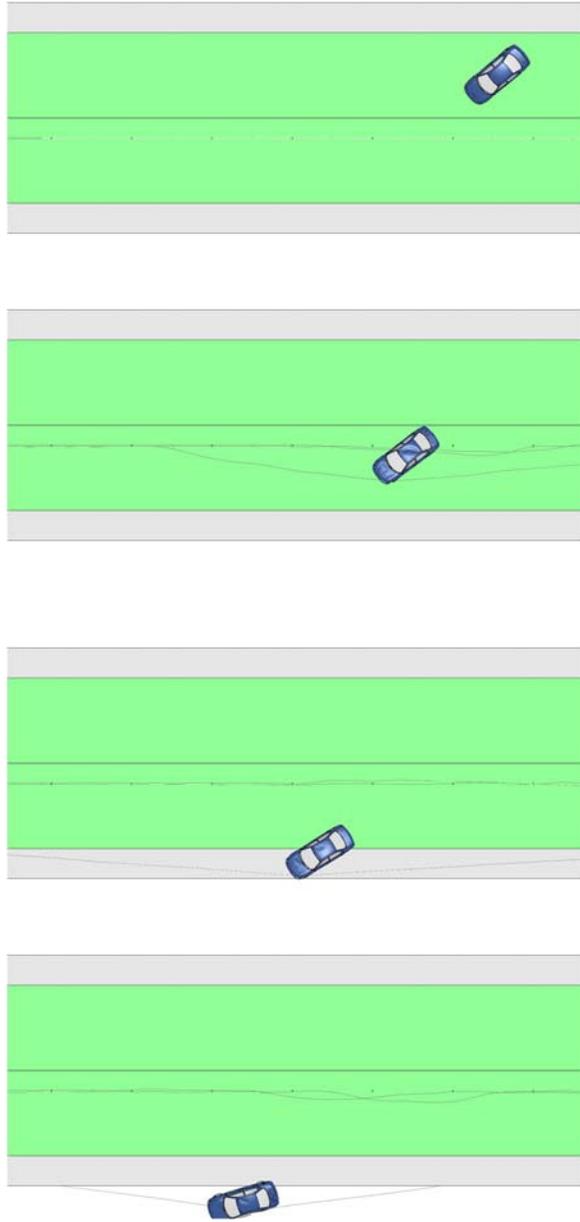


Fig. A.105: Back-side impact by Dodge Neon at 40° and 55 mph for the fifth design of Retrofit Option 1.

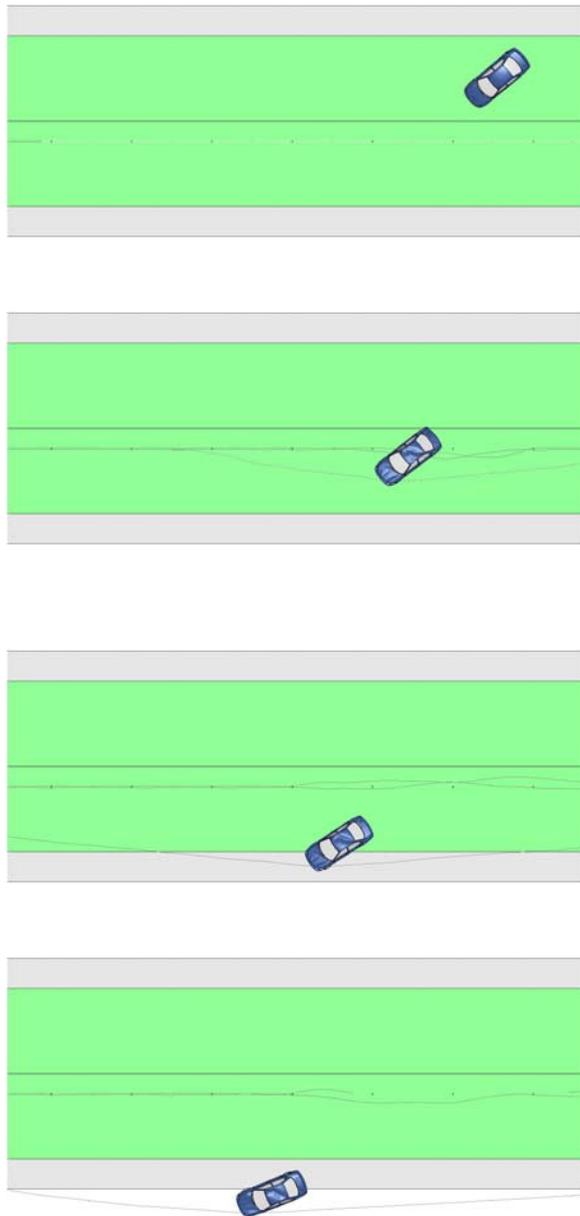


Fig. A.106: Back-side impact by Dodge Neon at  $40^\circ$  and 65 mph for the fifth design of Retrofit Option 1.

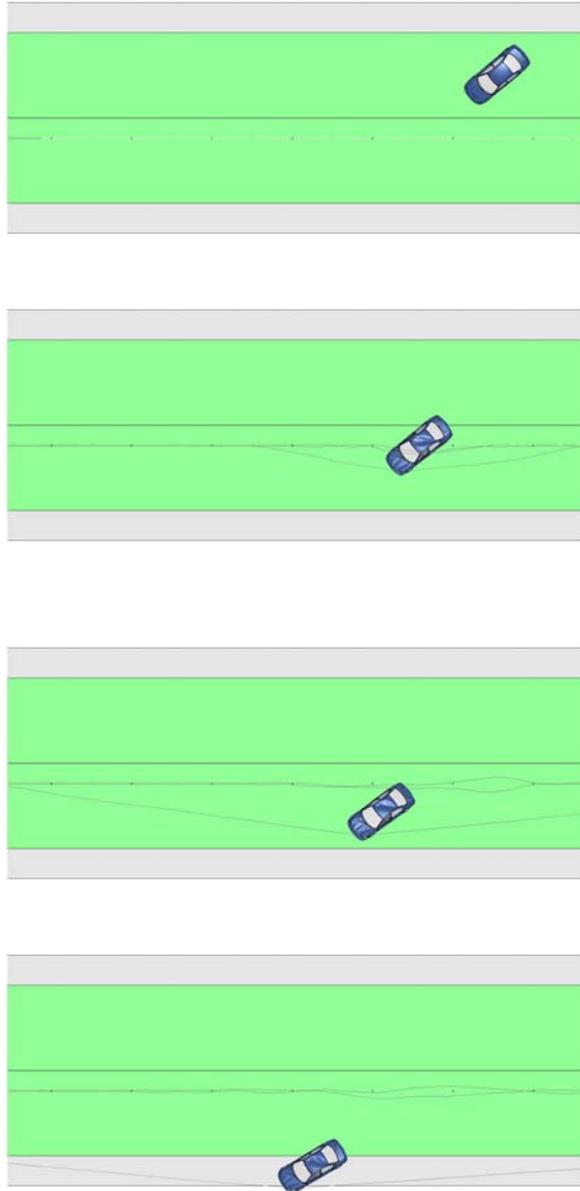


Fig. A.107: Back-side impact by Dodge Neon at 40° and 70 mph for the fifth design of Retrofit Option 1.

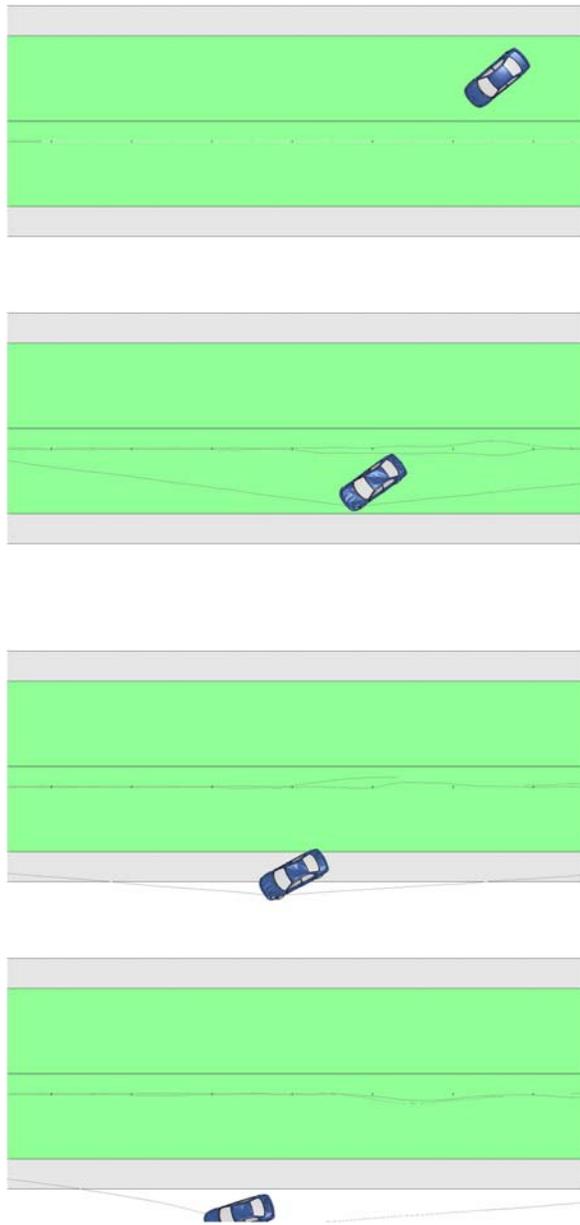


Fig. A.108: Back-side impact by Dodge Neon at 40° and 75 mph for the fifth design of Retrofit Option 1.

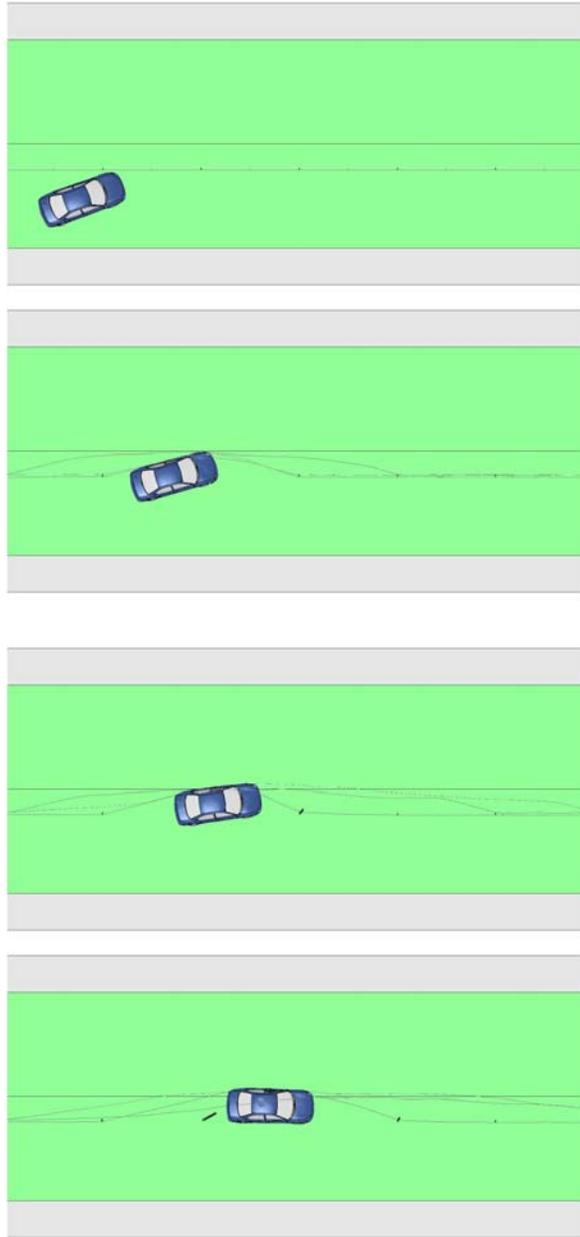


Fig. A.109: Front-side impact by Dodge Neon at 20° and 55 mph for the sixth design of Retrofit Option 1.

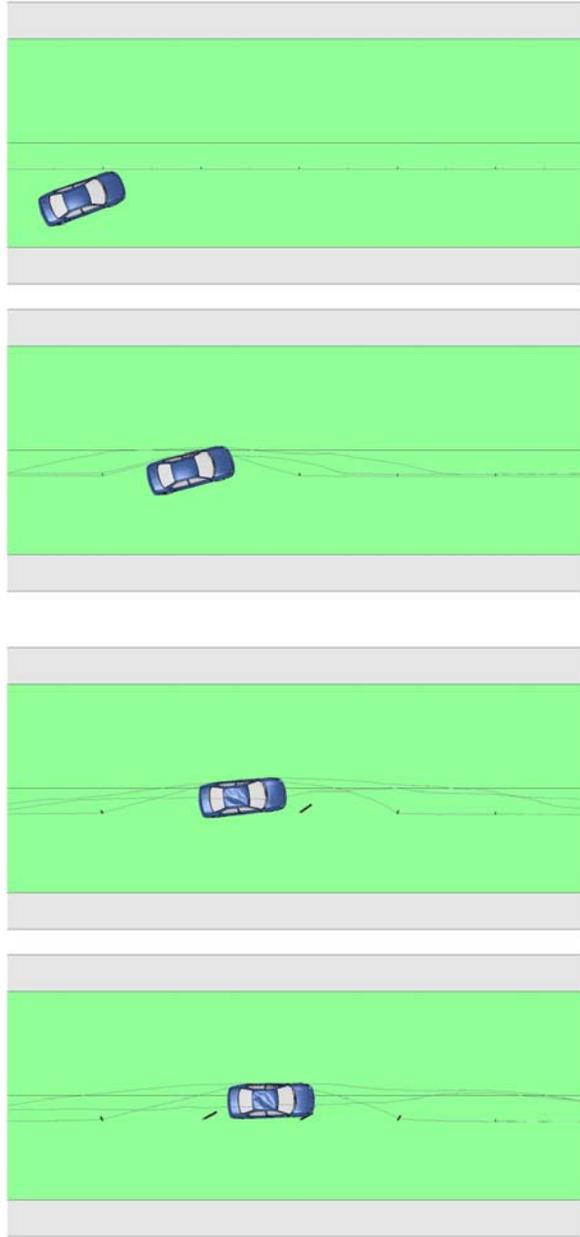


Fig. A.110: Front-side impact by Dodge Neon at 20° and 65 mph for the sixth design of Retrofit Option 1.

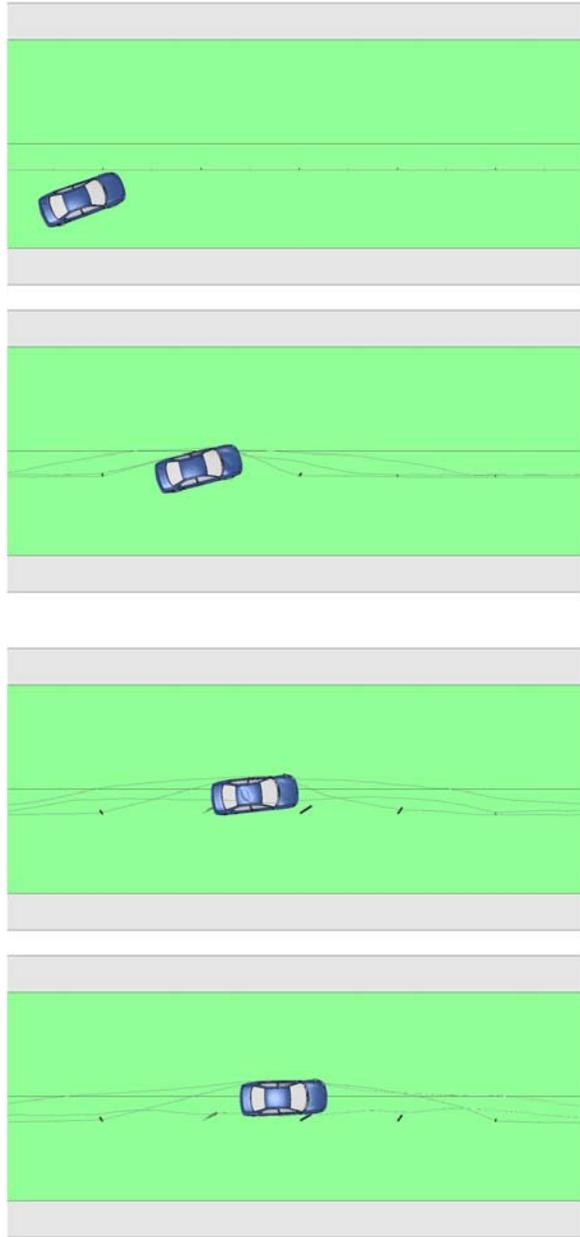


Fig. A.111: Front-side impact by Dodge Neon at 20° and 70 mph for the sixth design of Retrofit Option 1.

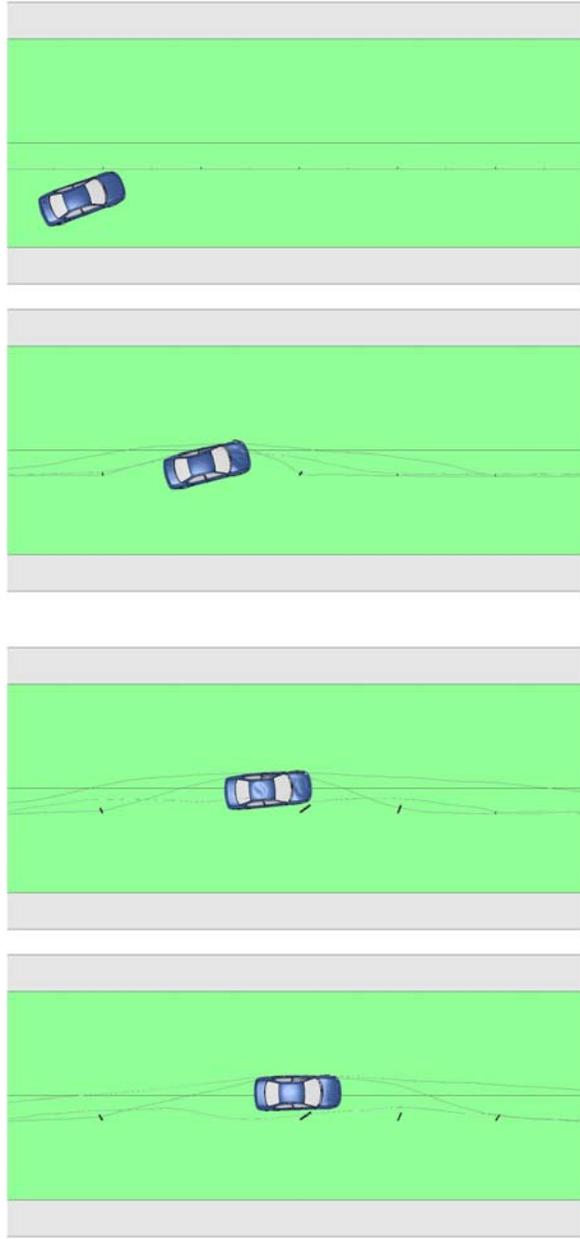


Fig. A.112: Front-side impact by Dodge Neon at 20° and 75 mph for the sixth design of Retrofit Option 1.

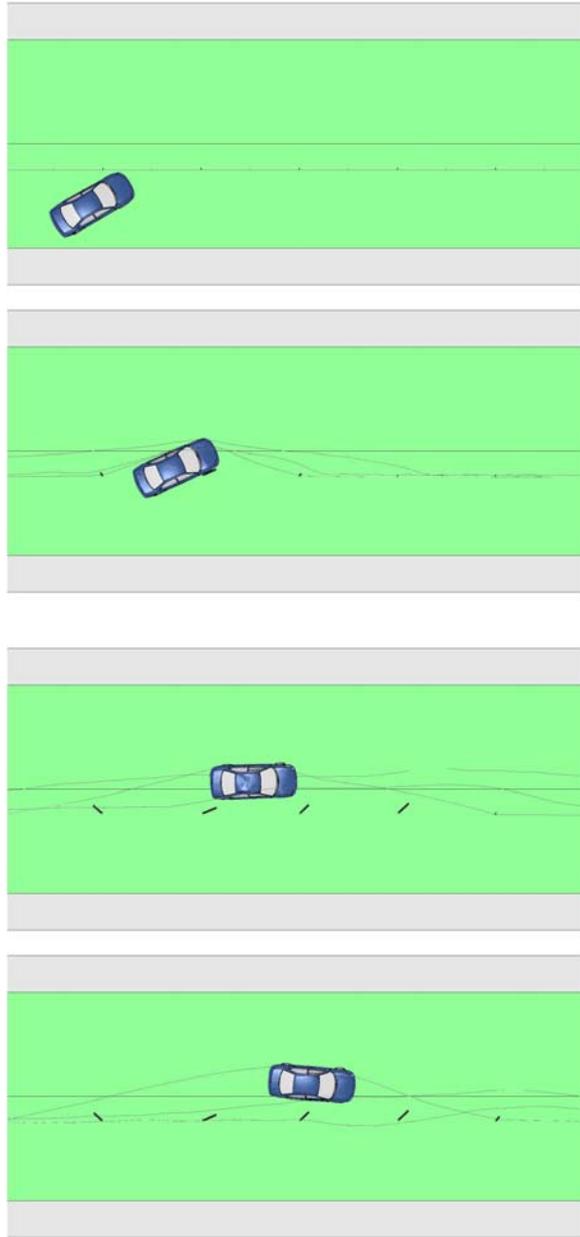


Fig. A.113: Front-side impact by Dodge Neon at 30° and 55 mph for the sixth design of Retrofit Option 1.

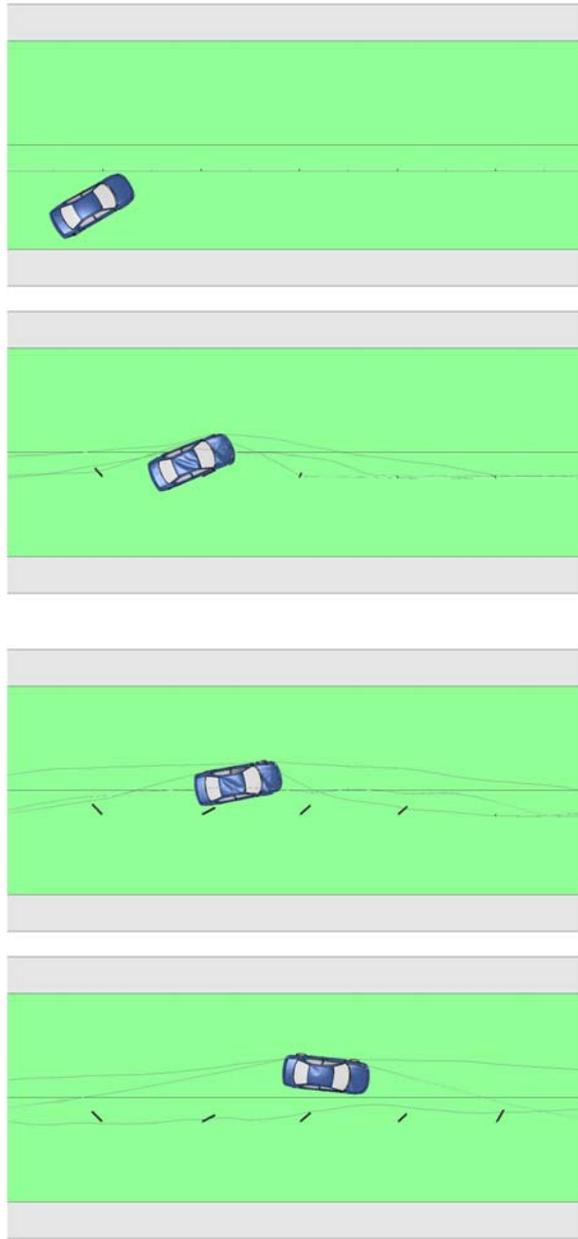


Fig. A.114: Front-side impact by Dodge Neon at 30° and 65 mph for the sixth design of Retrofit Option 1.

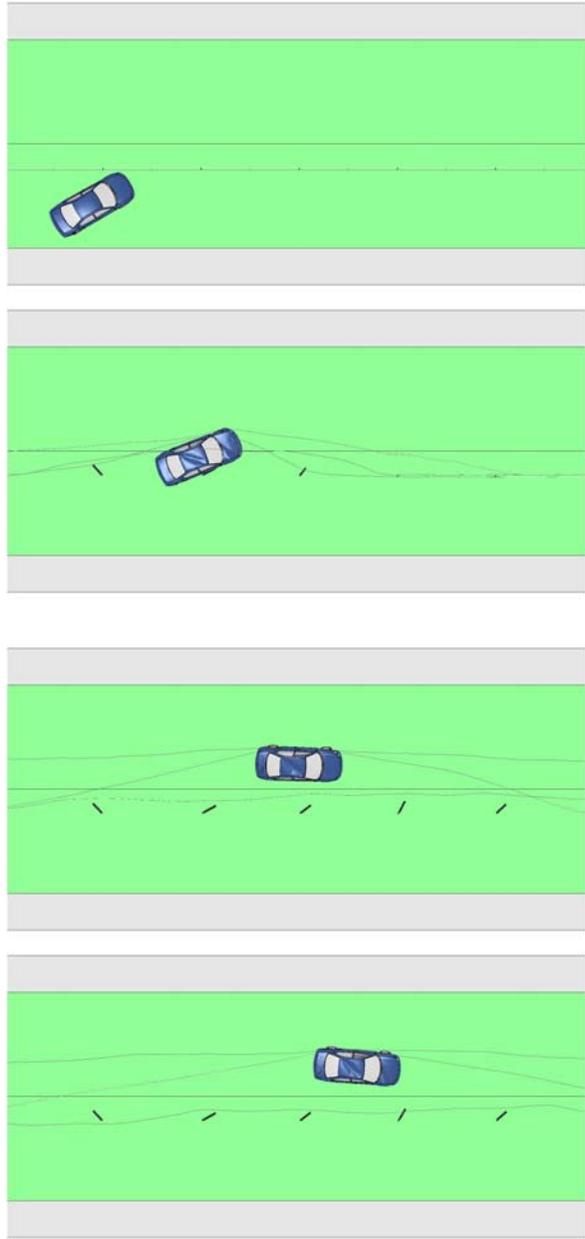


Fig. A.115: Front-side impact by Dodge Neon at 30° and 70 mph for the sixth design of Retrofit Option 1.

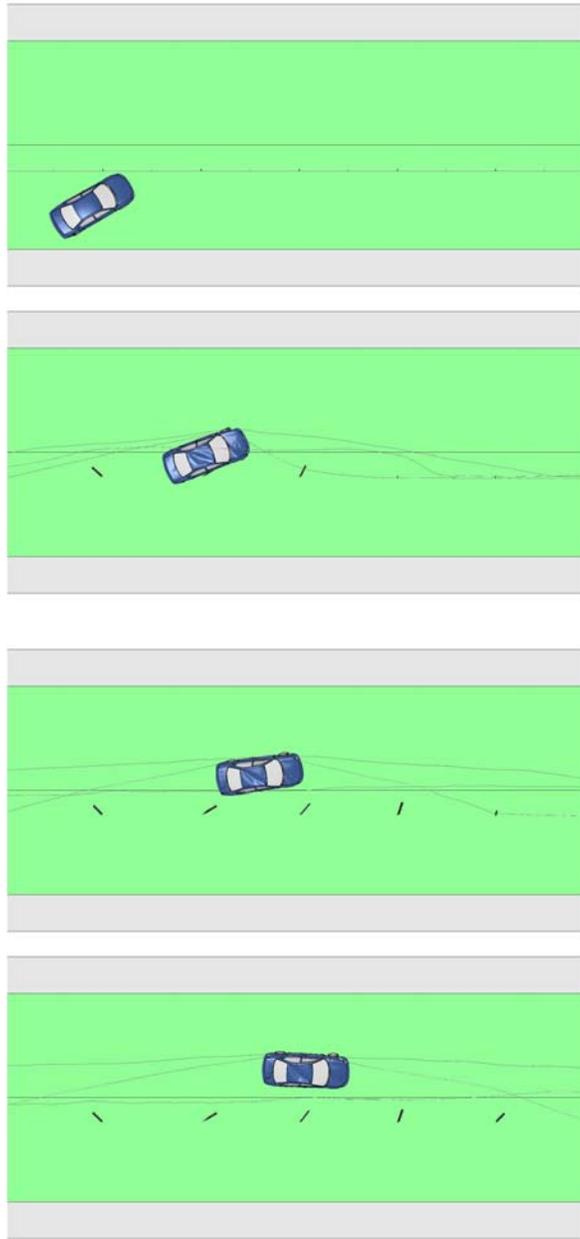


Fig. A.116: Front-side impact by Dodge Neon at 30° and 75 mph for the sixth design of Retrofit Option 1.

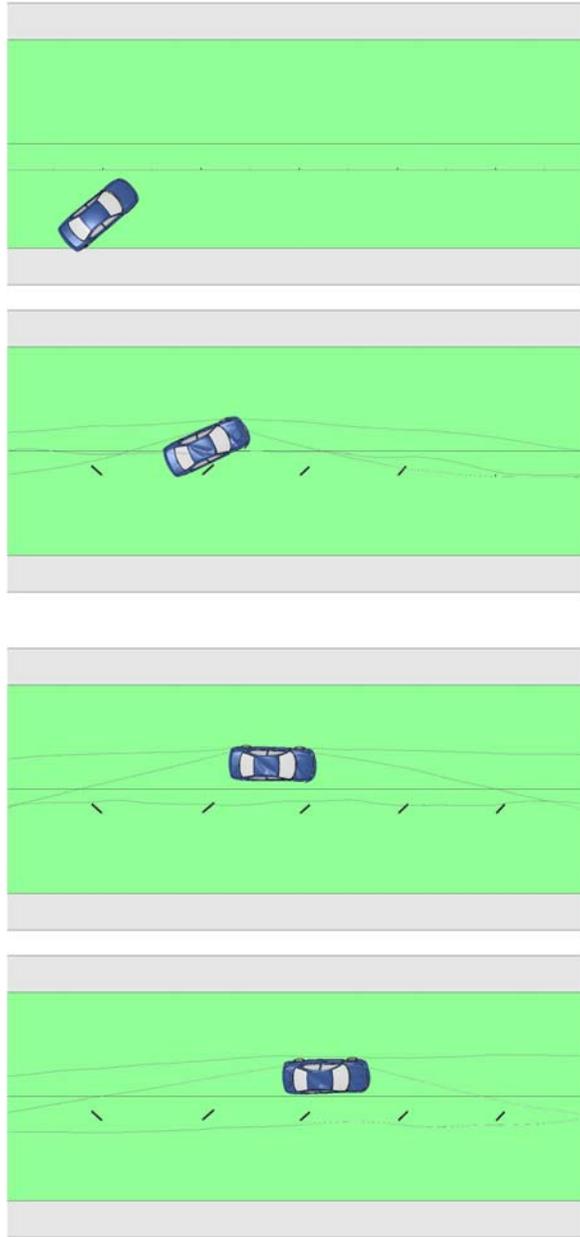


Fig. A.117: Front-side impact by Dodge Neon at 40° and 55 mph for the sixth design of Retrofit Option 1.

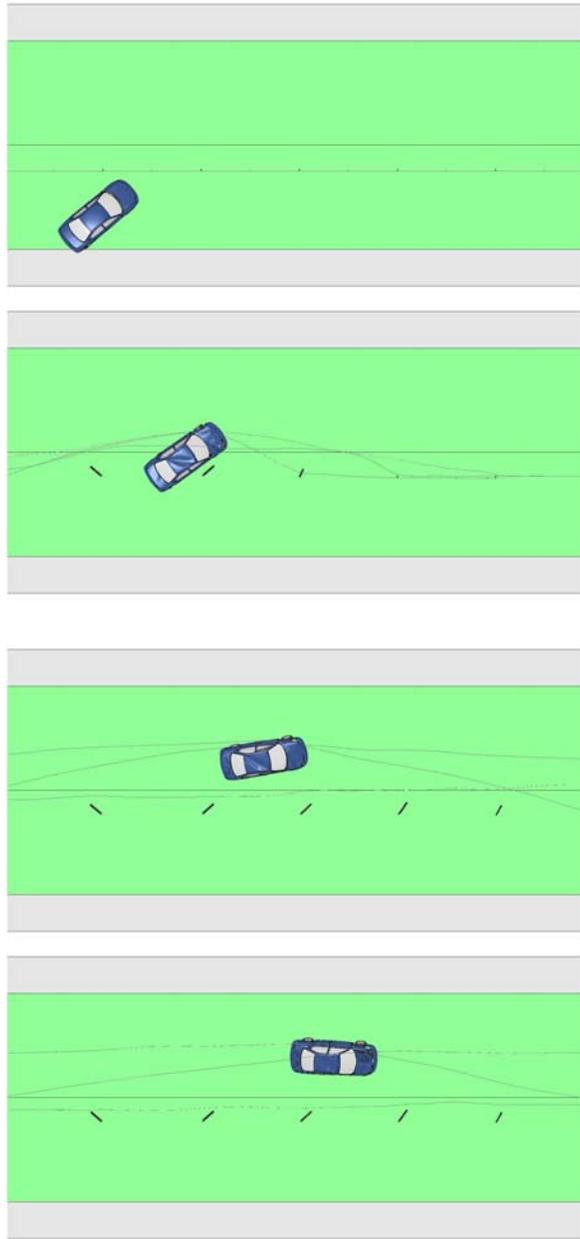


Fig. A.118: Front-side impact by Dodge Neon at  $40^\circ$  and 65 mph for the sixth design of Retrofit Option 1.

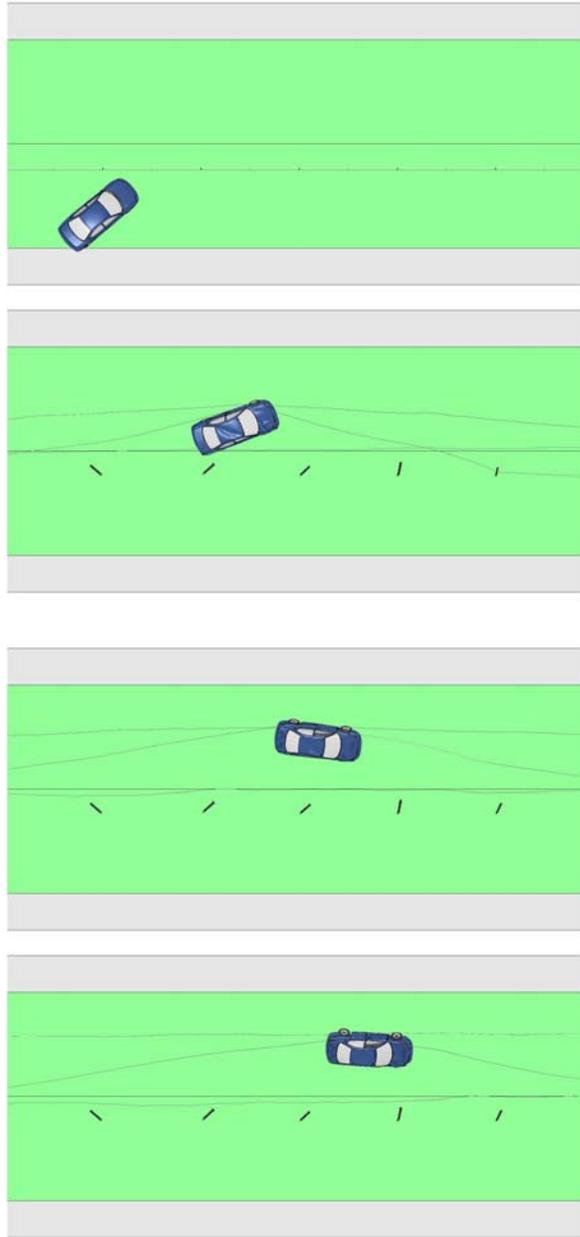


Fig. A.119: Front-side impact by Dodge Neon at 40° and 70 mph for the sixth design of Retrofit Option 1.

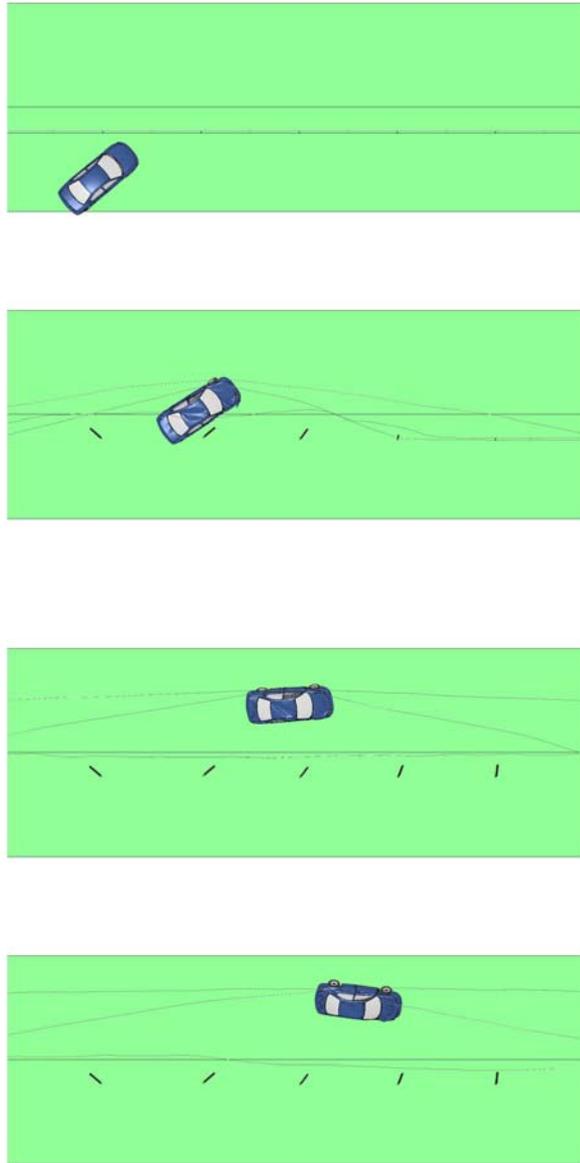


Fig. A.120: Front-side impact by Dodge Neon at 40° and 75 mph for the sixth design of Retrofit Option 1.

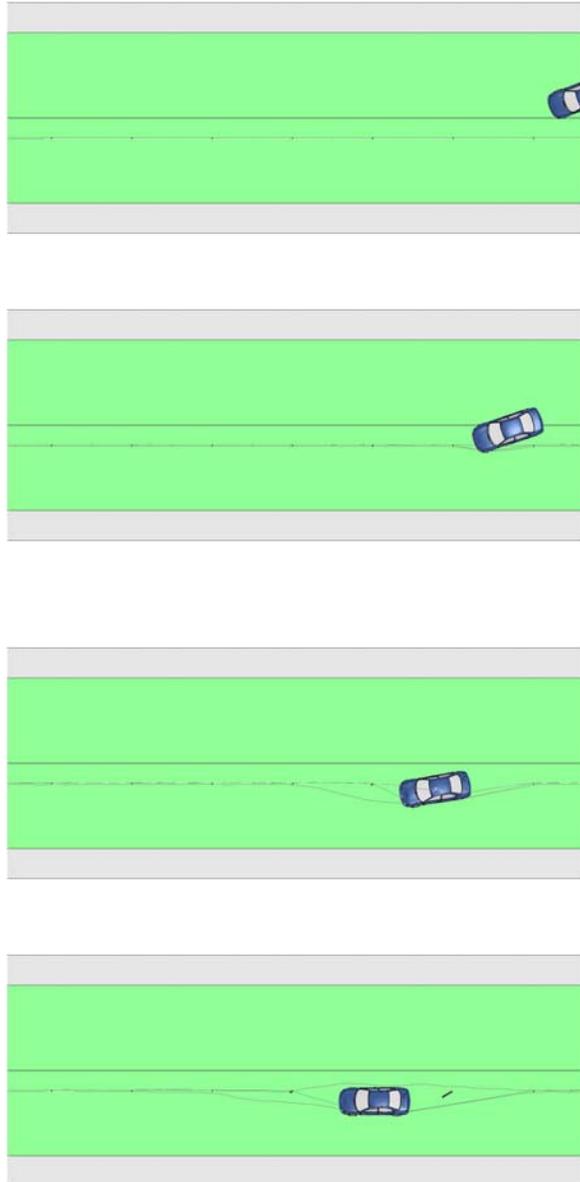


Fig. A.121: Back-side impact by Dodge Neon at 20° and 55 mph for the sixth design of Retrofit Option 1.

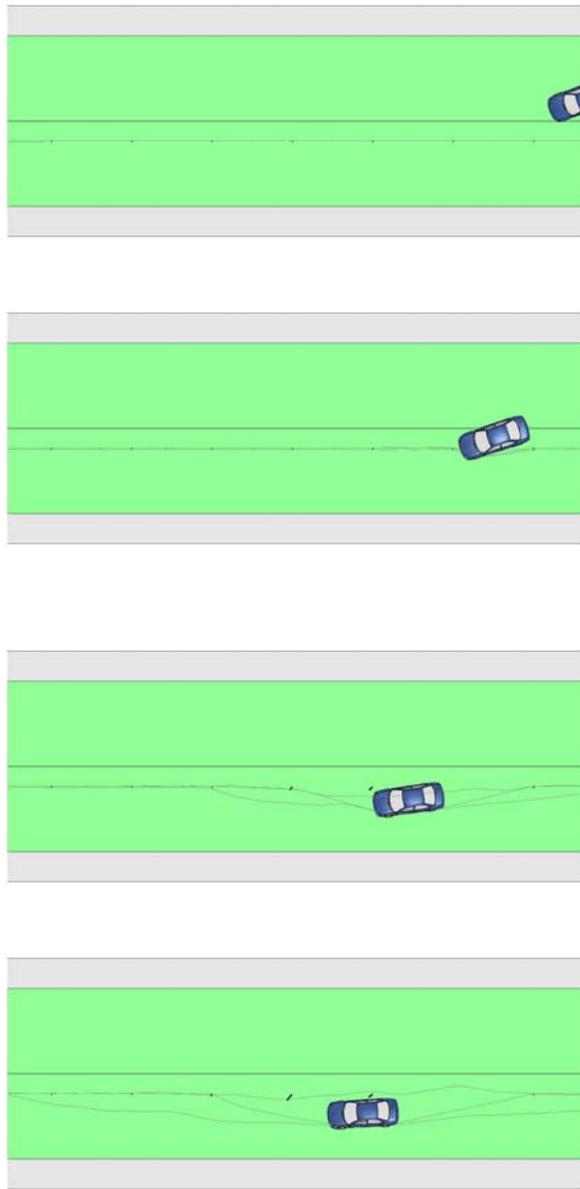


Fig. A.122: Back-side impact by Dodge Neon at 20° and 65 mph for the sixth design of Retrofit Option 1.

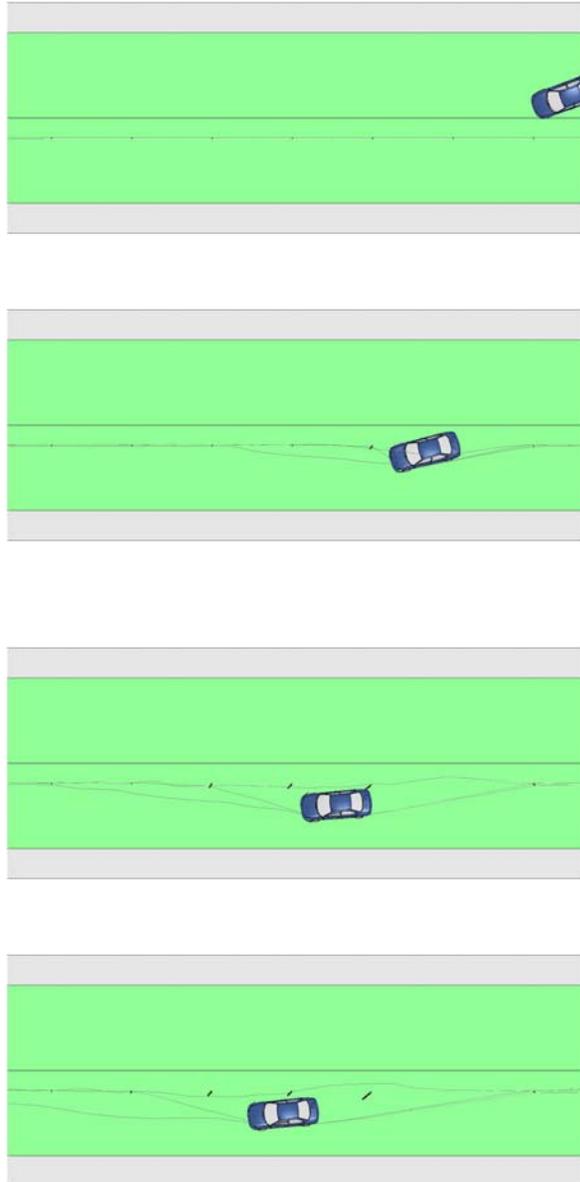


Fig. A.123: Back-side impact by Dodge Neon at 20° and 70 mph for the sixth design of Retrofit Option 1.

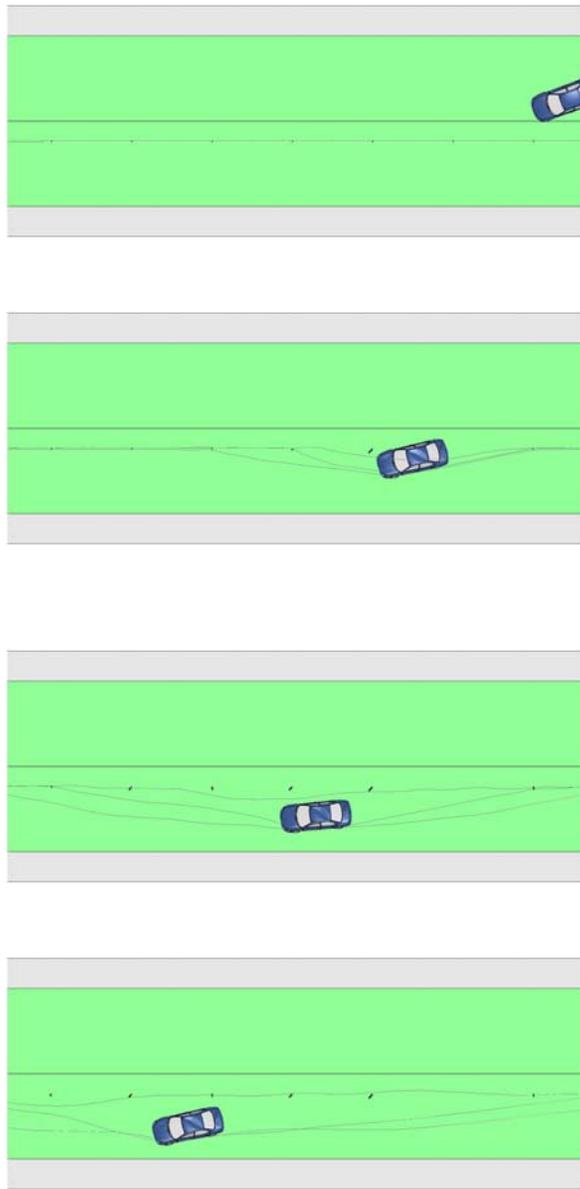


Fig. A.124: Back-side impact by Dodge Neon at 20° and 75 mph for the sixth design of Retrofit Option 1.

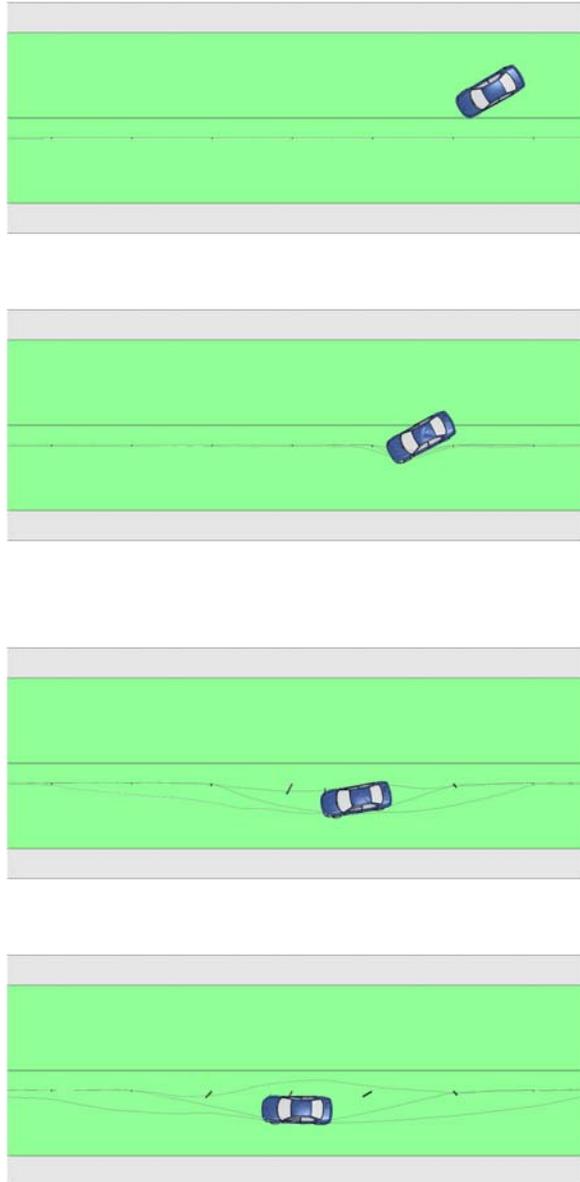


Fig. A.125: Back-side impact by Dodge Neon at 30° and 55 mph for the sixth design of Retrofit Option 1.

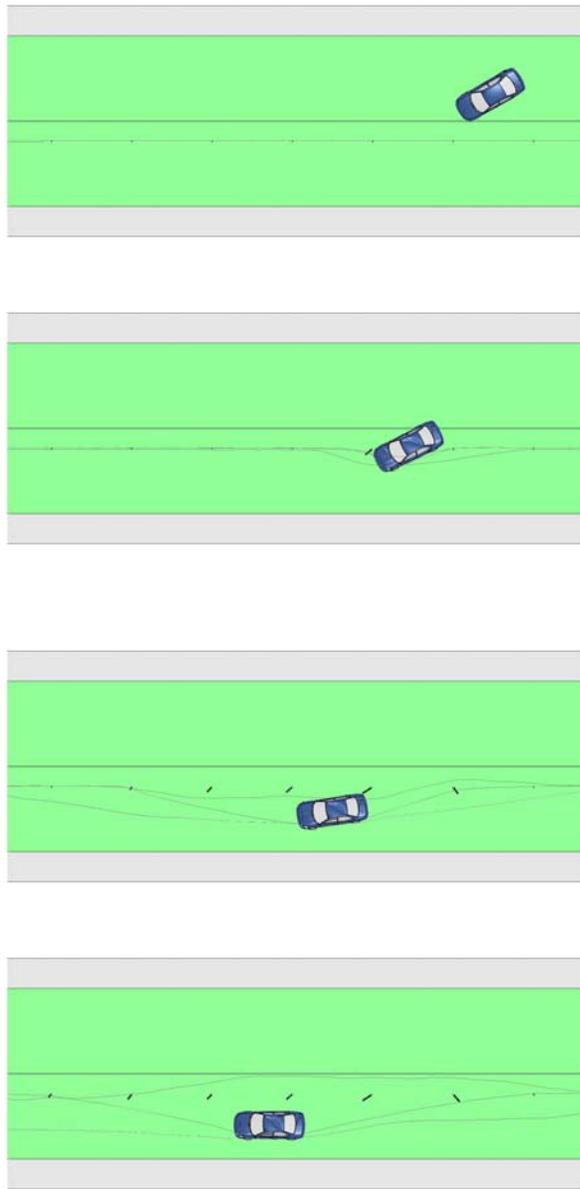


Fig. A.126: Back-side impact by Dodge Neon at 30° and 65 mph for the sixth design of Retrofit Option 1.

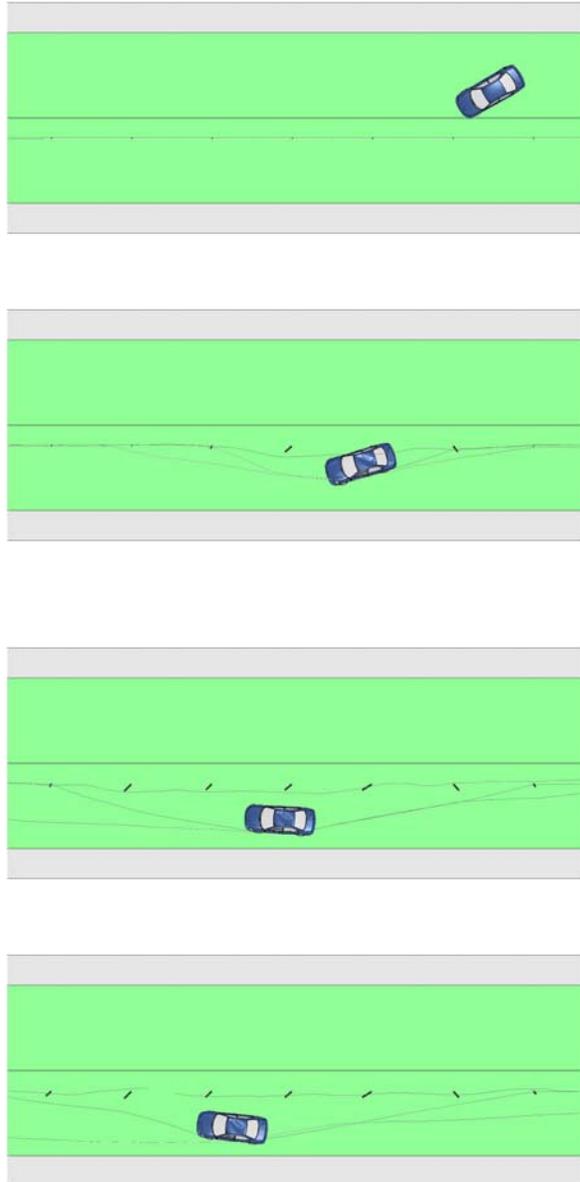


Fig. A.127: Back-side impact by Dodge Neon at 30° and 70 mph for the sixth design of Retrofit Option 1.

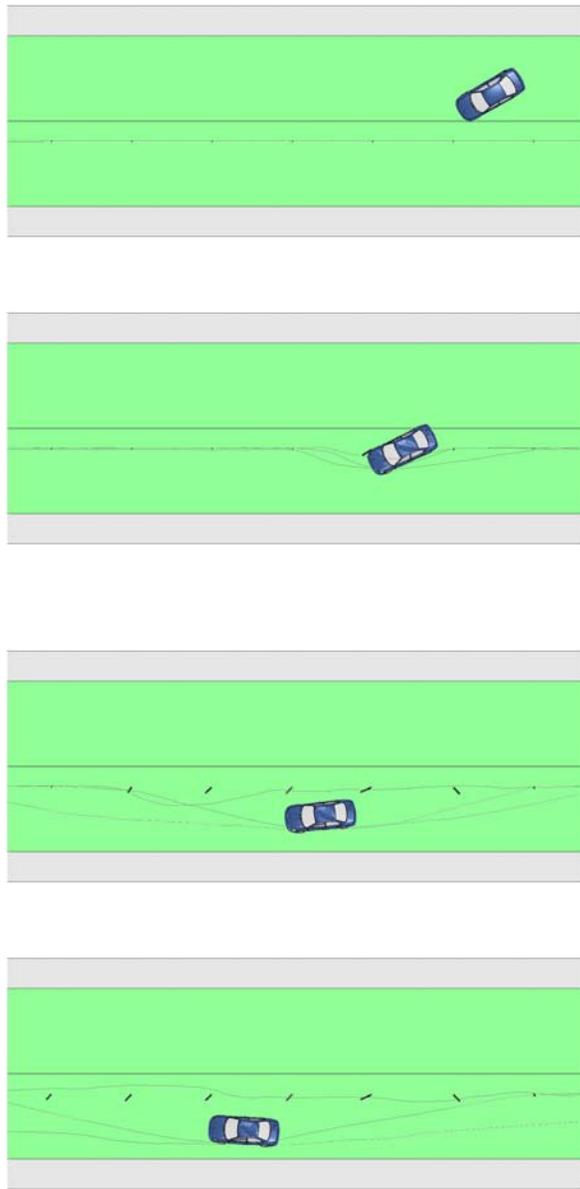


Fig. A.128: Back-side impact by Dodge Neon at 30° and 75 mph for the sixth design of Retrofit Option 1.

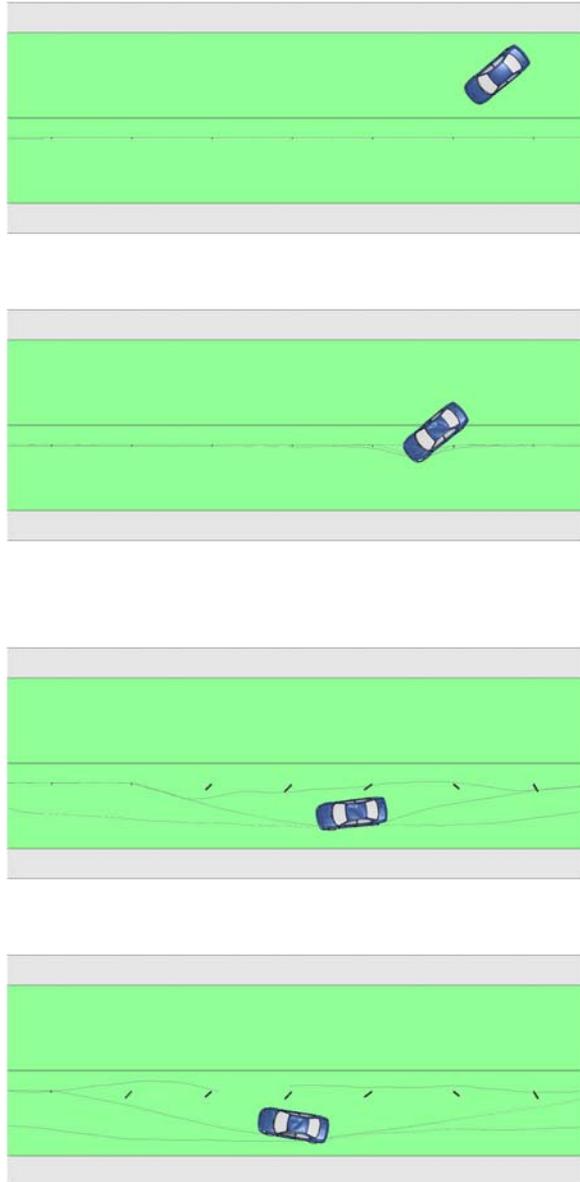


Fig. A.129: Back-side impact by Dodge Neon at 40° and 55 mph for the sixth design of Retrofit Option 1.

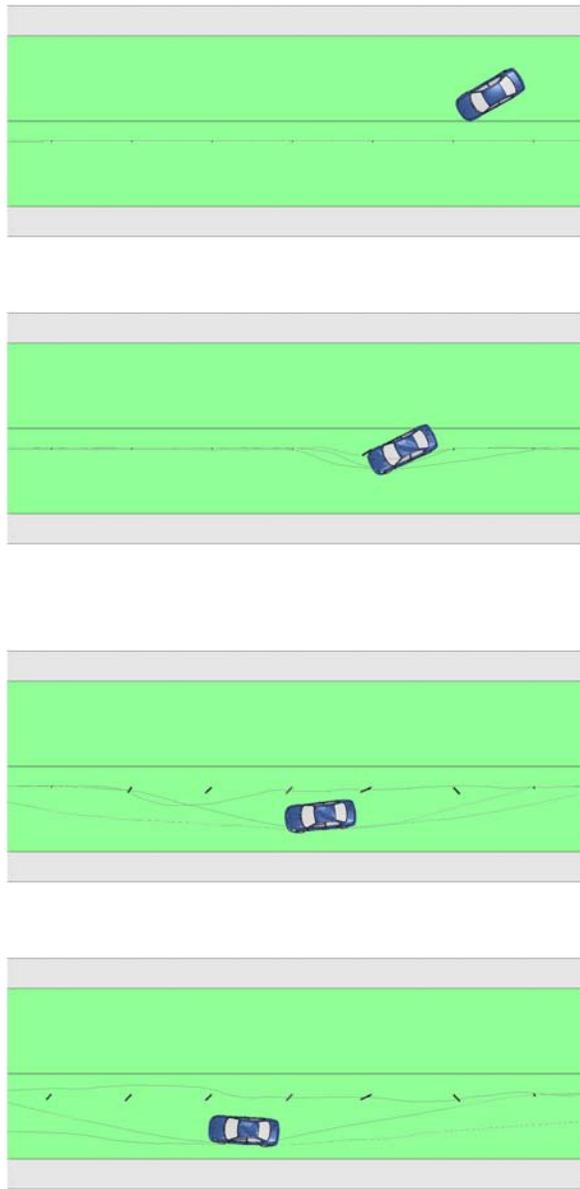


Fig. A.130: Back-side impact by Dodge Neon at 40° and 65 mph for the sixth design of Retrofit Option 1.

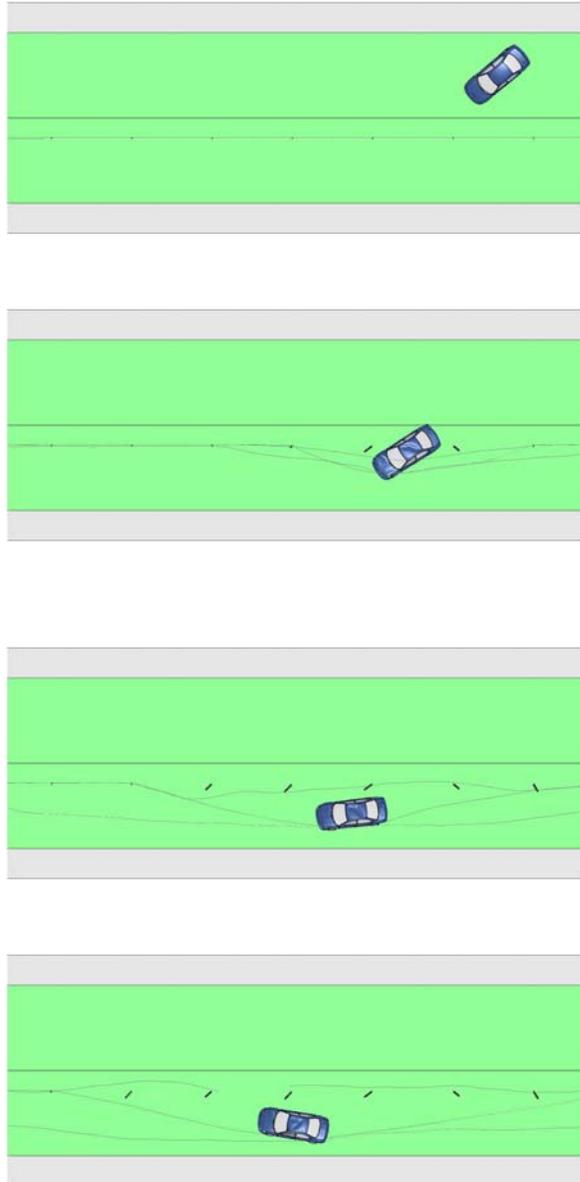


Fig. A.131: Back-side impact by Dodge Neon at 40° and 70 mph for the sixth design of Retrofit Option 1.

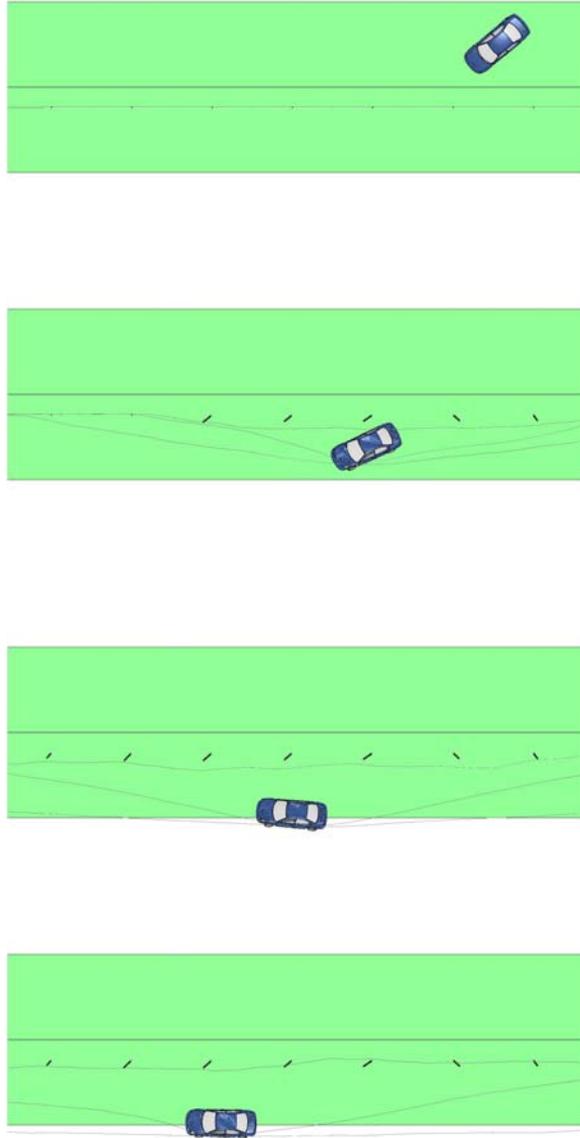


Fig. A.132: Back-side impact by Dodge Neon at  $40^\circ$  and 75 mph for the sixth design of Retrofit Option 1.

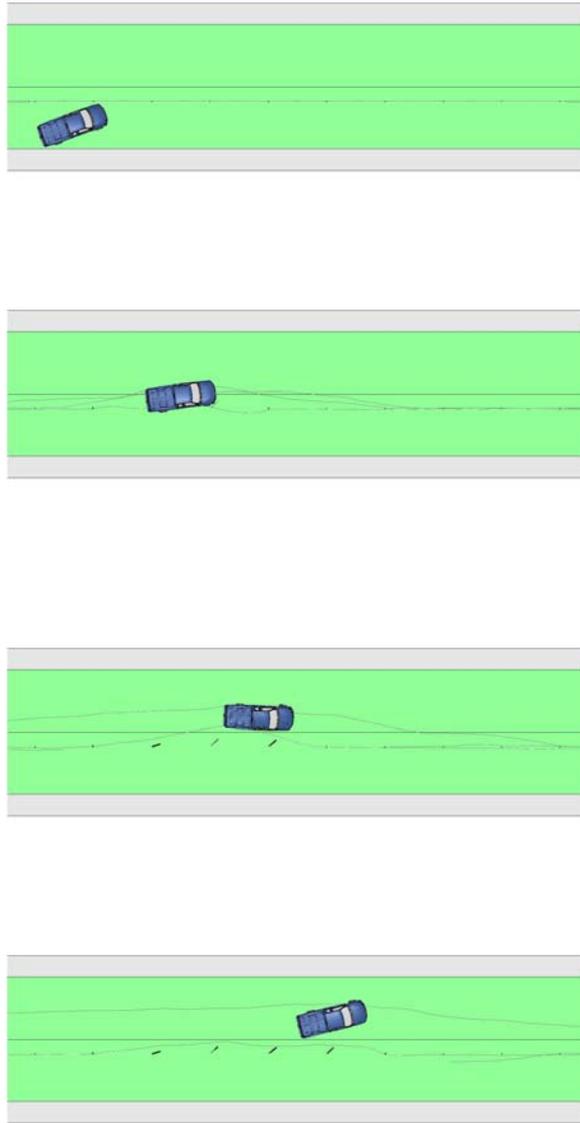


Fig. A.133: Front-side impact by Ford F250 at 20° and 55 mph for the sixth design of Retrofit Option 1.

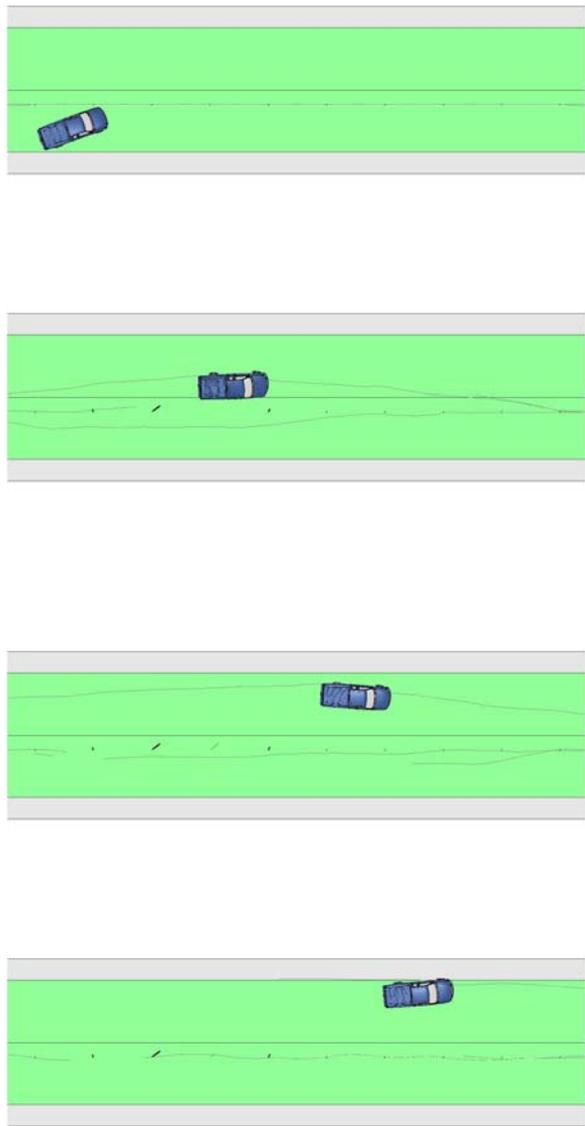


Fig. A.134: Front-side impact by Ford F250 at 20° and 65 mph for the sixth design of Retrofit Option 1.

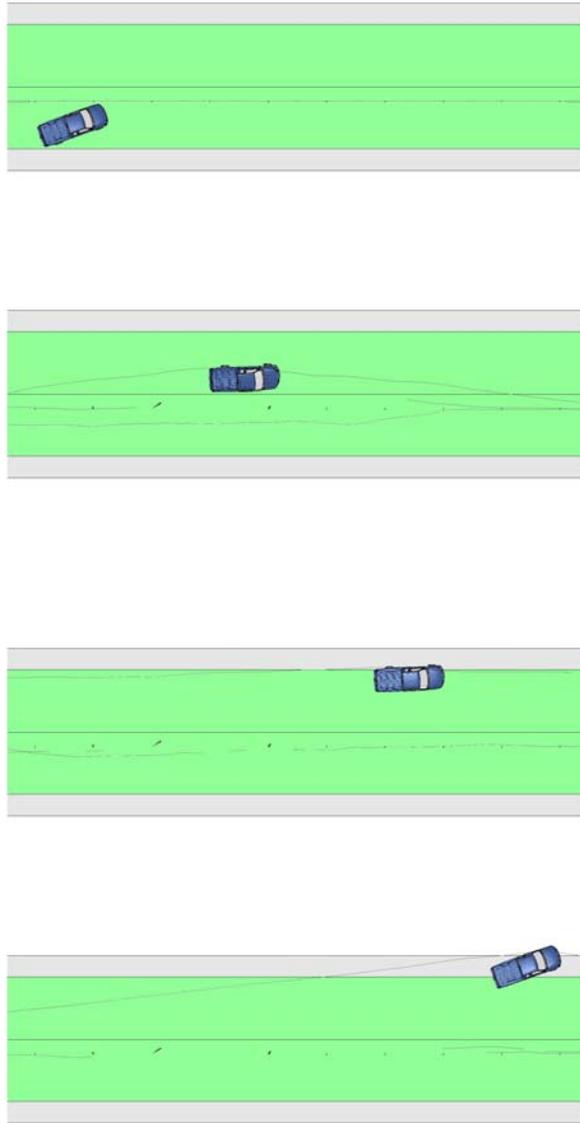


Fig. A.135: Front-side impact by Ford F250 at 20° and 70 mph for the sixth design of Retrofit Option 1.

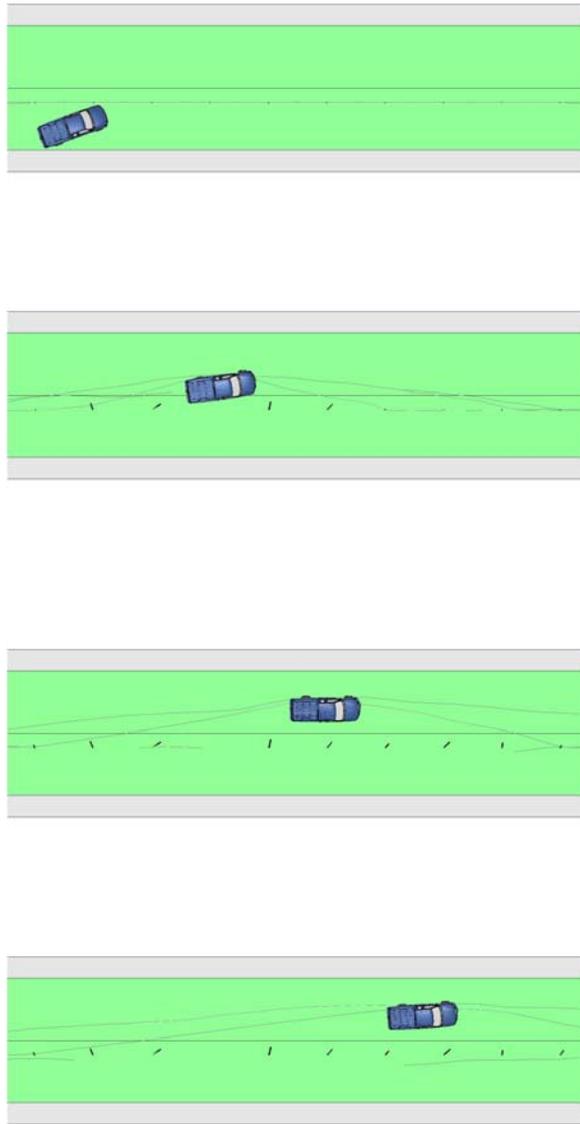


Fig. A.136: Front-side impact by Ford F250 at 20° and 75 mph for the sixth design of Retrofit Option 1.

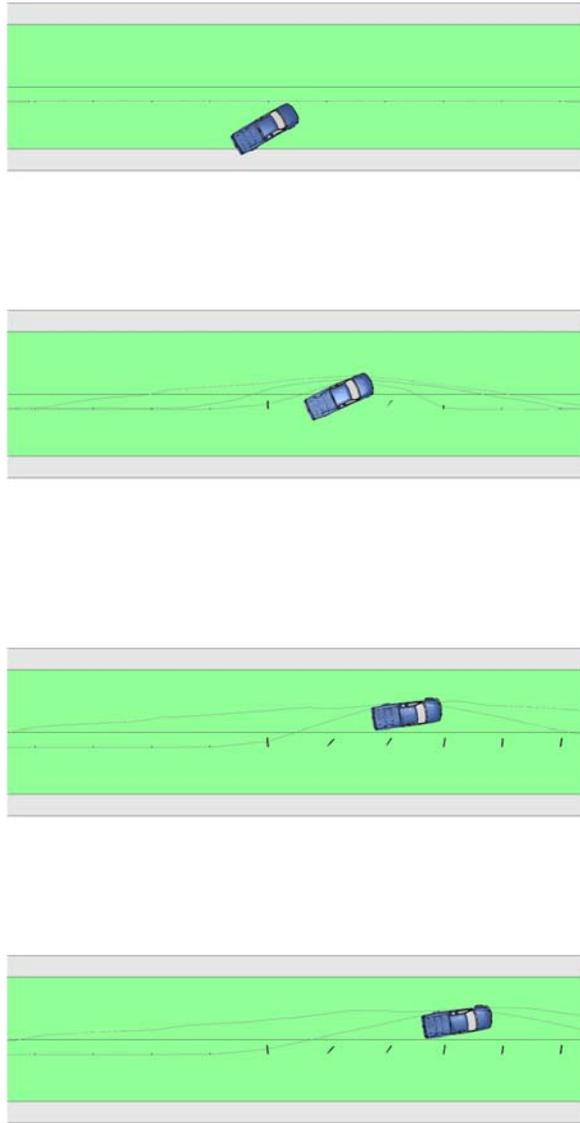


Fig. A.137: Front-side impact by Ford F250 at 30° and 55 mph for the sixth design of Retrofit Option 1.

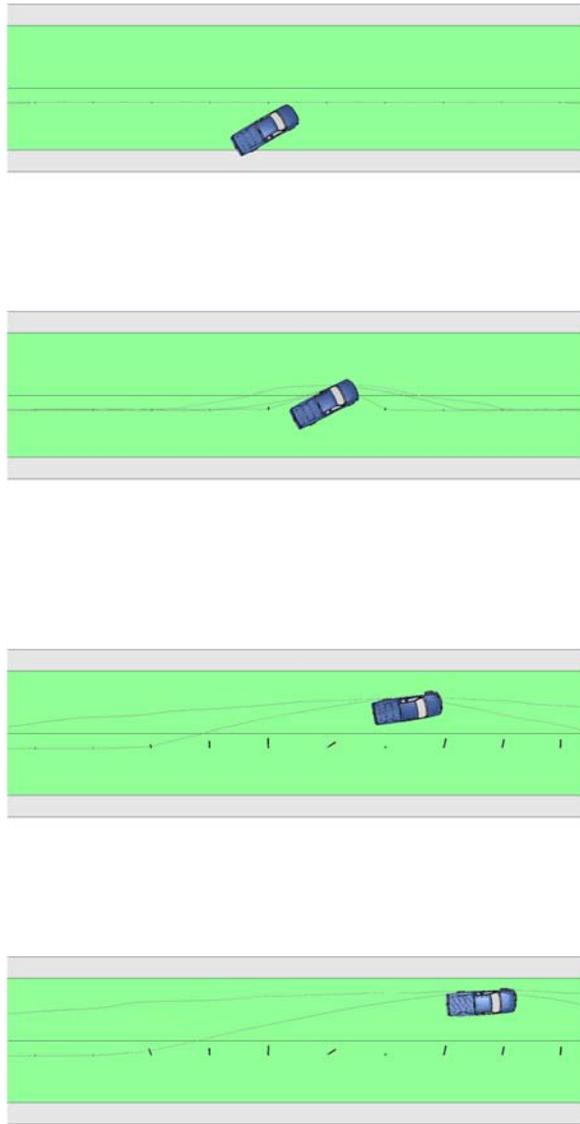


Fig. A.138: Front-side impact by Ford F250 at 30° and 65 mph for the sixth design of Retrofit Option 1.

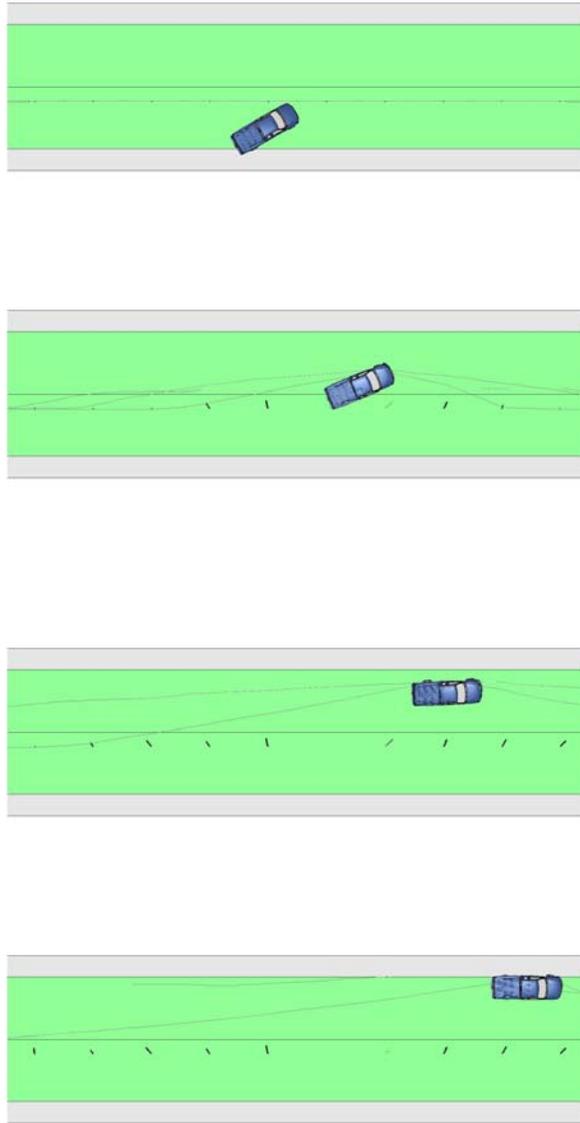


Fig. A.139: Front-side impact by Ford F250 at 30° and 70 mph for the sixth design of Retrofit Option 1.

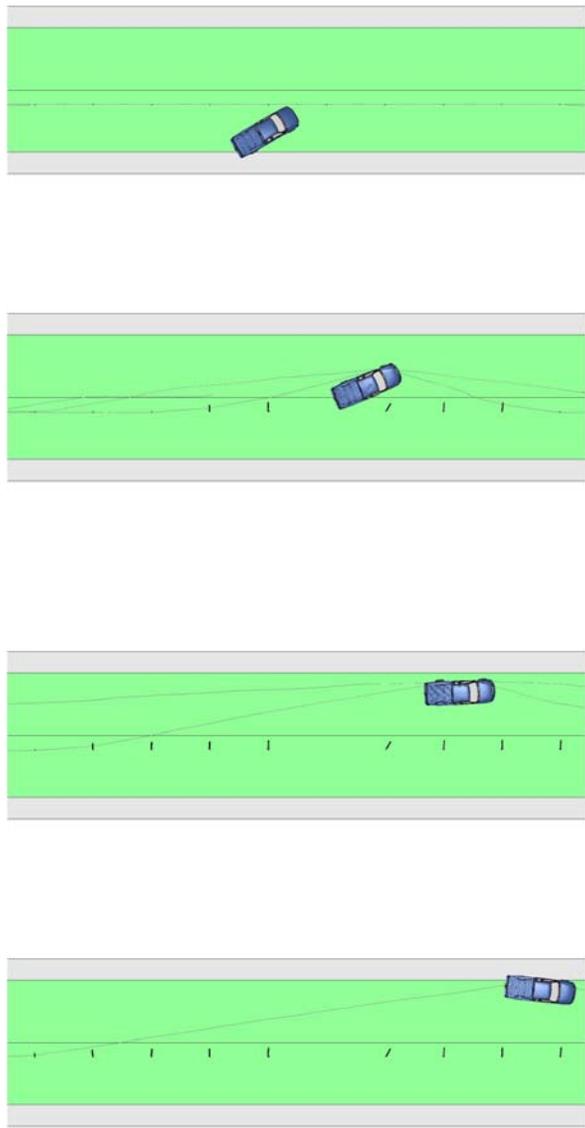


Fig. A.140: Front-side impact by Ford F250 at 30° and 75 mph for the sixth design of Retrofit Option 1.

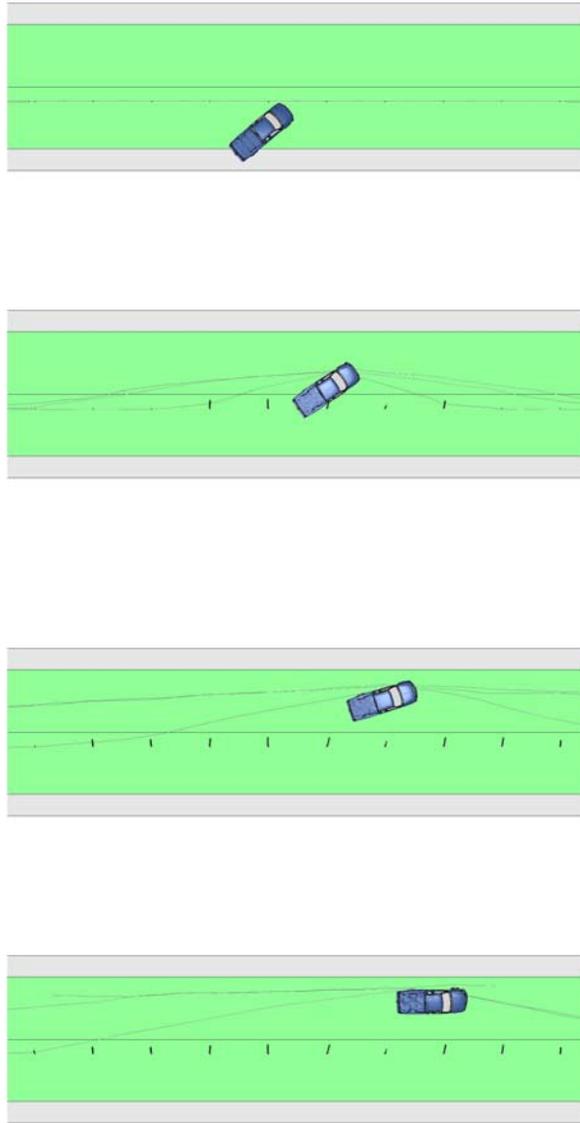


Fig. A.141: Front-side impact by Ford F250 at 40° and 55 mph for the sixth design of Retrofit Option 1.

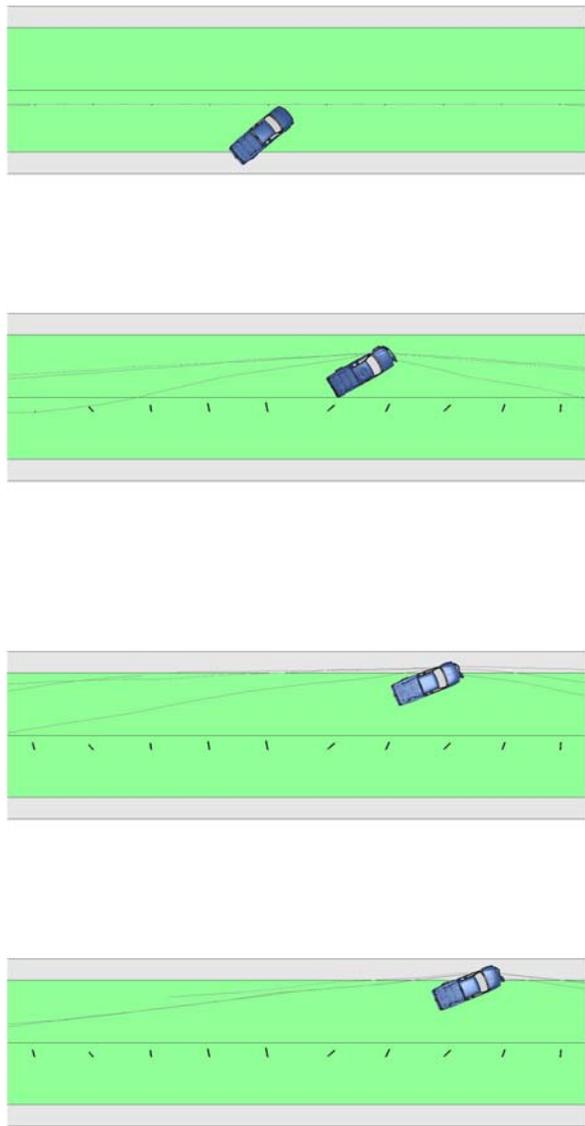


Fig. A.142: Front-side impact by Ford F250 at 40° and 65 mph for the sixth design of Retrofit Option 1.

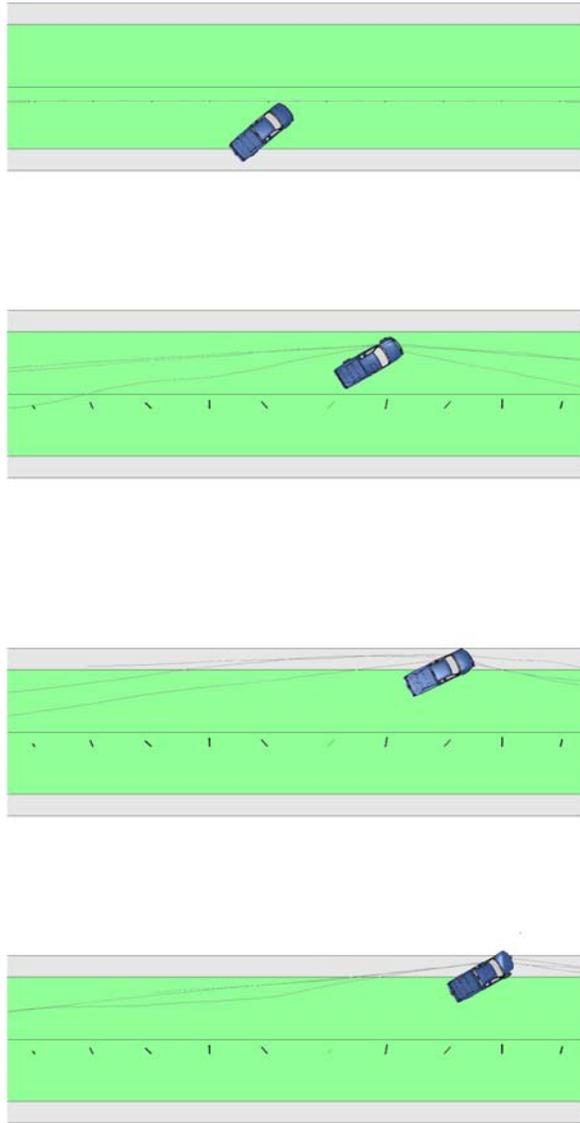


Fig. A.143: Front-side impact by Ford F250 at 40° and 70 mph for the sixth design of Retrofit Option 1.

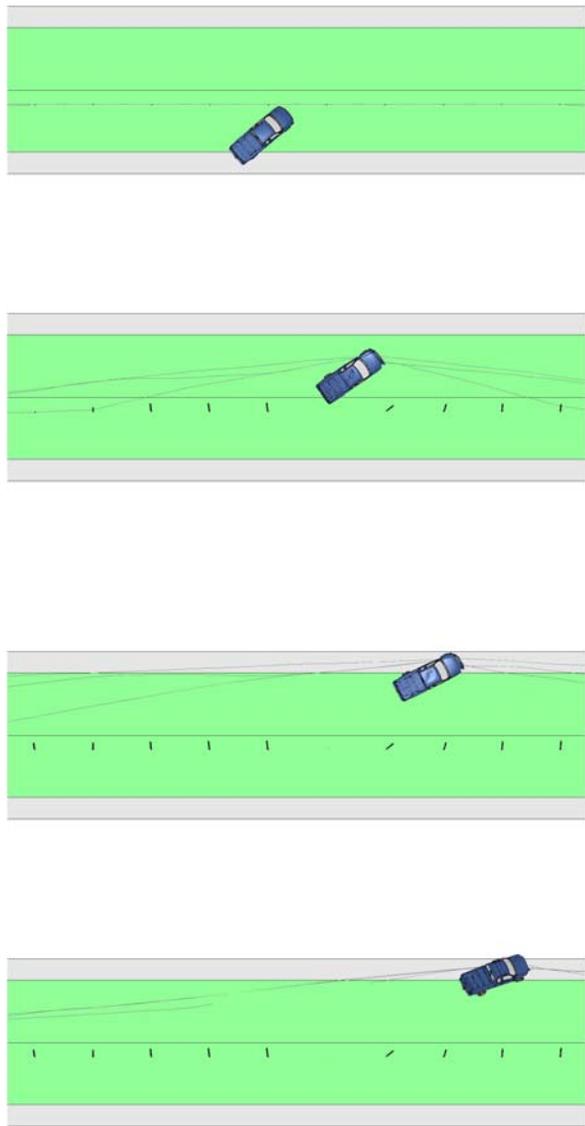


Fig. A.144: Front-side impact by Ford F250 at 40° and 75 mph for the sixth design of Retrofit Option 1.

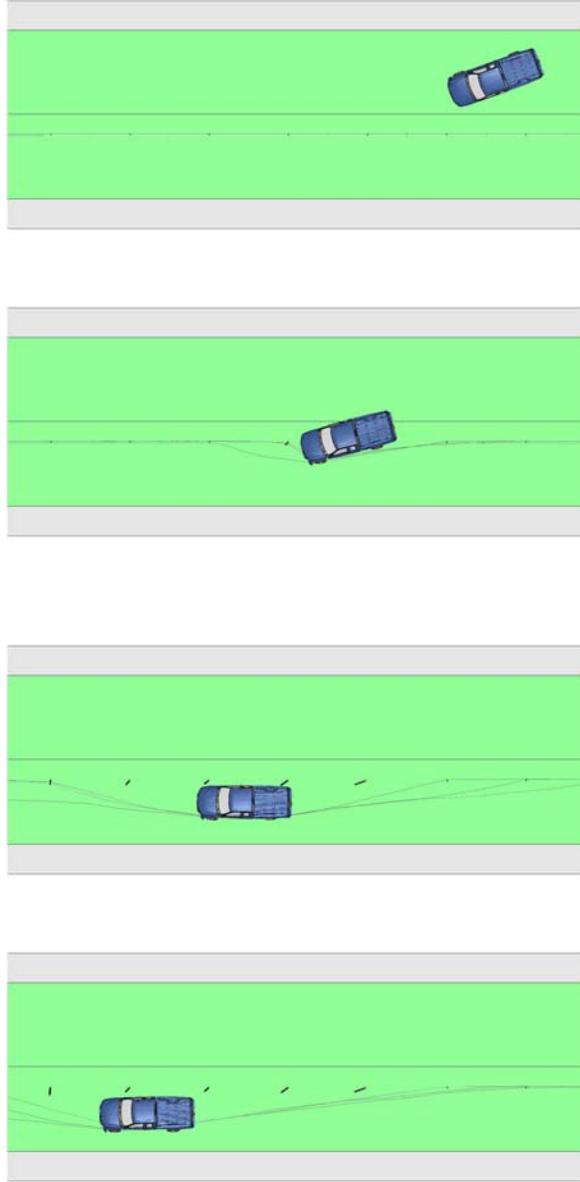


Fig. A.145: Back-side impact by Ford F250 at 20° and 55 mph for the sixth design of Retrofit Option 1.

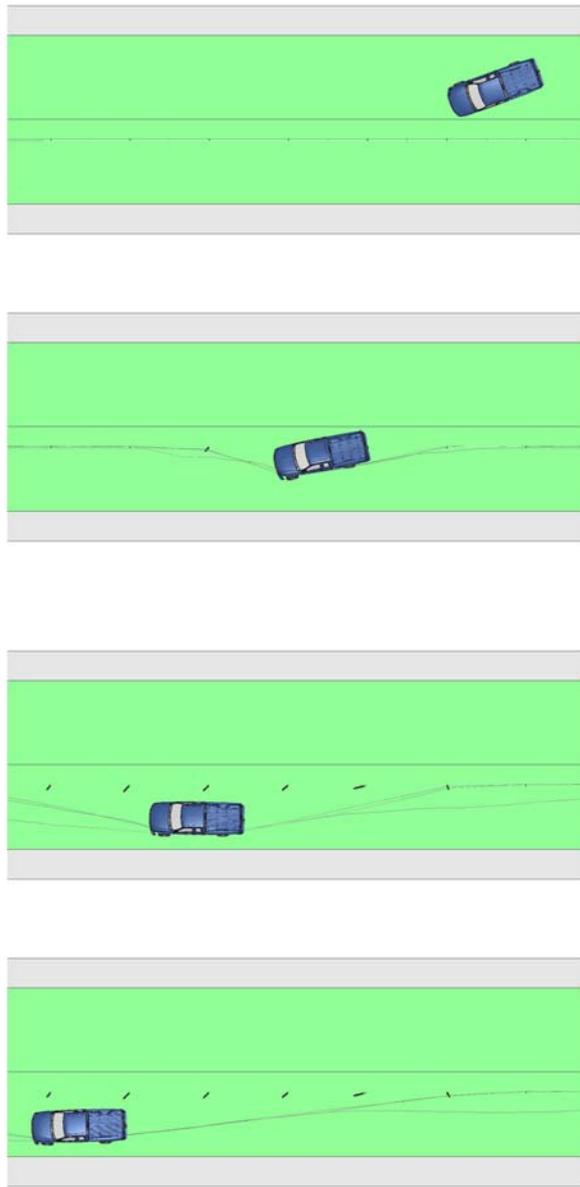


Fig. A.146: Back-side impact by Ford F250 at 20° and 65 mph for the sixth design of Retrofit Option 1.

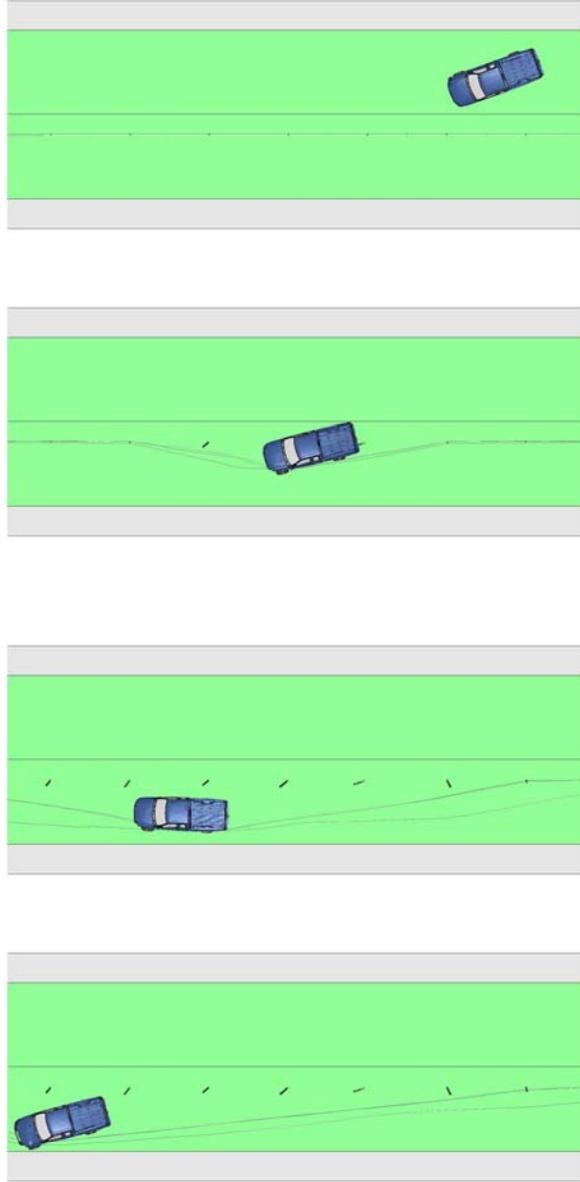


Fig. A.147: Back-side impact by Ford F250 at 20° and 70 mph for the sixth design of Retrofit Option 1.

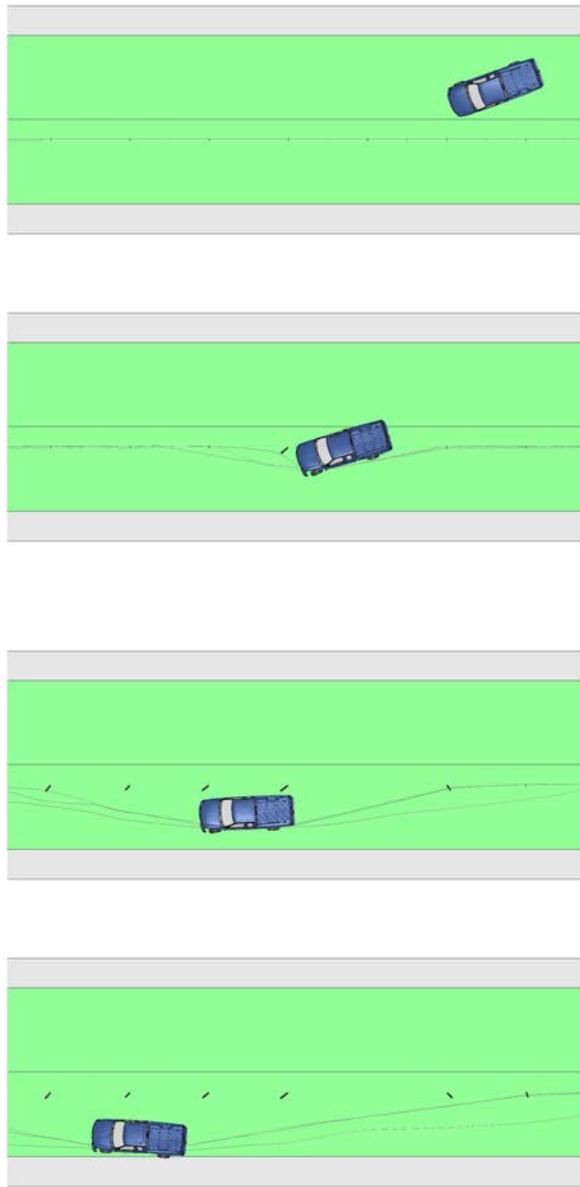


Fig. A.148: Back-side impact by Ford F250 at 20° and 75 mph for the sixth design of Retrofit Option 1.

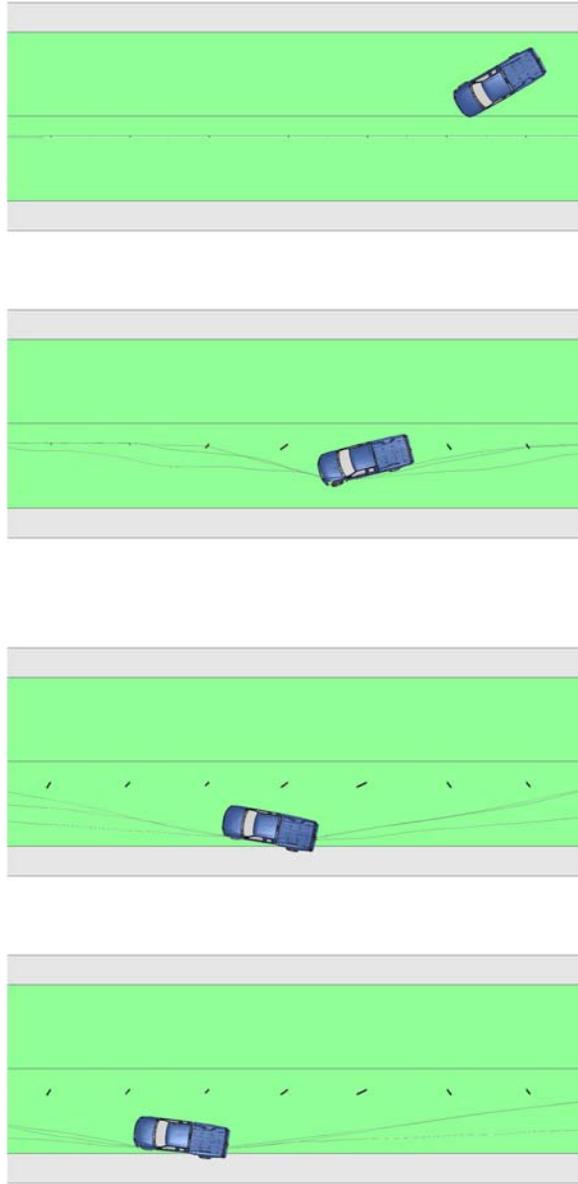


Fig. A.149: Back-side impact by Ford F250 at 30° and 55 mph for the sixth design of Retrofit Option 1.

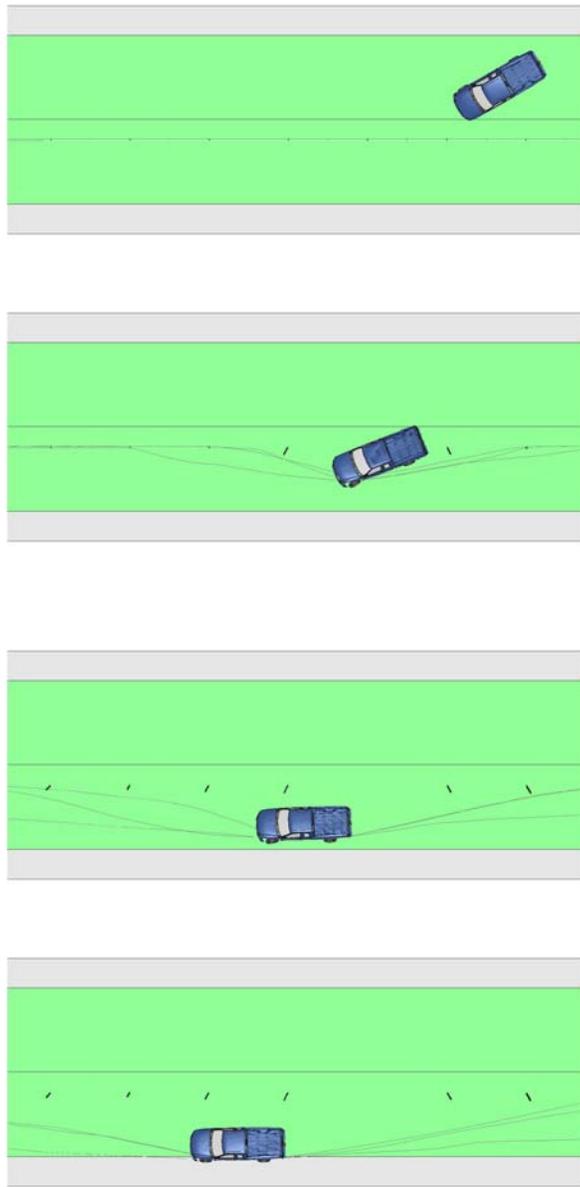


Fig. A.150: Back-side impact by Ford F250 at 30° and 65 mph for the sixth design of Retrofit Option 1.

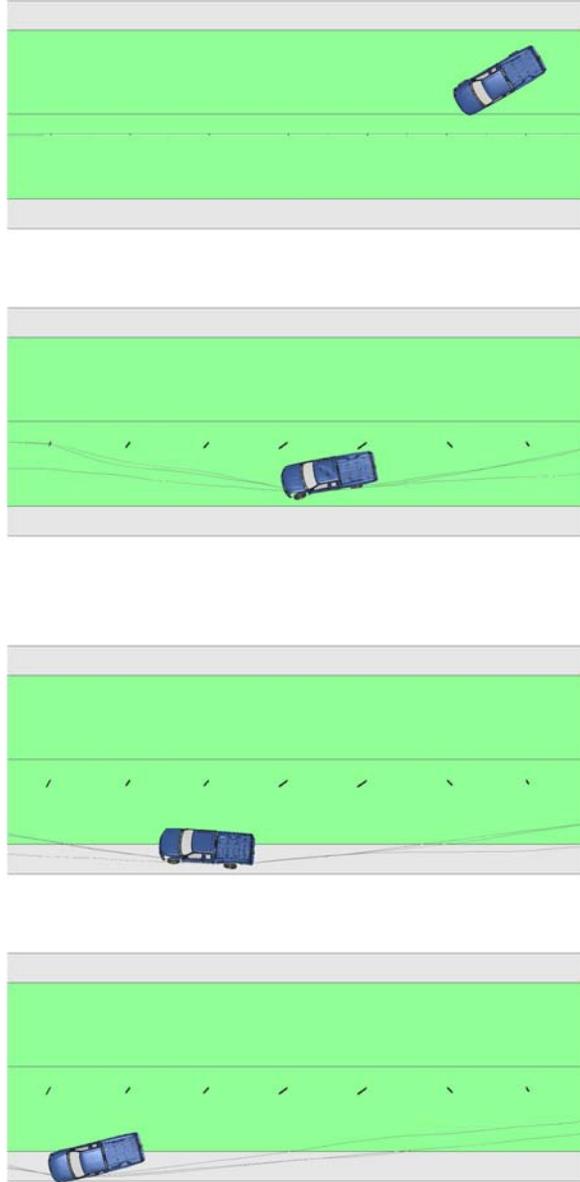


Fig. A.151: Back-side impact by Ford F250 at 30° and 70 mph for the sixth design of Retrofit Option 1.

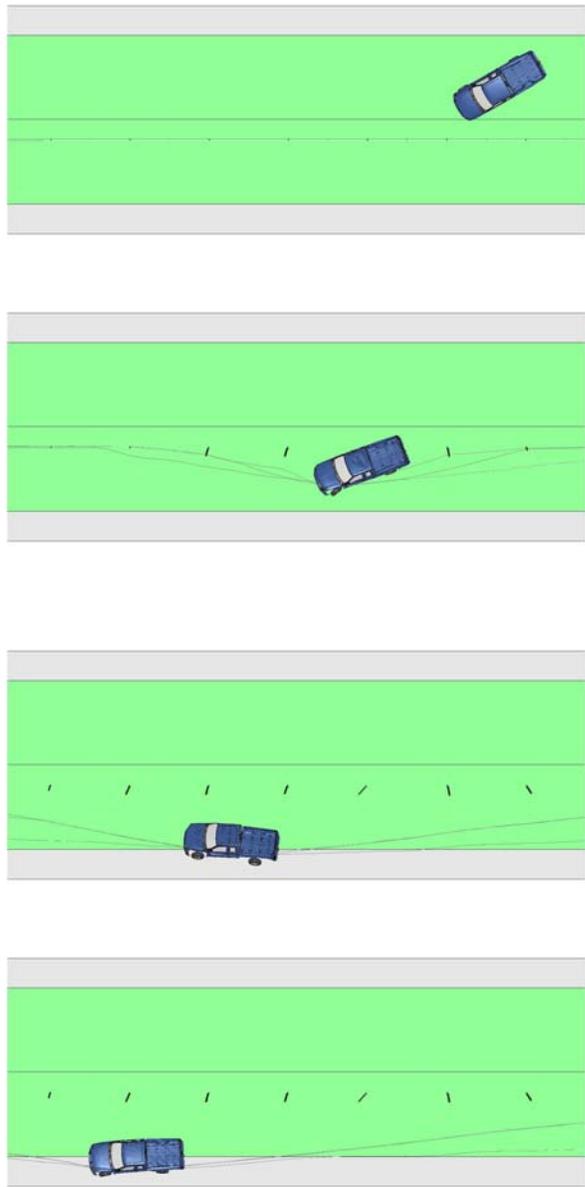


Fig. A.152: Back-side impact by Ford F250 at 30° and 75 mph for the sixth design of Retrofit Option 1.

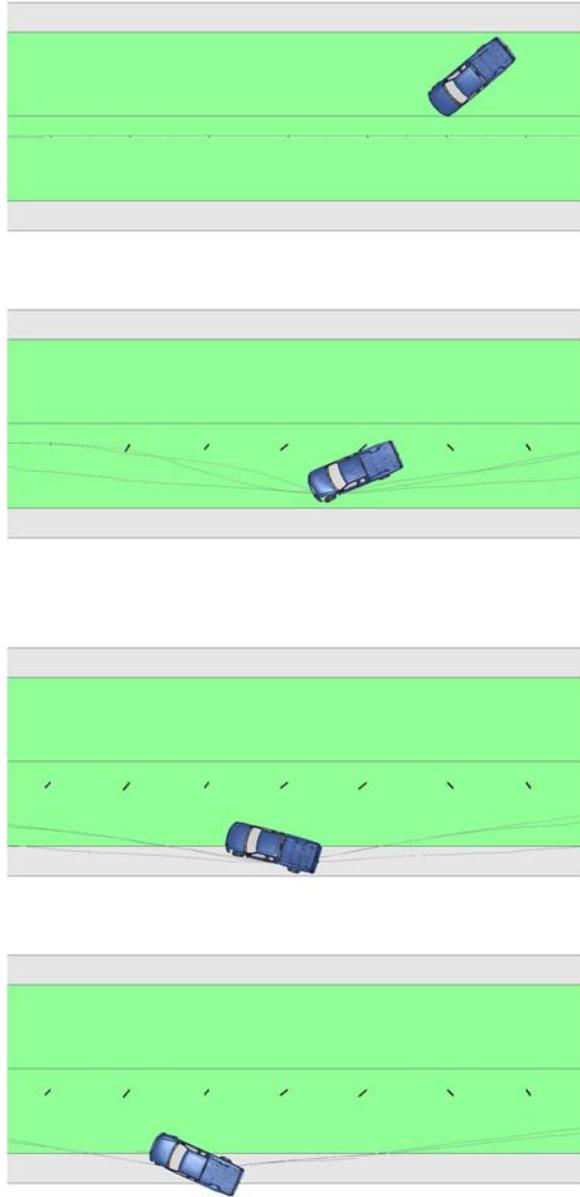


Fig. A.153: Back-side impact by Ford F250 at 40° and 55 mph for the sixth design of Retrofit Option 1.

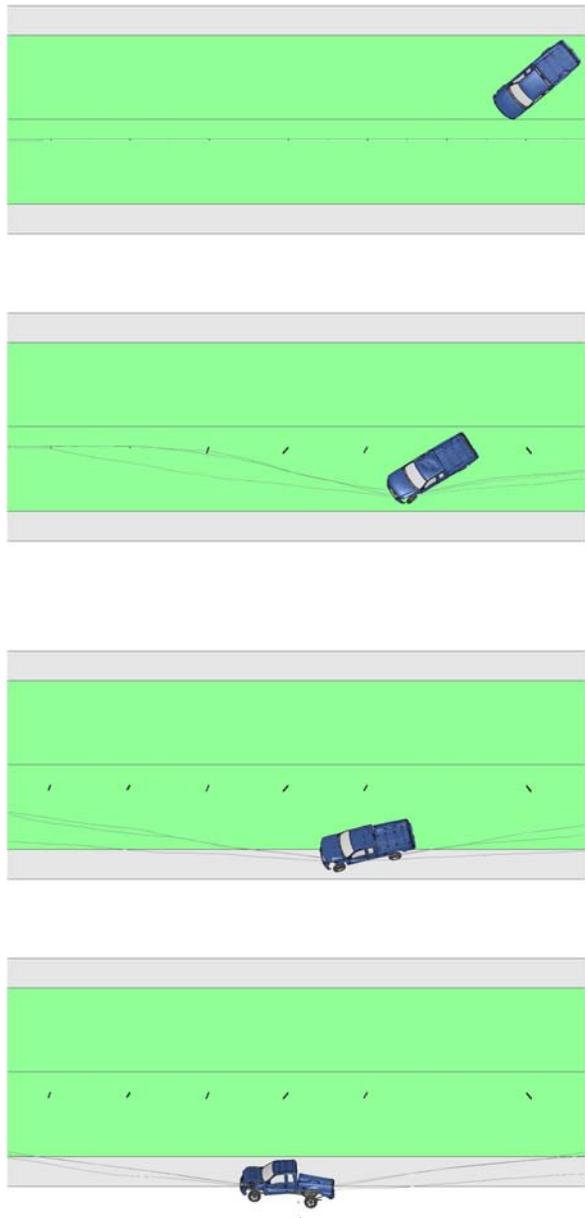


Fig. A.154: Back-side impact by Ford F250 at 40° and 65 mph for the sixth design of Retrofit Option 1.

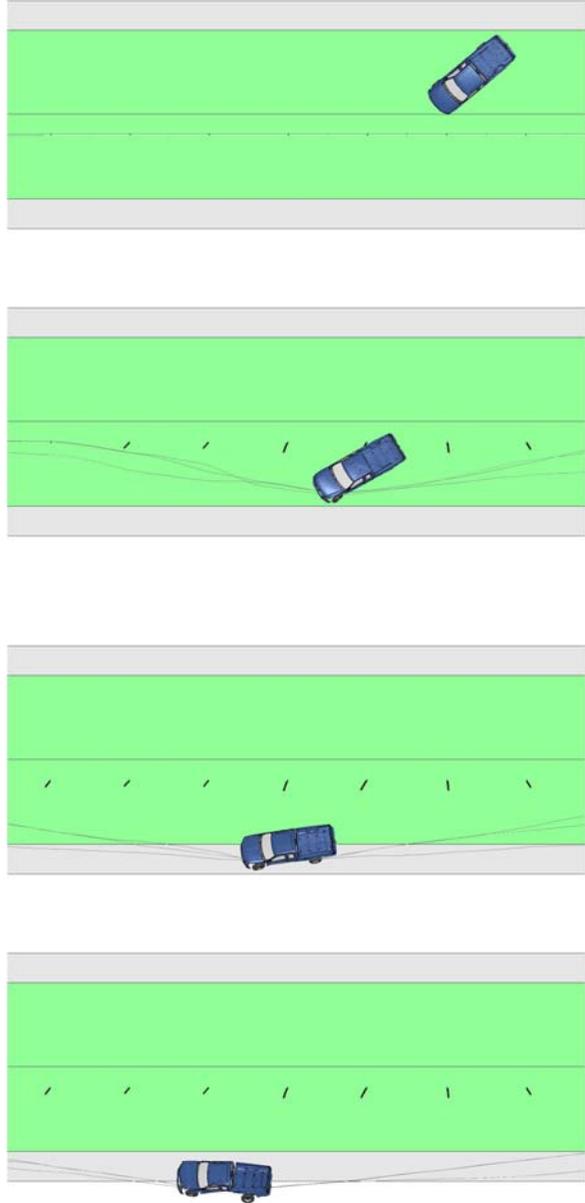


Fig. A.155: Back-side impact by Ford F250 at 40° and 70 mph for the sixth design of Retrofit Option 1.

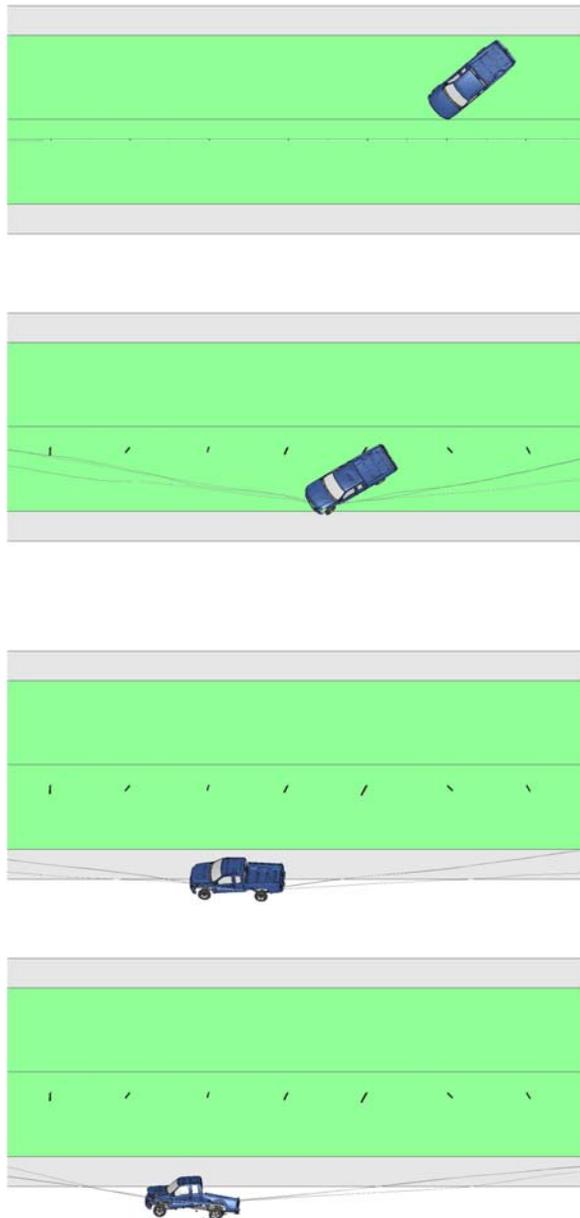


Fig. A.156: Back-side impact by Ford F250 at 40° and 75 mph for the sixth design of Retrofit Option 1.

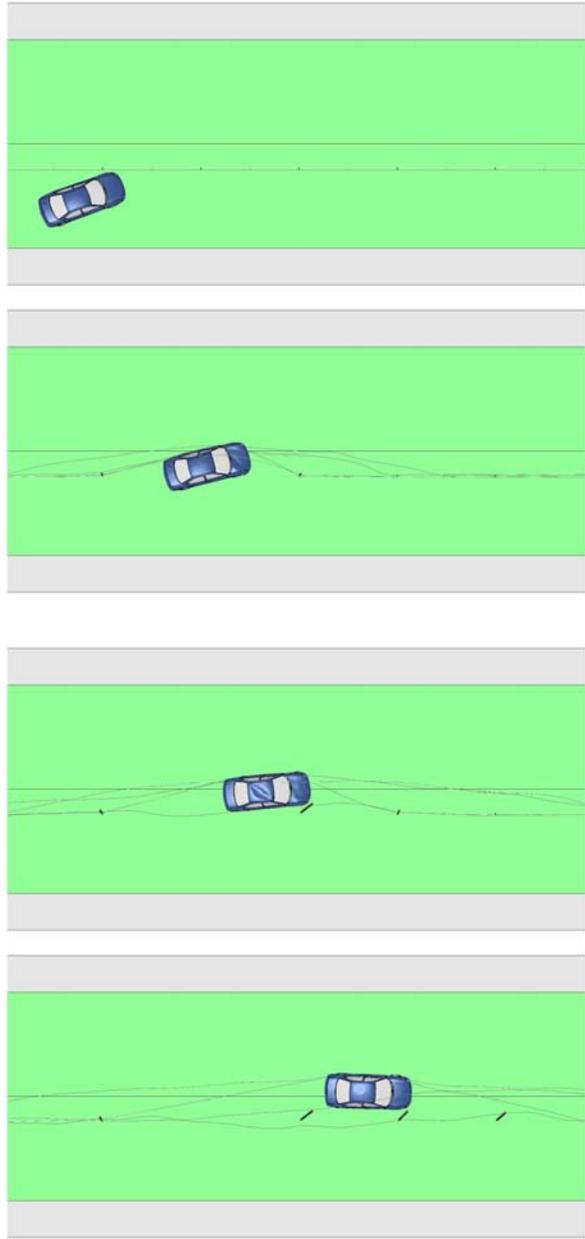


Fig. A.157: Front-side impact by Dodge Neon at 20° and 75 mph for the first design of Retrofit Option 2.

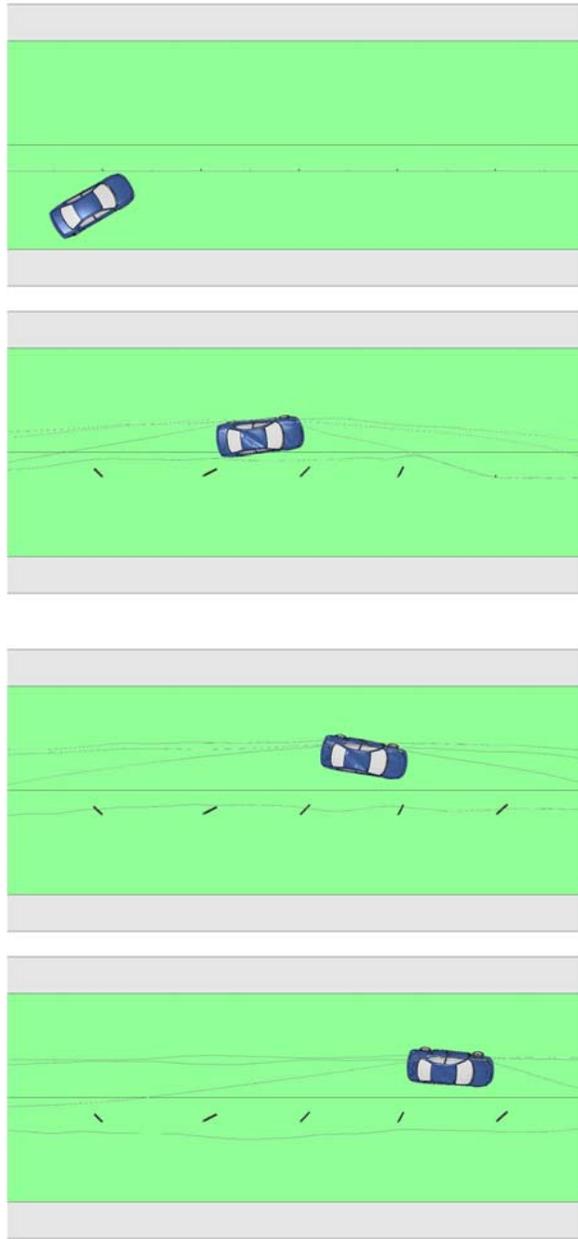


Fig. A.158: Front-side impact by Dodge Neon at 30° and 75 mph for the first design of Retrofit Option 2.

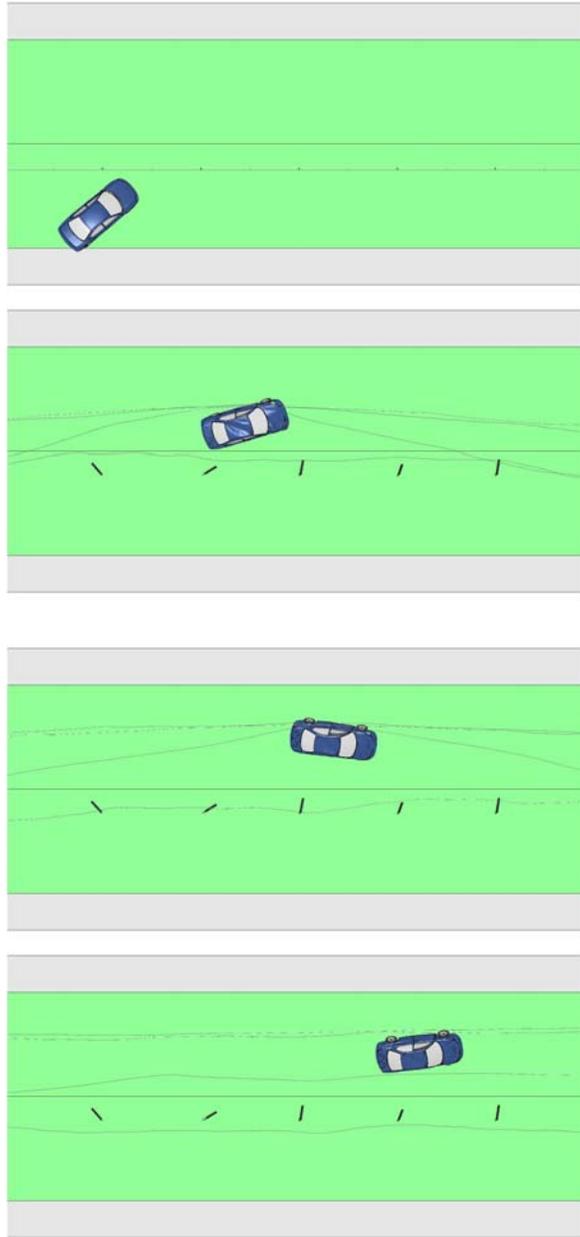


Fig. A.159: Front-side impact by Dodge Neon at 40° and 75 mph for the first design of Retrofit Option 2.

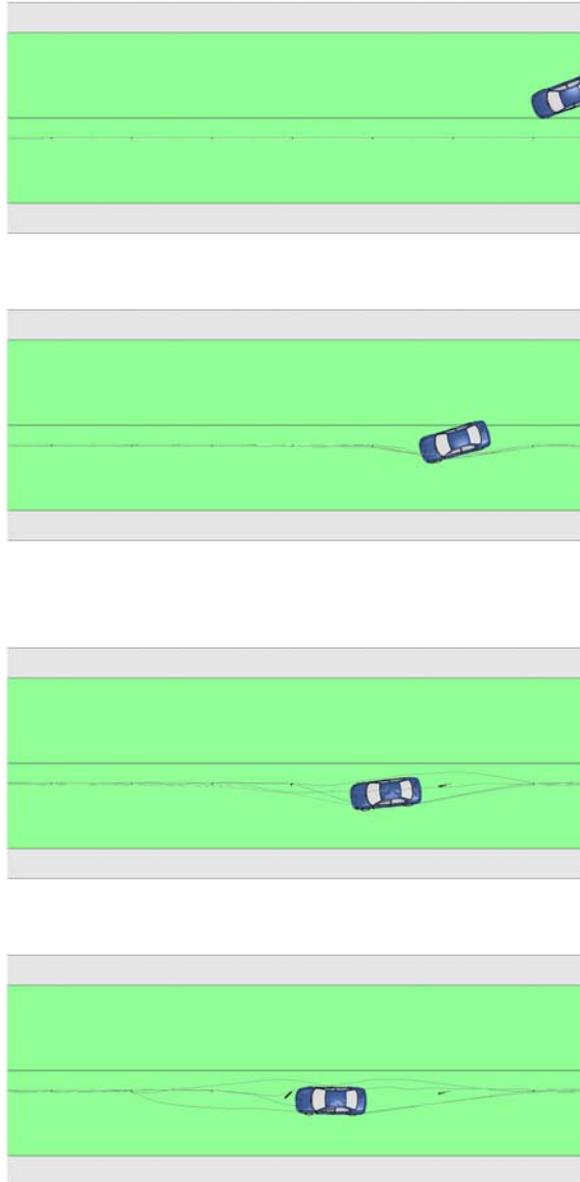


Fig. A.160: Back-side impact by Dodge Neon at 20° and 55 mph for the first design of Retrofit Option 2.

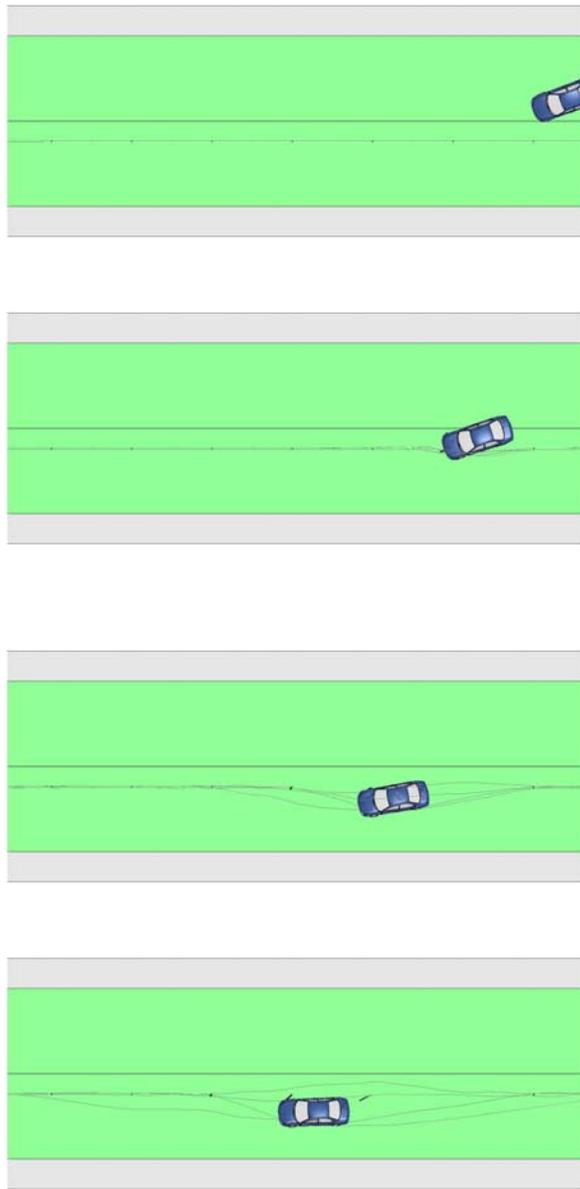


Fig. A.161: Back-side impact by Dodge Neon at 20° and 65 mph for the first design of Retrofit Option 2.

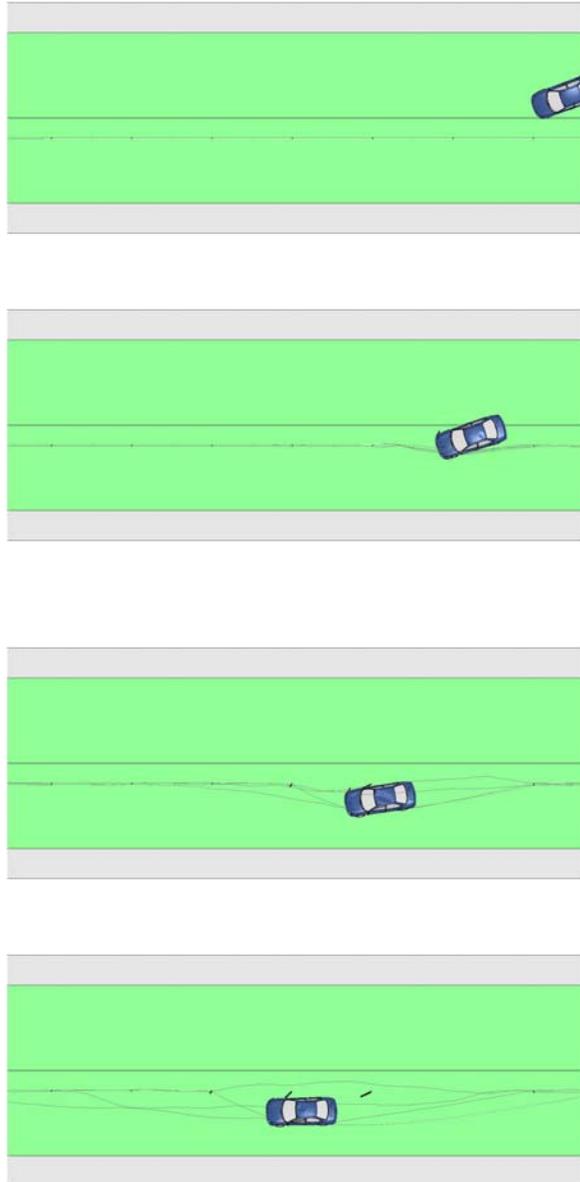


Fig. A.162: Back-side impact by Dodge Neon at 20° and 70 mph for the first design of Retrofit Option 2.

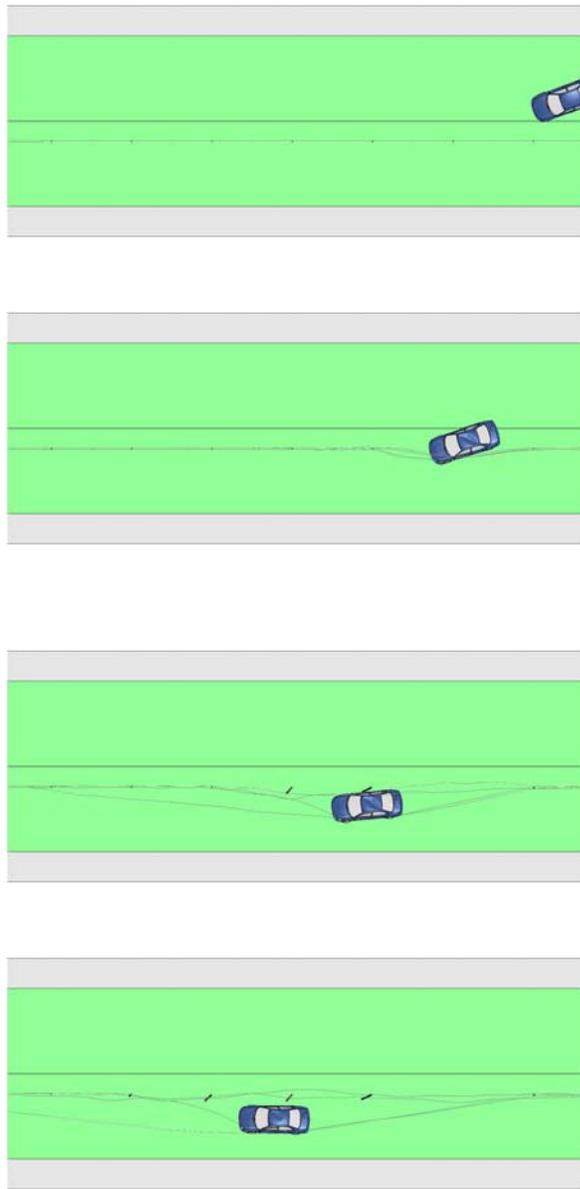


Fig. A.163: Back-side impact by Dodge Neon at 20° and 75 mph for the first design of Retrofit Option 2.

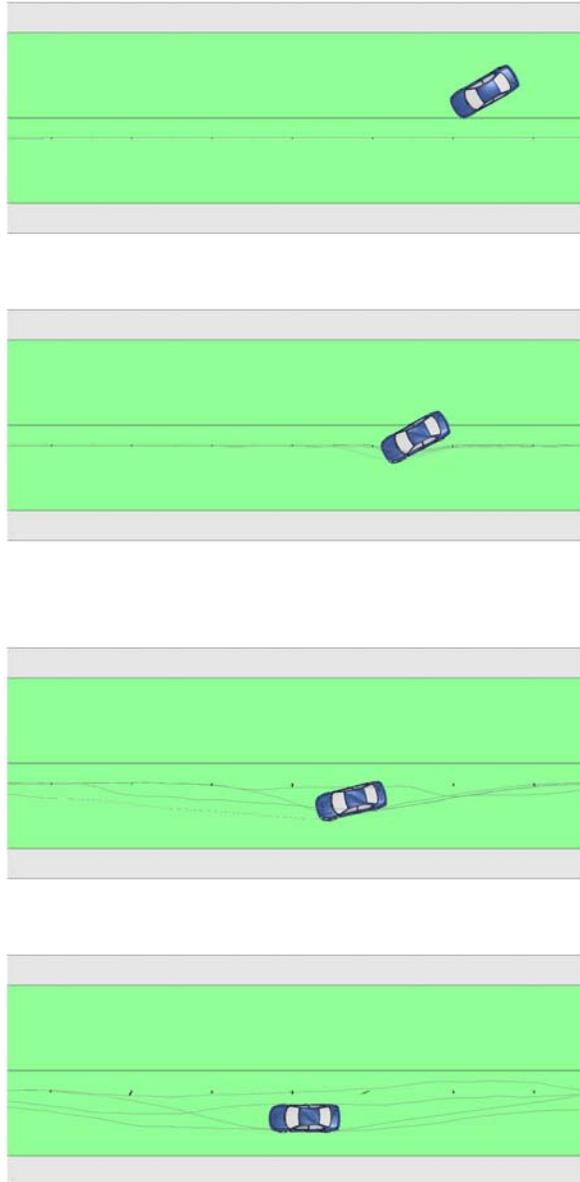


Fig. A.164: Back-side impact by Dodge Neon at 30° and 55 mph for the first design of Retrofit Option 2.

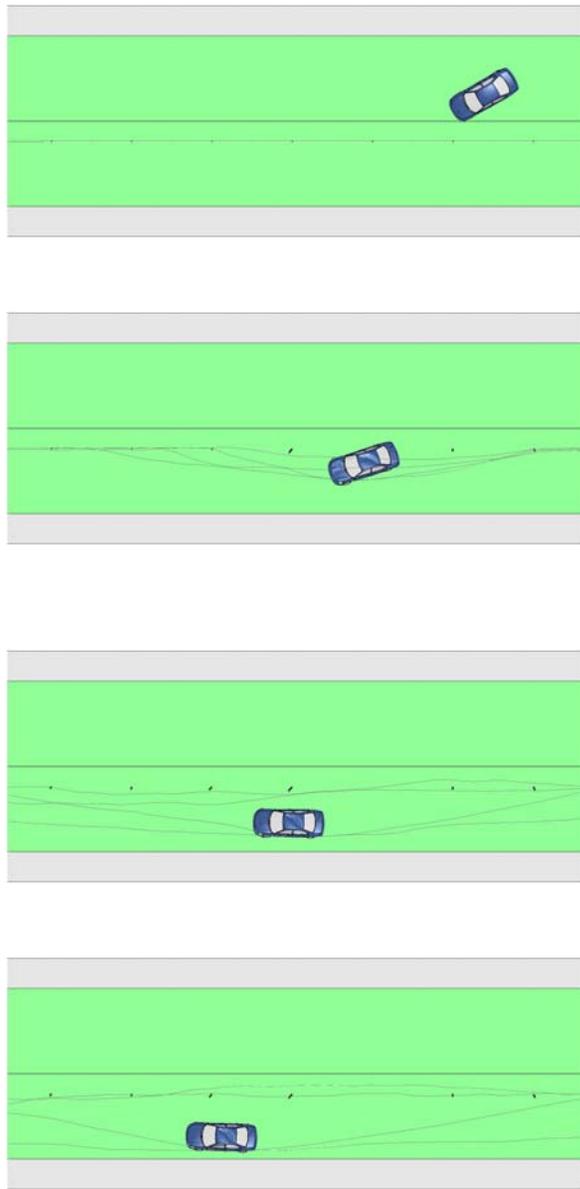


Fig. A.165: Back-side impact by Dodge Neon at 30° and 65 mph for the first design of Retrofit Option 2.

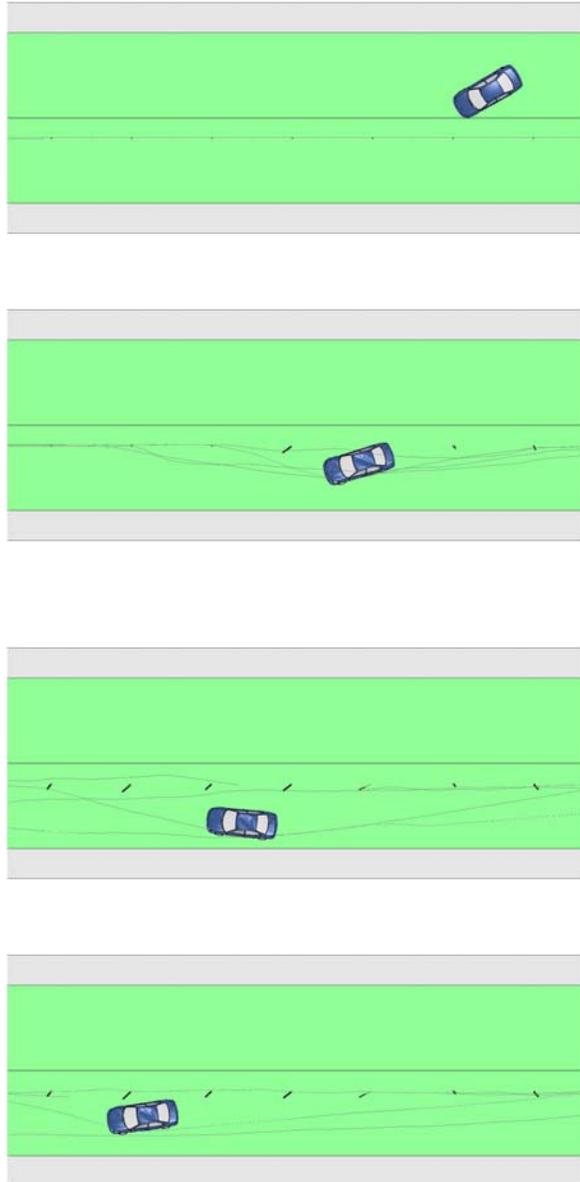


Fig. A.166: Back-side impact by Dodge Neon at 30° and 70 mph for the first design of Retrofit Option 2.

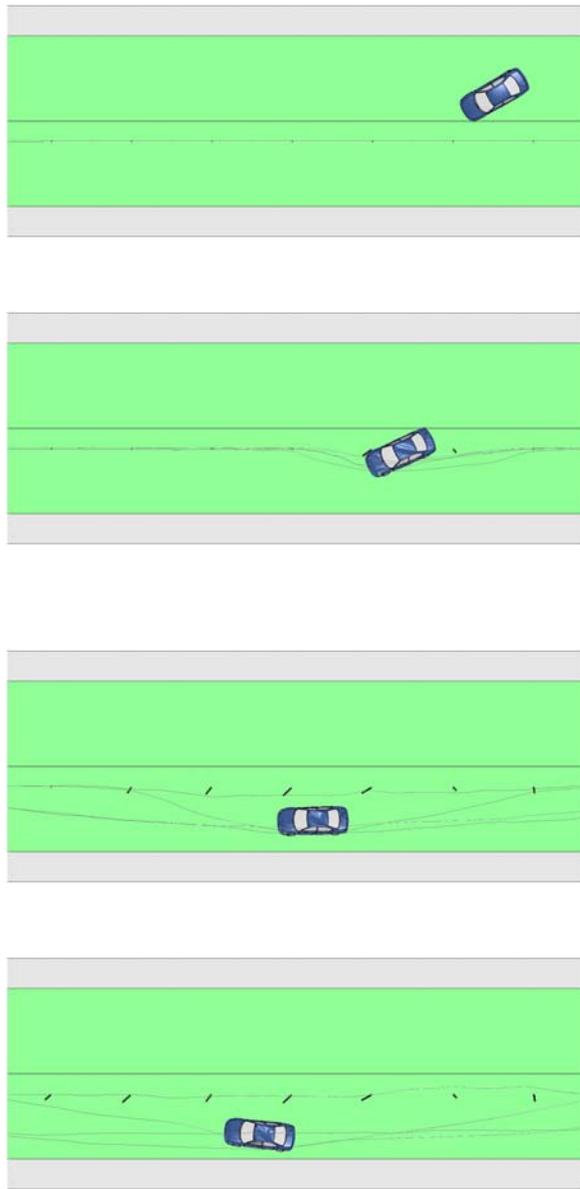


Fig. A.167: Back-side impact by Dodge Neon at 30° and 75 mph for the first design of Retrofit Option 2.

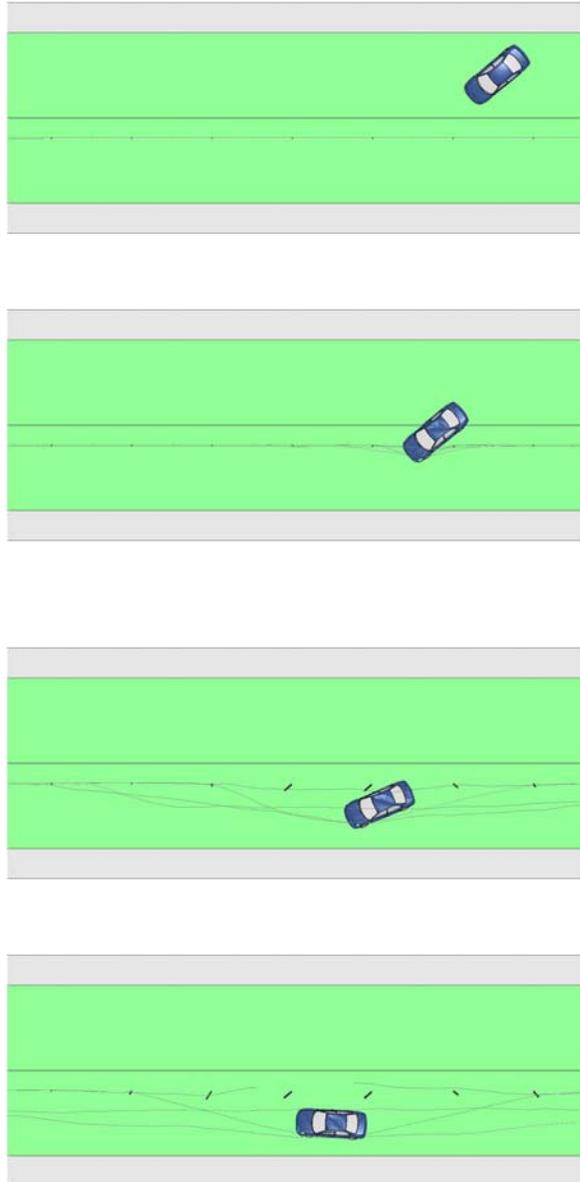


Fig. A.168: Back-side impact by Dodge Neon at 40° and 55 mph for the first design of Retrofit Option 2.

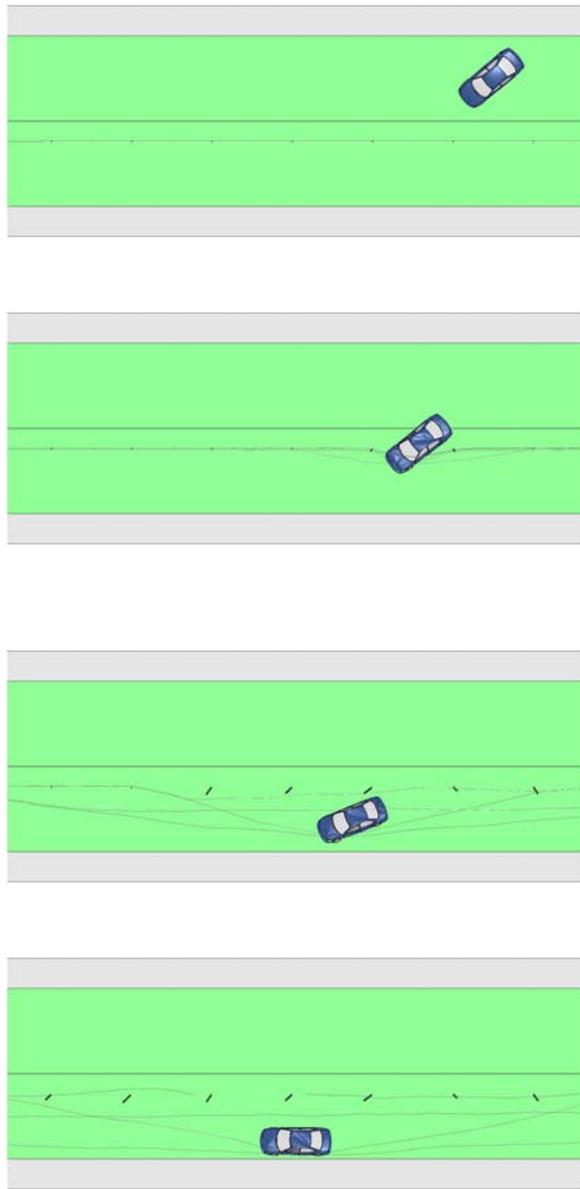


Fig. A.169: Back-side impact by Dodge Neon at 40° and 65 mph for the first design of Retrofit Option 2.

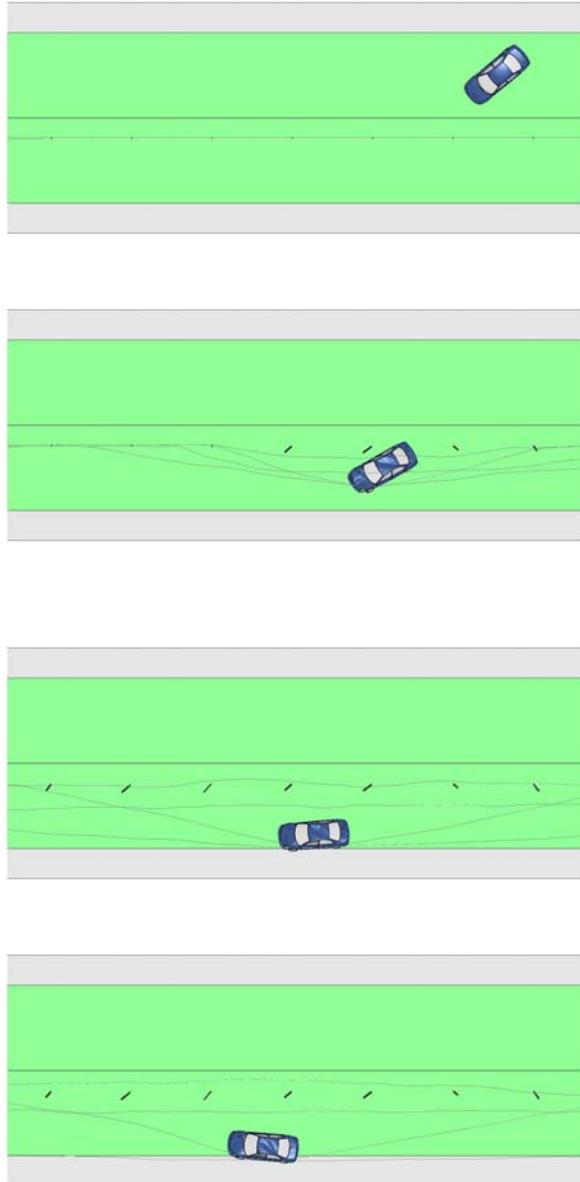


Fig. A.170: Back-side impact by Dodge Neon at 40° and 70 mph for the first design of Retrofit Option 2.

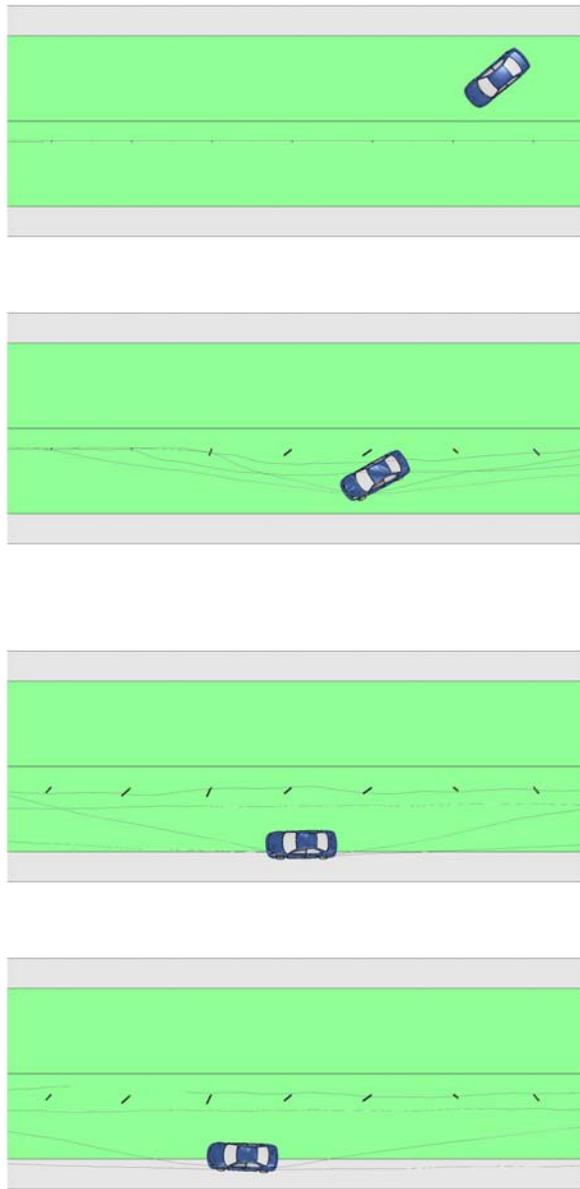


Fig. A.171: Back-side impact by Dodge Neon at 40° and 75 mph for the first design of Retrofit Option 2.

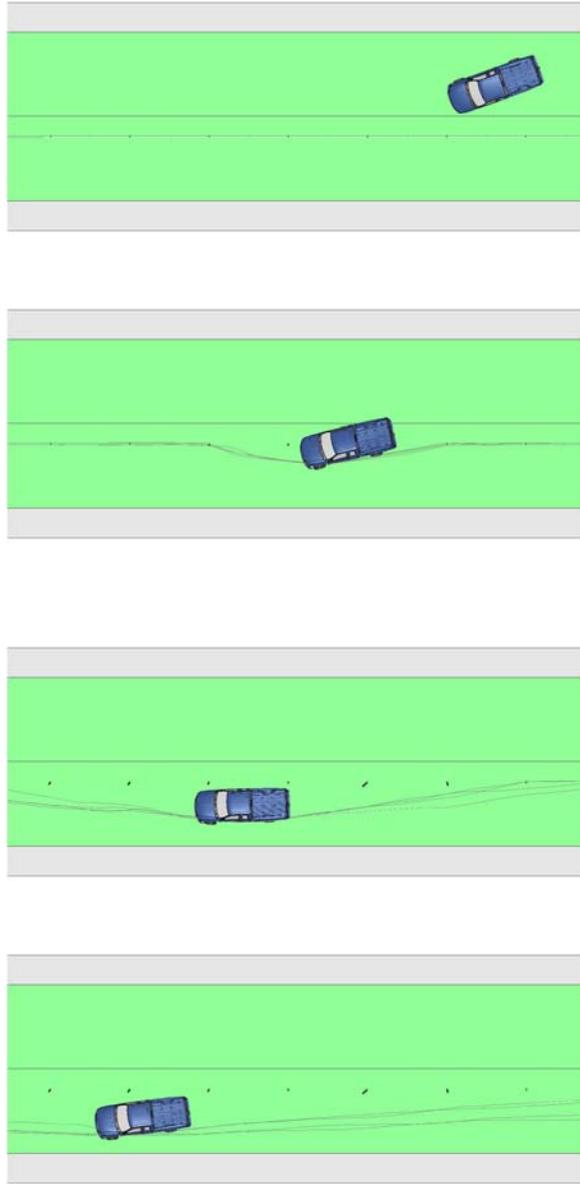


Fig. A.172: Back-side impact by Ford F250 at 20° and 55 mph for the first design of Retrofit Option 2.

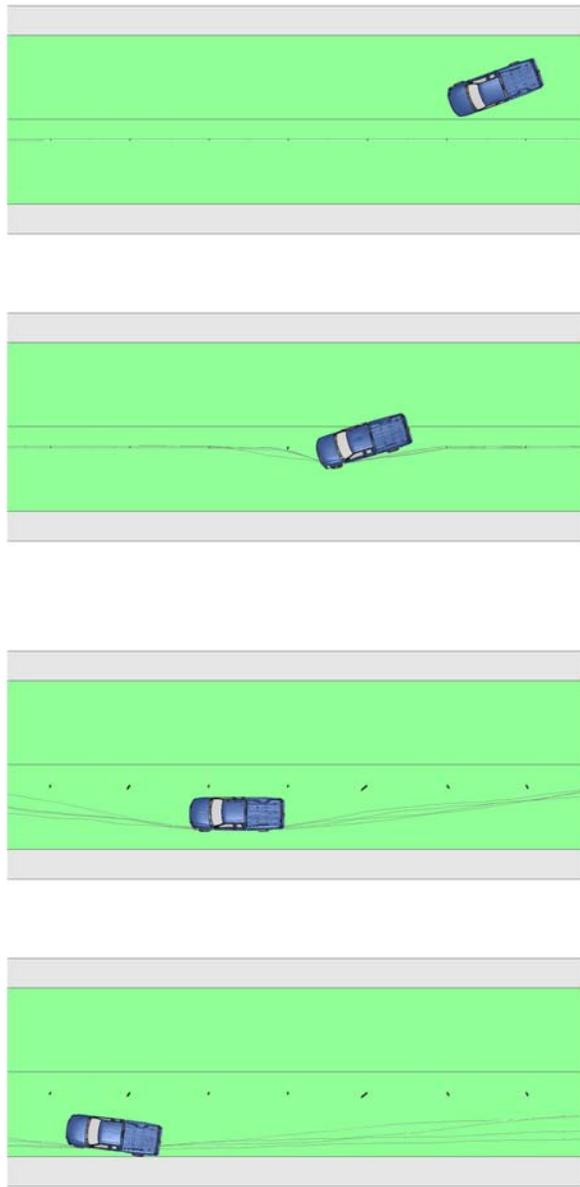


Fig. A.173: Back-side impact by Ford F250 at 20° and 65 mph for the first design of Retrofit Option 2.

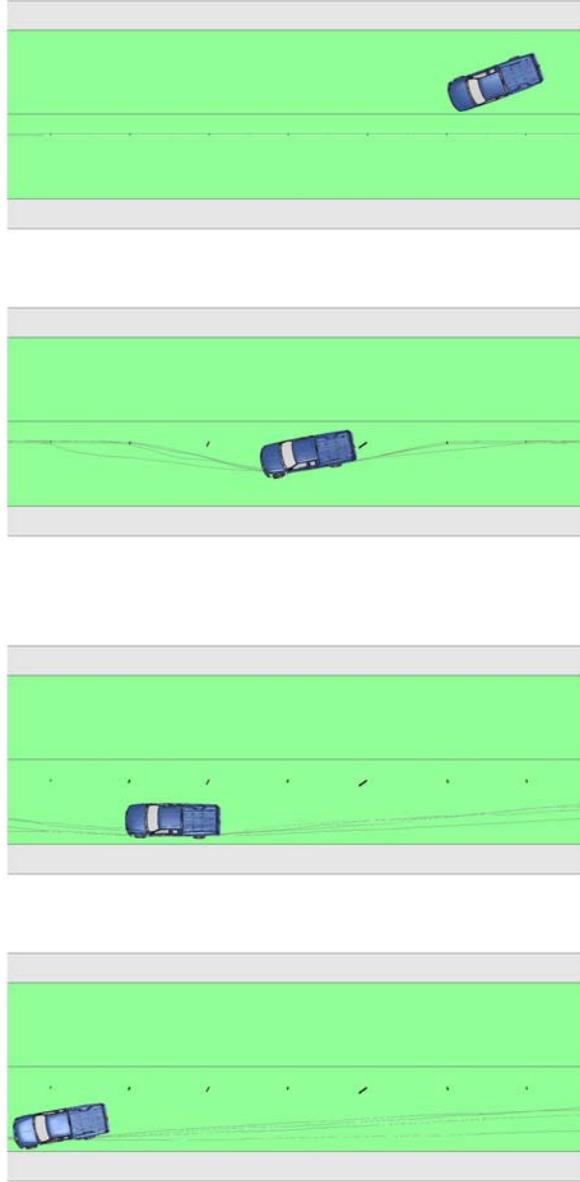


Fig. A.174: Back-side impact by Ford F250 at 20° and 70 mph for the first design of Retrofit Option 2.

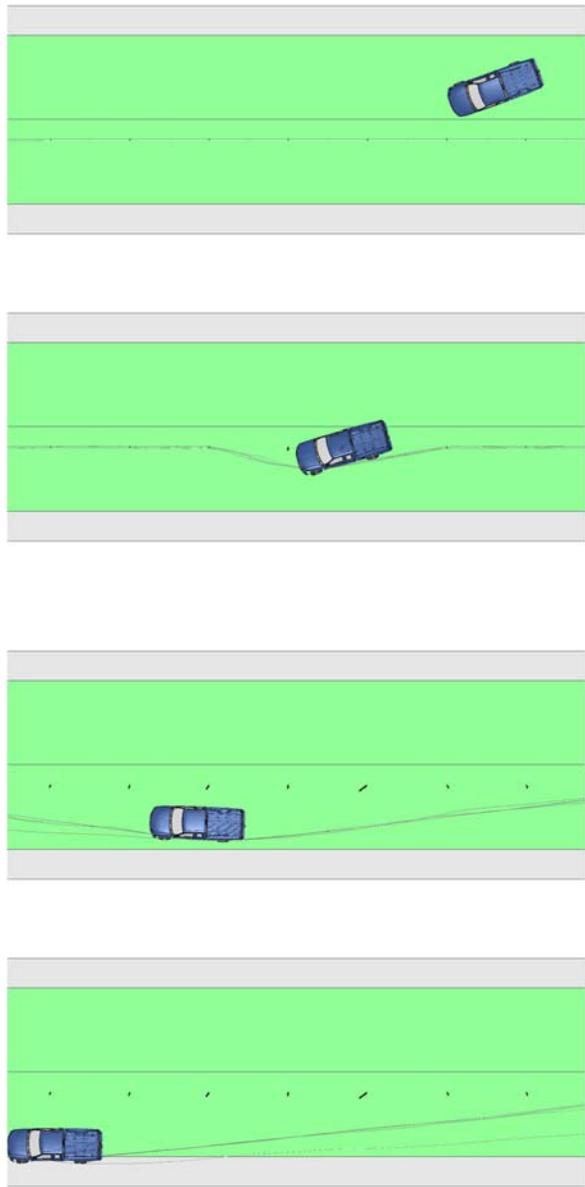


Fig. A.175: Back-side impact by Ford F250 at 20° and 75 mph for the first design of Retrofit Option 2.

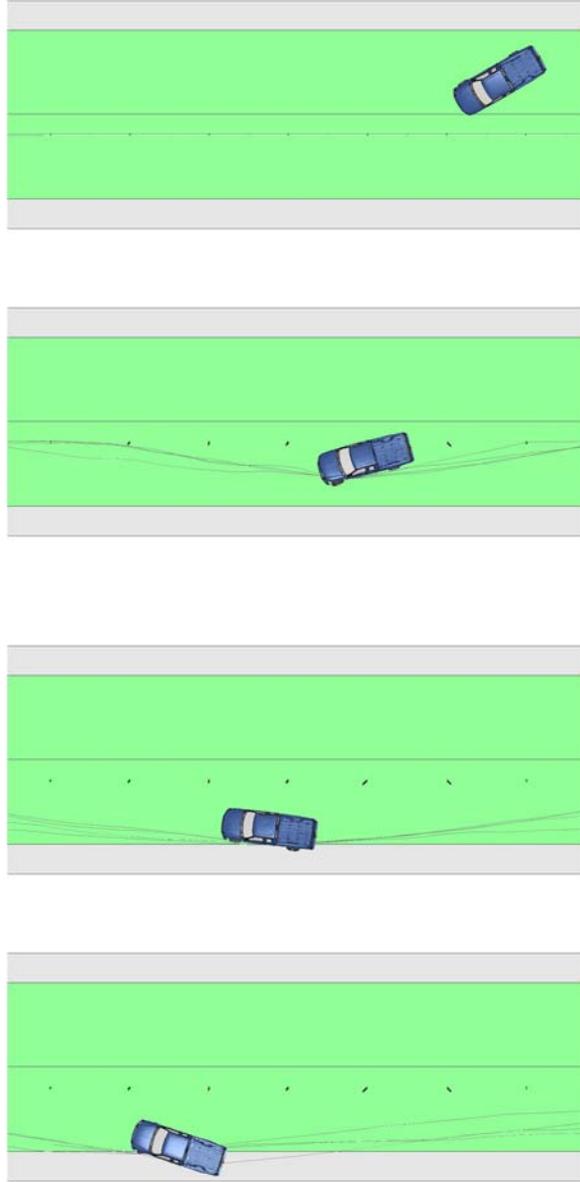


Fig. A.176: Back-side impact by Ford F250 at 30° and 55 mph for the first design of Retrofit Option 2.

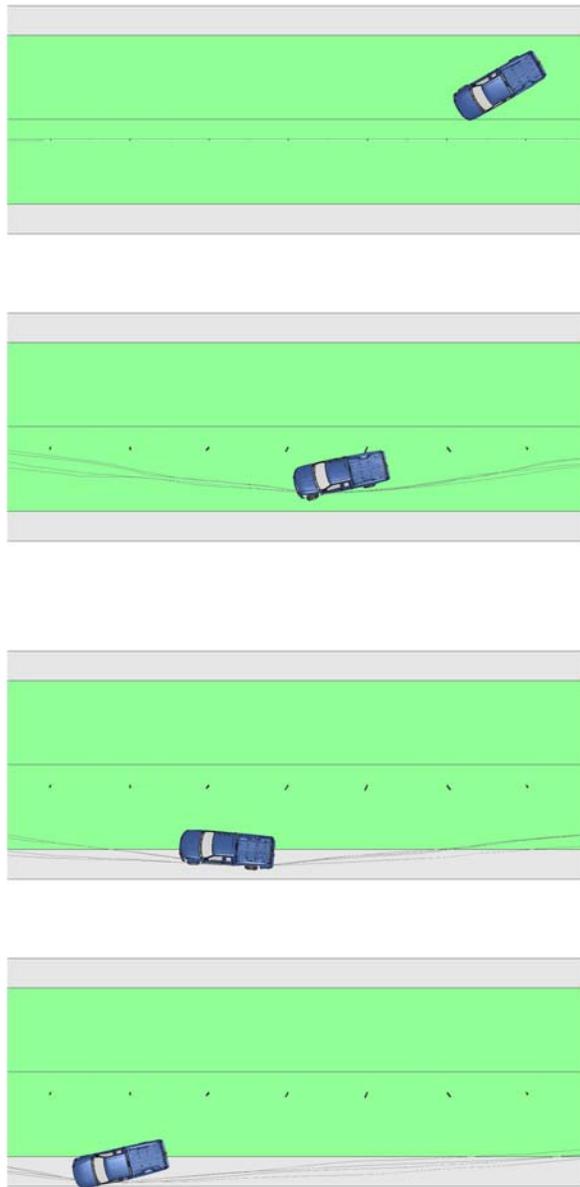


Fig. A.177: Back-side impact by Ford F250 at 30° and 65 mph for the first design of Retrofit Option 2.

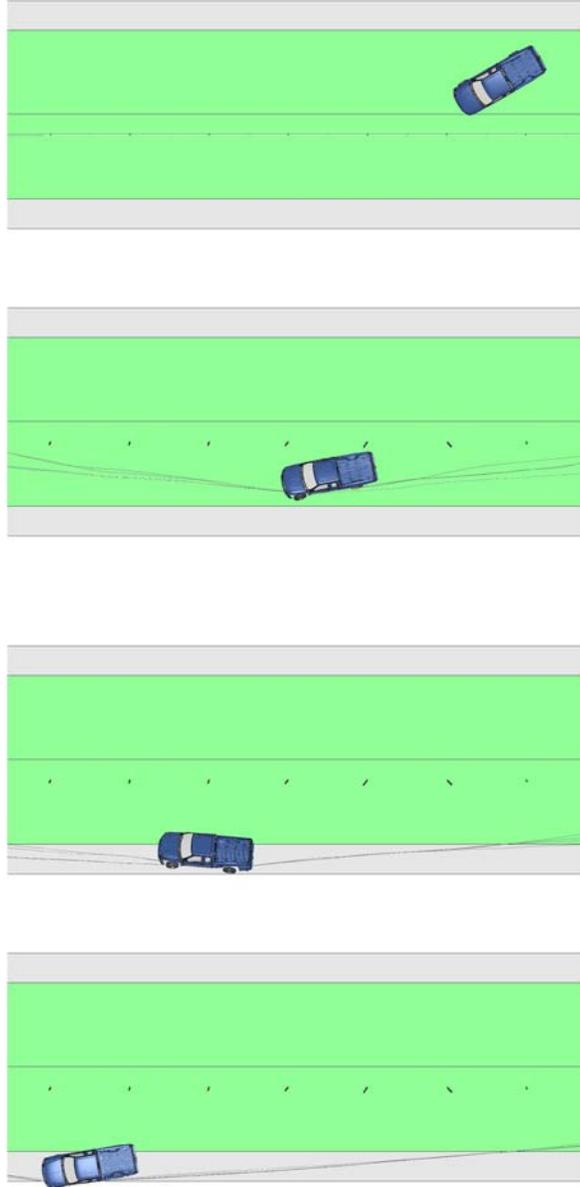


Fig. A.178: Back-side impact by Ford F250 at 30° and 70 mph for the first design of Retrofit Option 2.

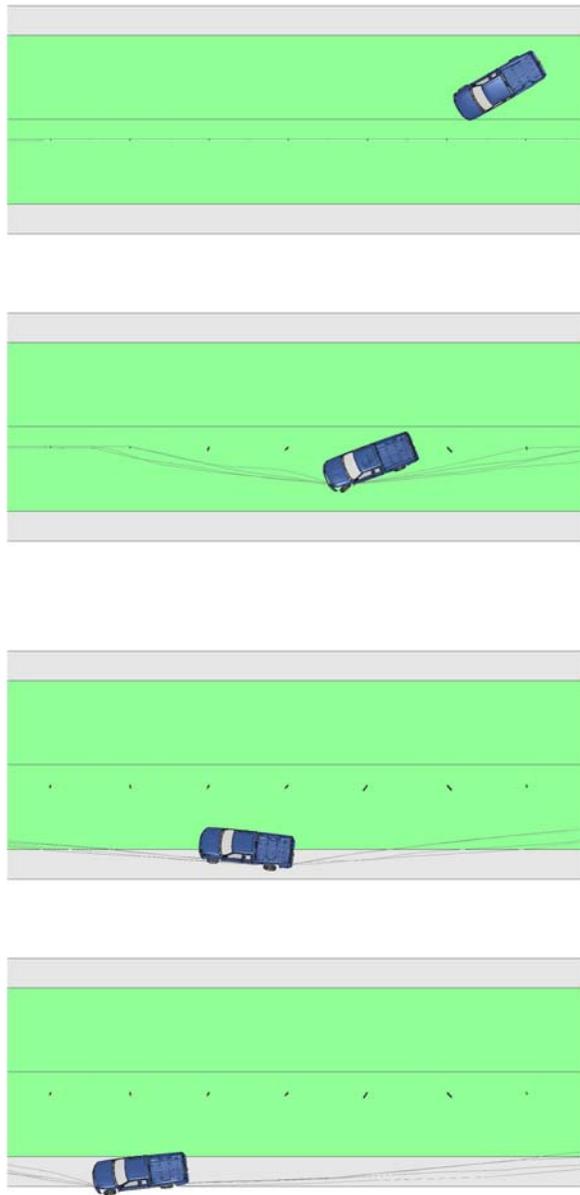


Fig. A.179: Back-side impact by Ford F250 at 30° and 75 mph for the first design of Retrofit Option 2.

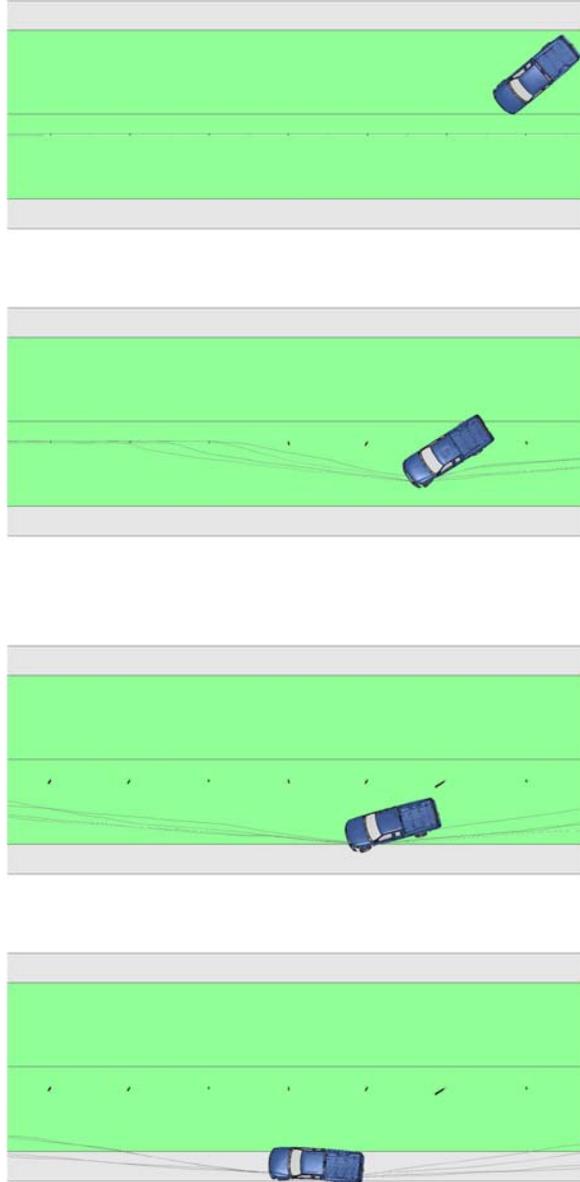


Fig. A.180: Back-side impact by Ford F250 at 40° and 55 mph for the first design of Retrofit Option 2.

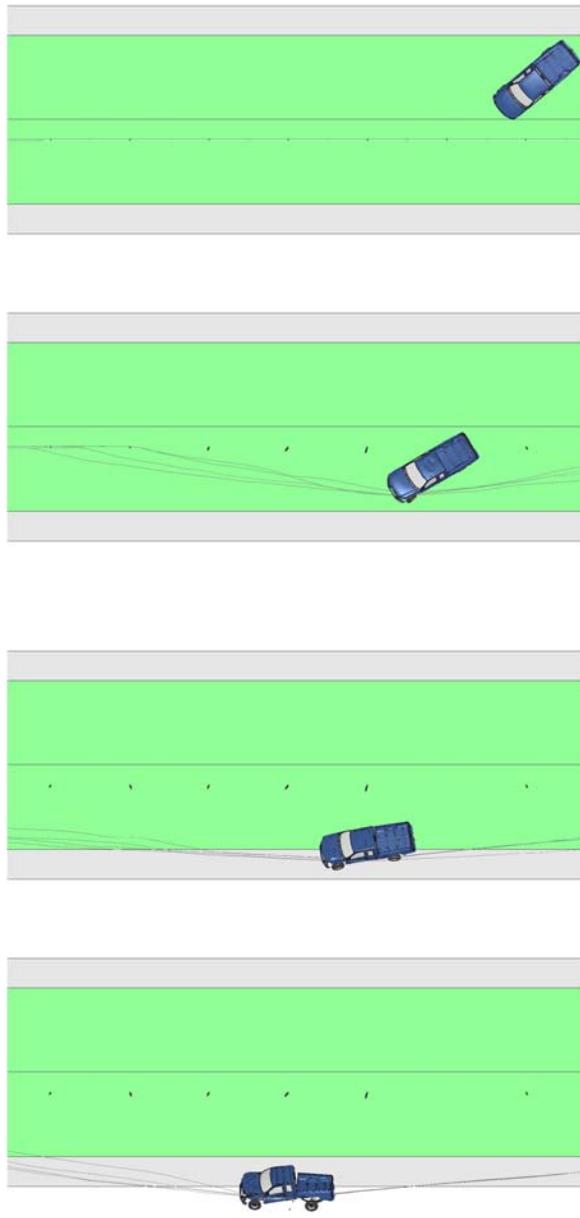


Fig. A.181: Back-side impact by Ford F250 at 40° and 65 mph for the first design of Retrofit Option 2.

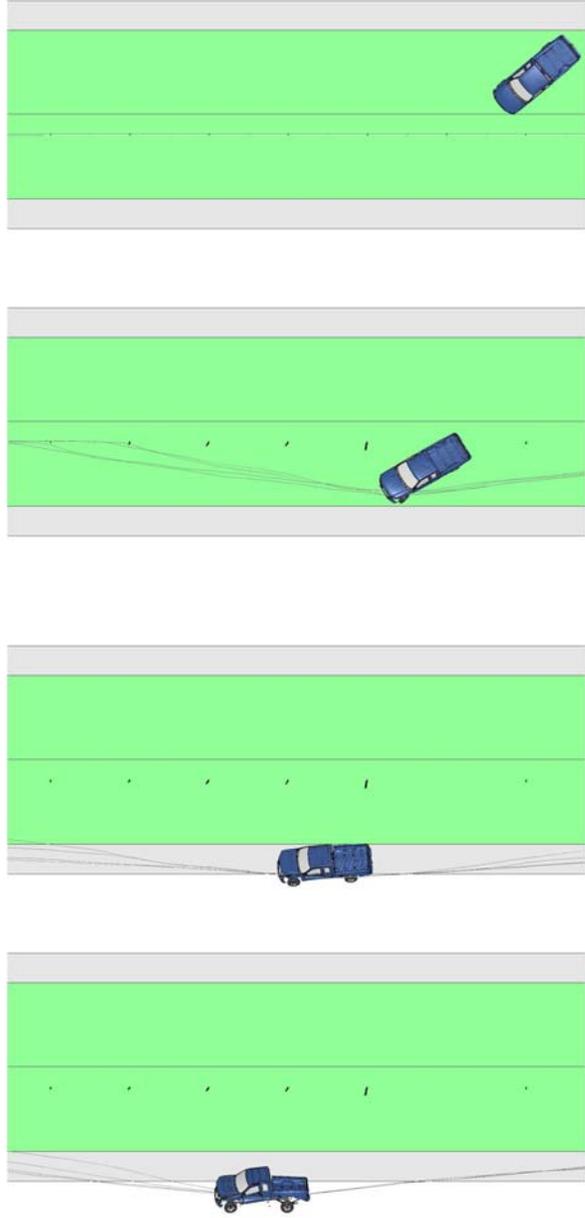


Fig. A.182: Back-side impact by Ford F250 at 40° and 70 mph for the first design of Retrofit Option 2.

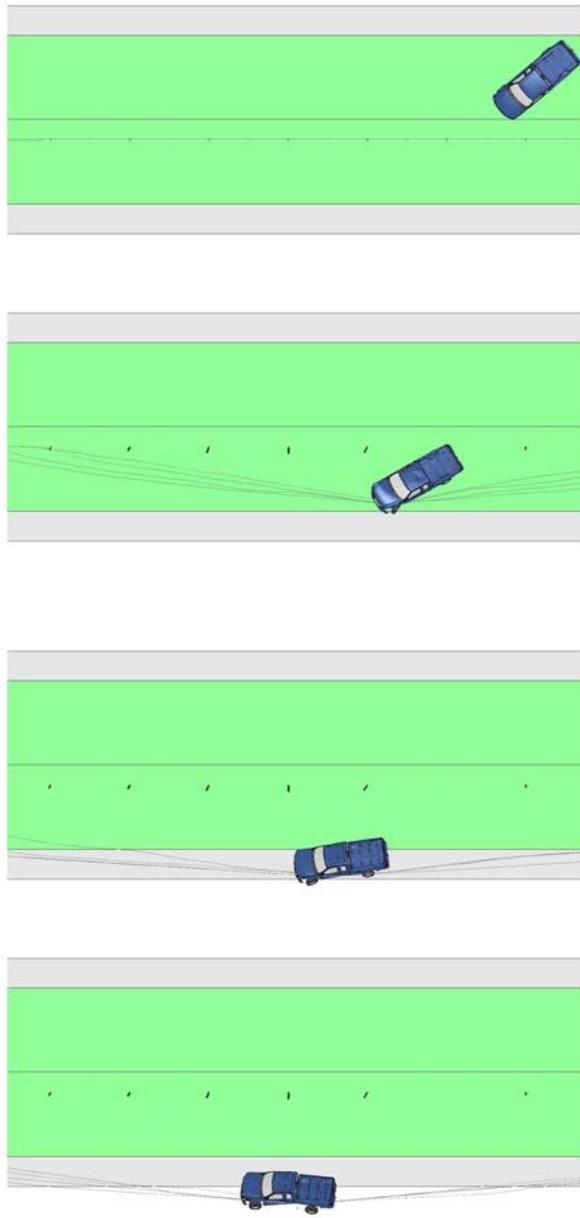


Fig. A.183: Back-side impact by Ford F250 at 40° and 75 mph for the first design of Retrofit Option 2.

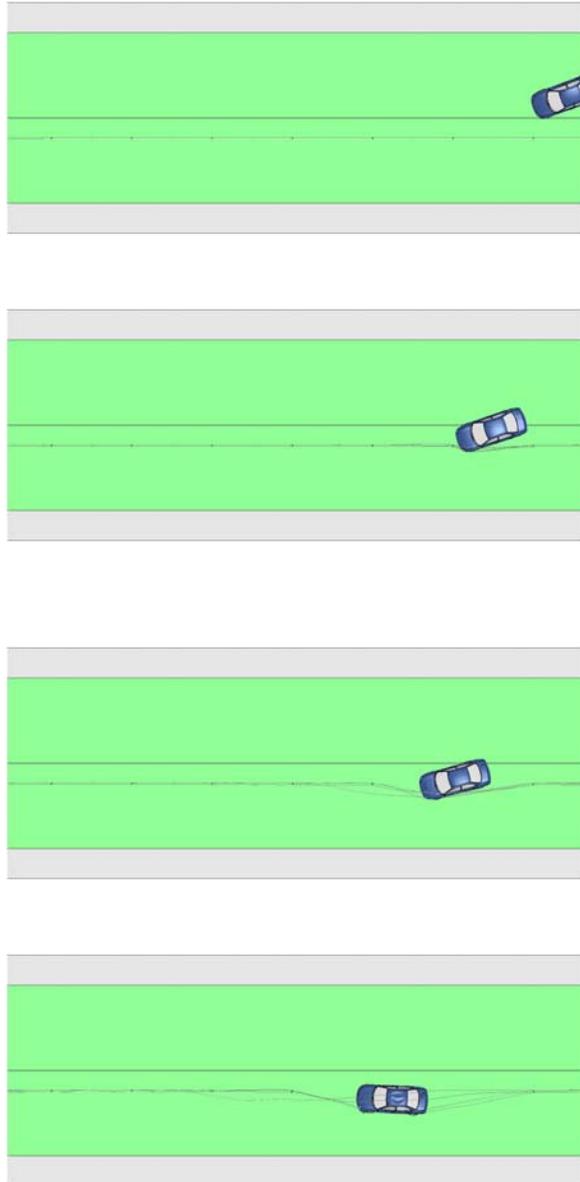


Fig. A.184: Back-side impact by Dodge Neon at 20° and 55 mph for the second design of Retrofit Option 2.

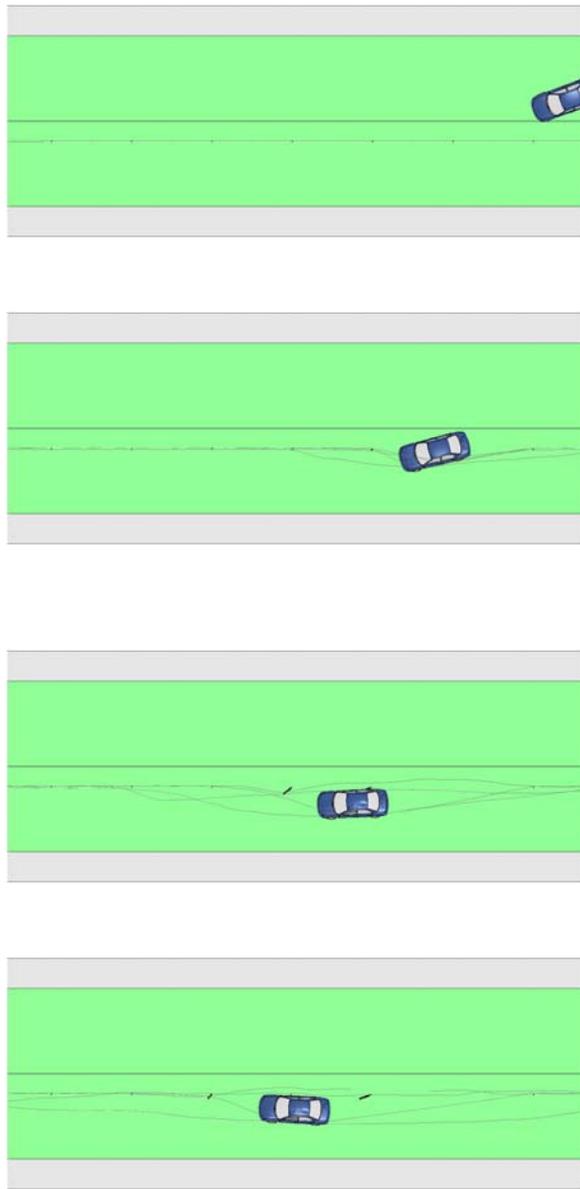


Fig. A.185: Back-side impact by Dodge Neon at 20° and 65 mph for the second design of Retrofit Option 2.

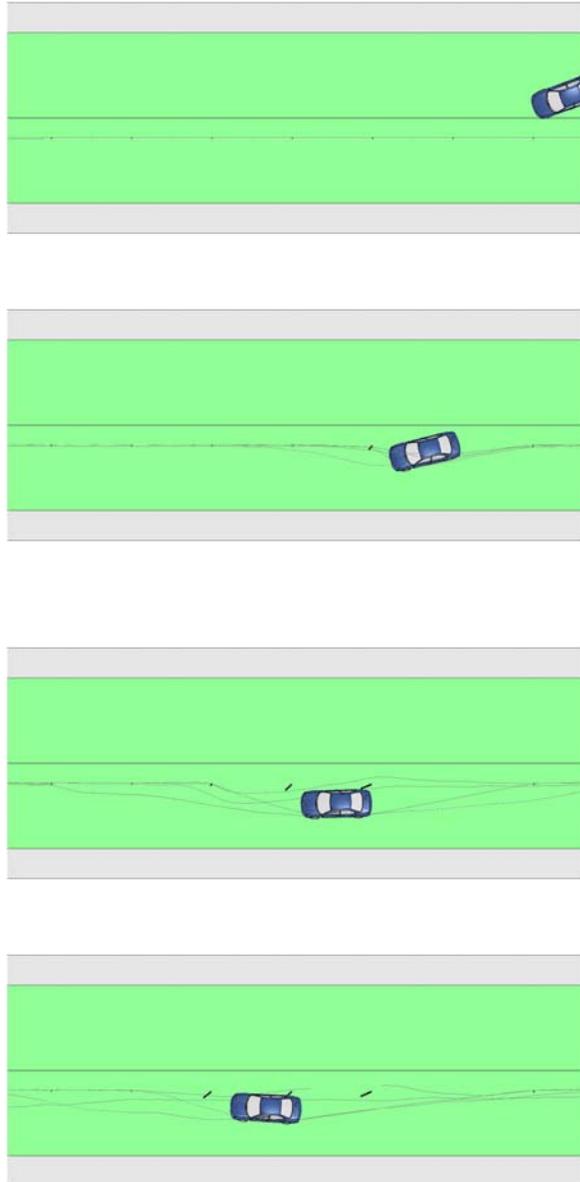


Fig. A.186: Back-side impact by Dodge Neon at 20° and 70 mph for the second design of Retrofit Option 2.

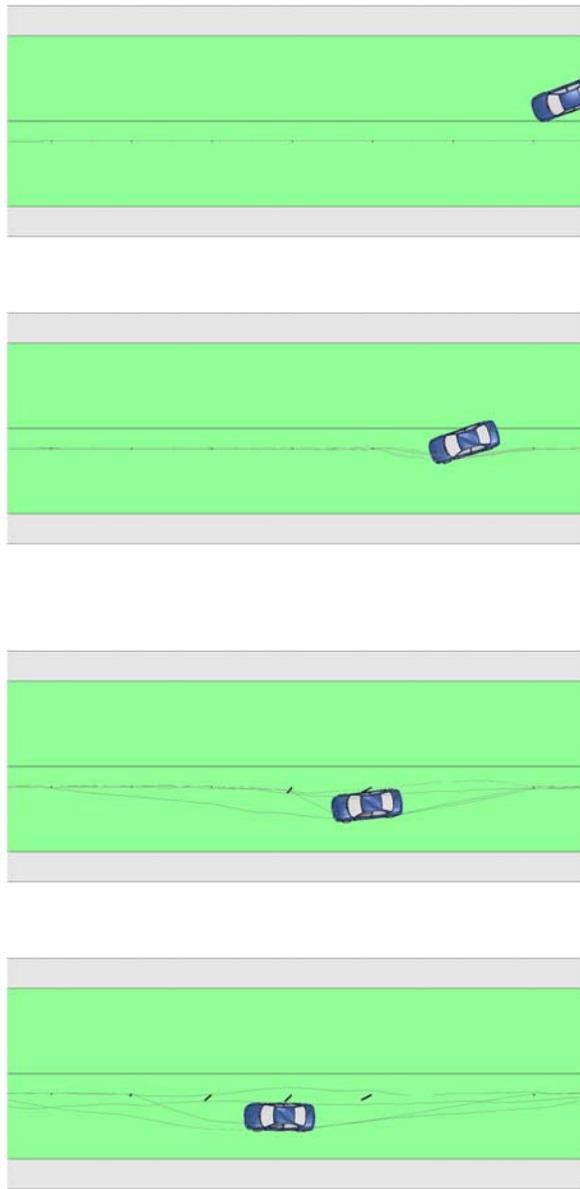


Fig. A.187: Back-side impact by Dodge Neon at 20° and 75 mph for the second design of Retrofit Option 2.

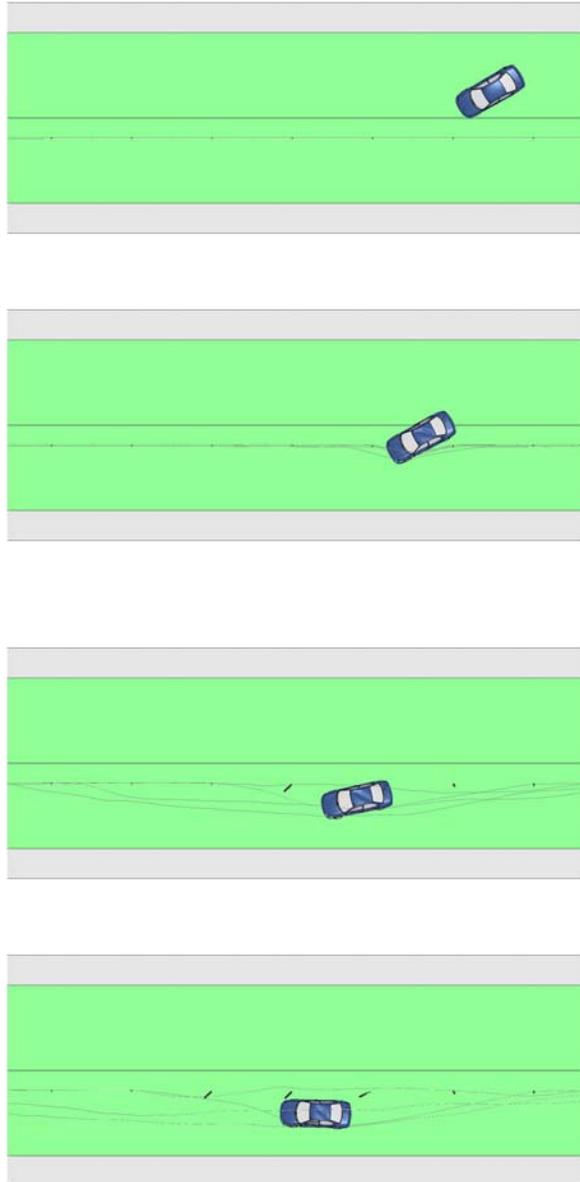


Fig. A.188: Back-side impact by Dodge Neon at 30° and 55 mph for the second design of Retrofit Option 2.

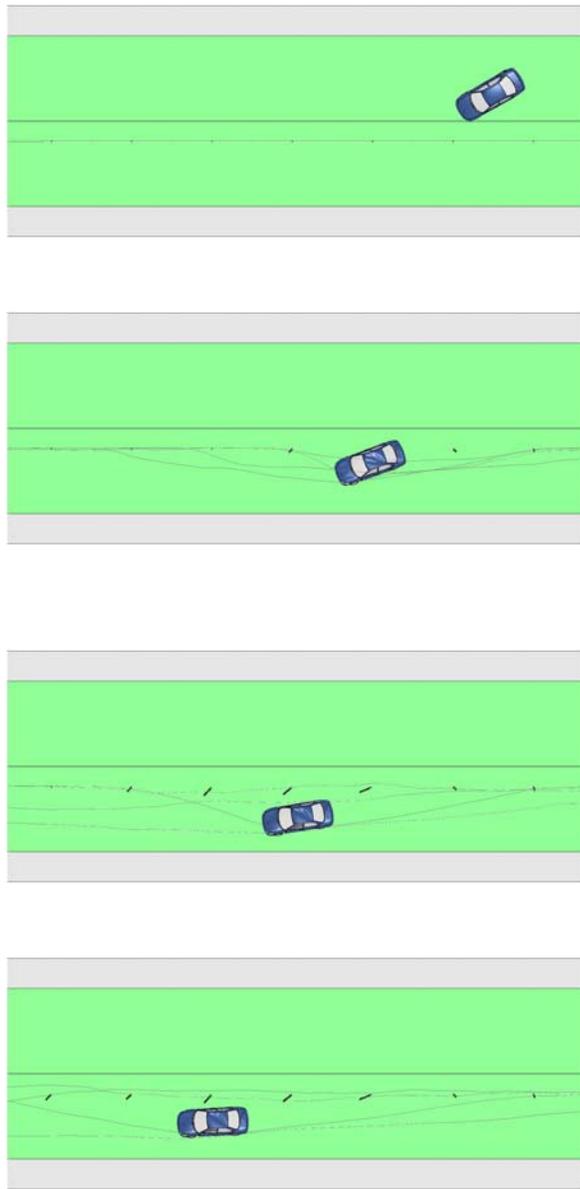


Fig. A.189: Back-side impact by Dodge Neon at 30° and 65 mph for the second design of Retrofit Option 2.

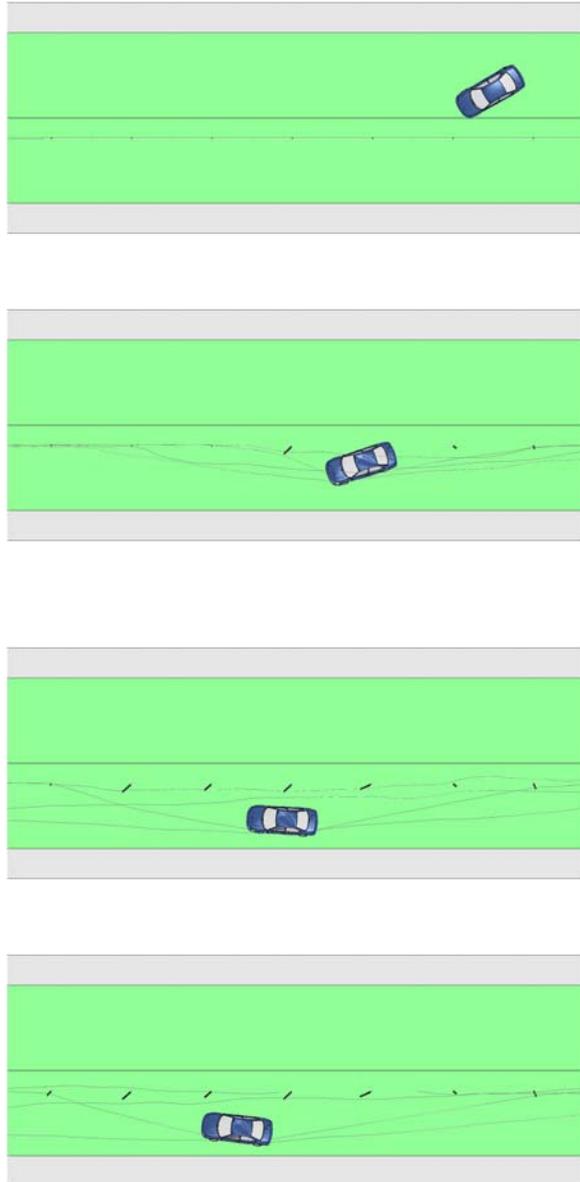


Fig. A.190: Back-side impact by Dodge Neon at 30° and 70 mph for the second design of Retrofit Option 2.

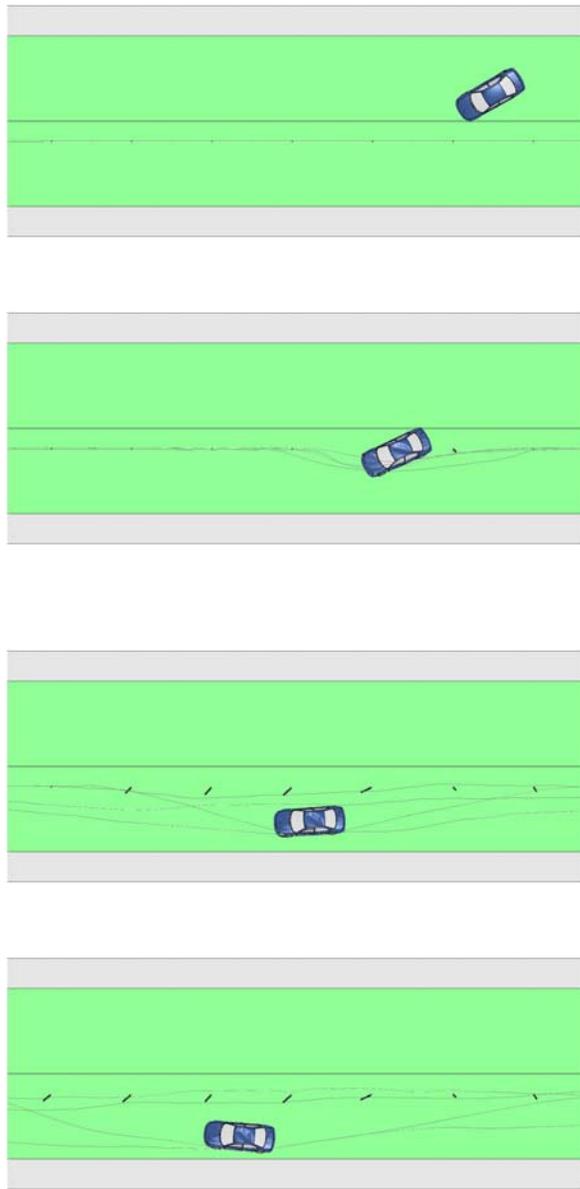


Fig. A.191: Back-side impact by Dodge Neon at 30° and 75 mph for the second design of Retrofit Option 2.

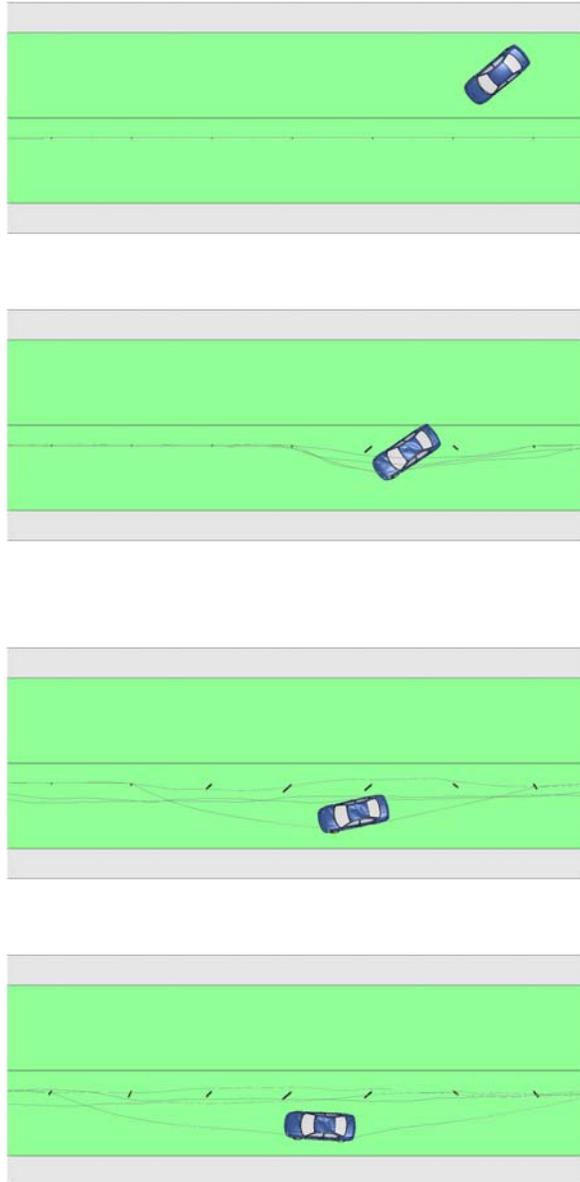


Fig. A.192: Back-side impact by Dodge Neon at 40° and 55 mph for the second design of Retrofit Option 2.

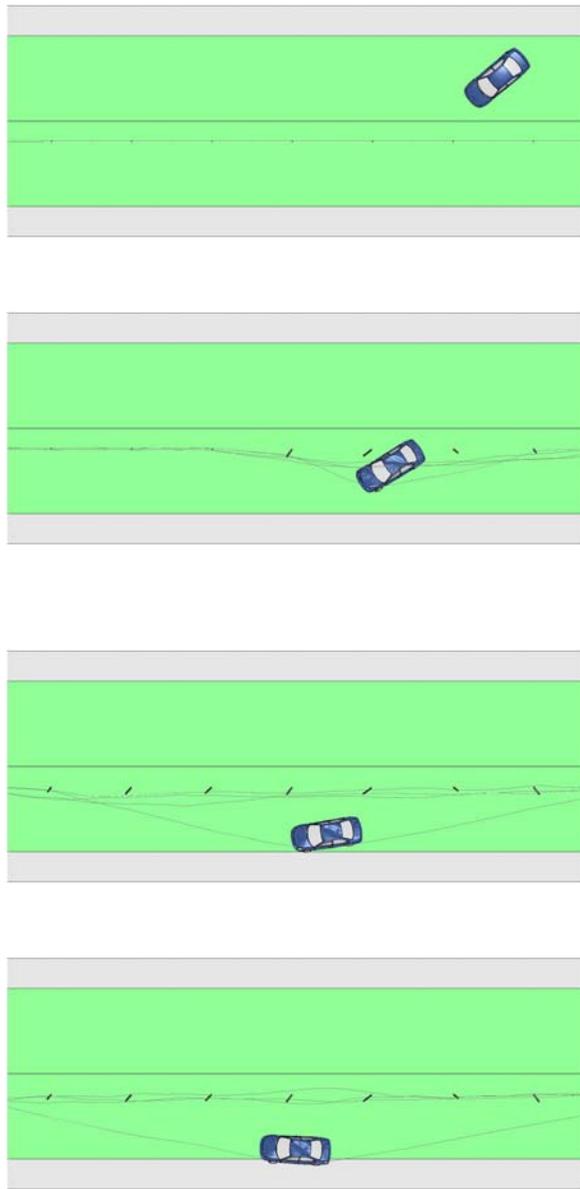


Fig. A.193: Back-side impact by Dodge Neon at 40° and 65 mph for the second design of Retrofit Option 2.

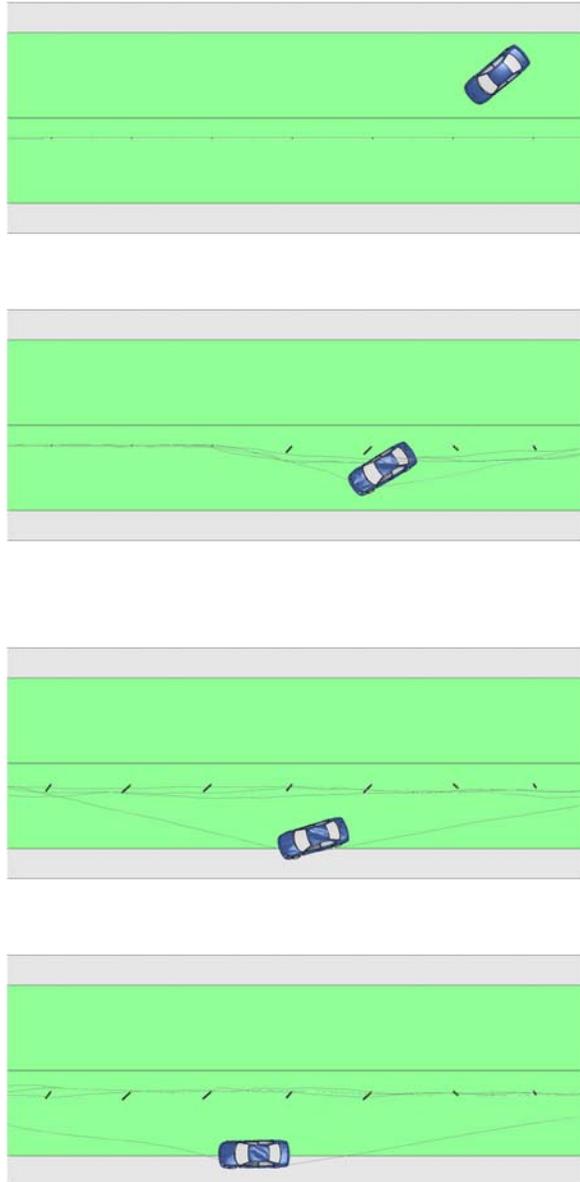


Fig. A.194: Back-side impact by Dodge Neon at 40° and 70 mph for the second design of Retrofit Option 2.

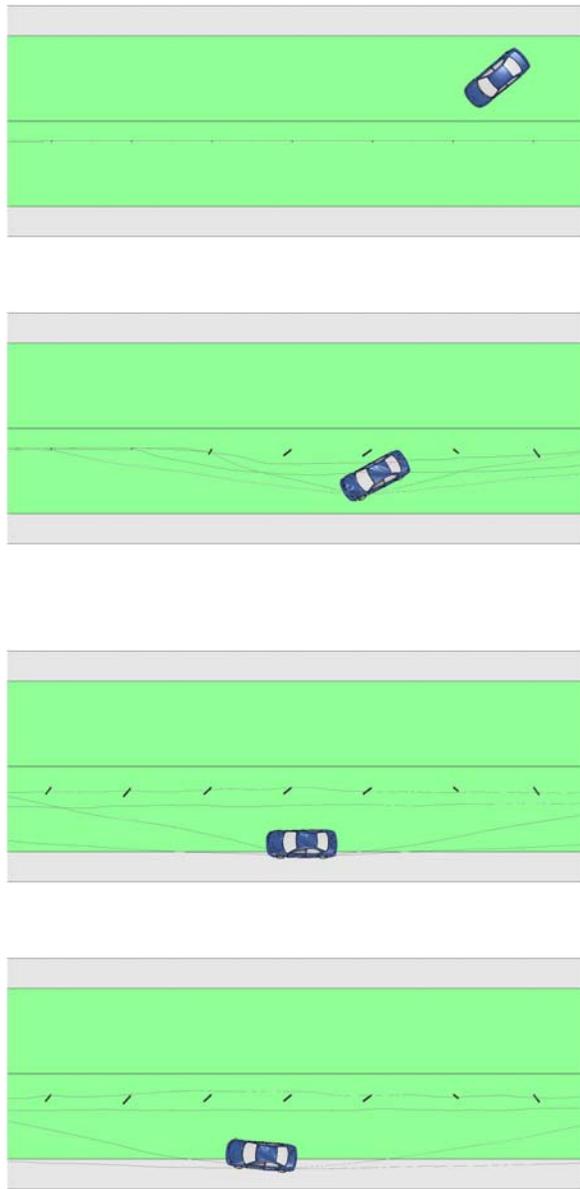
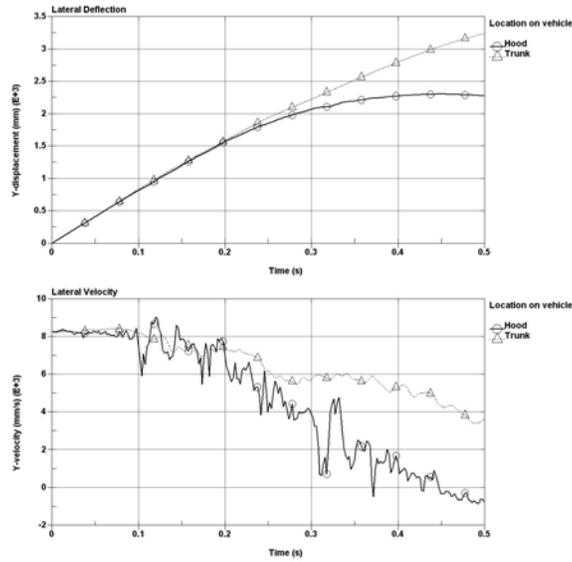


Fig. A.195: Back-side impact by Dodge Neon at 40° and 75 mph for the second design of Retrofit Option 2.

## **APPENDIX B. VEHICLE TRAVERSAL VELOCITIES AND DISPLACEMENTS IN IMPACT SIMULATIONS**

This appendix presents the time histories of traversal velocities and displacements of the vehicle impact simulations for the current design and all of the retrofit designs.

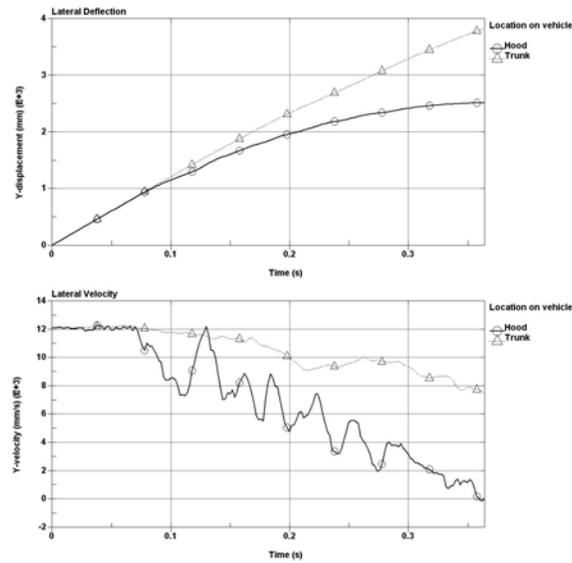


a.

b.

Fig. B.1: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 55 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

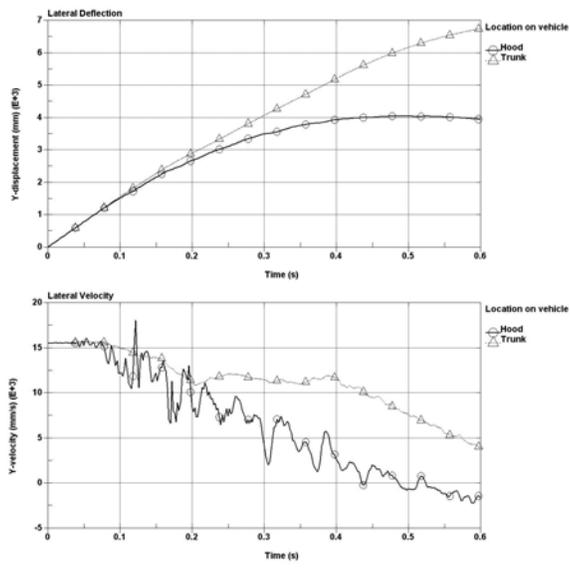


a.

b.

Fig. B.2: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 55 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

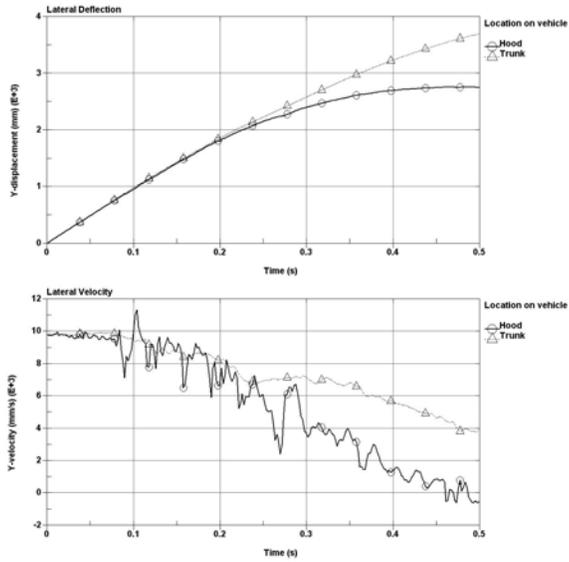


a.

b.

Fig. B.3: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 55 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

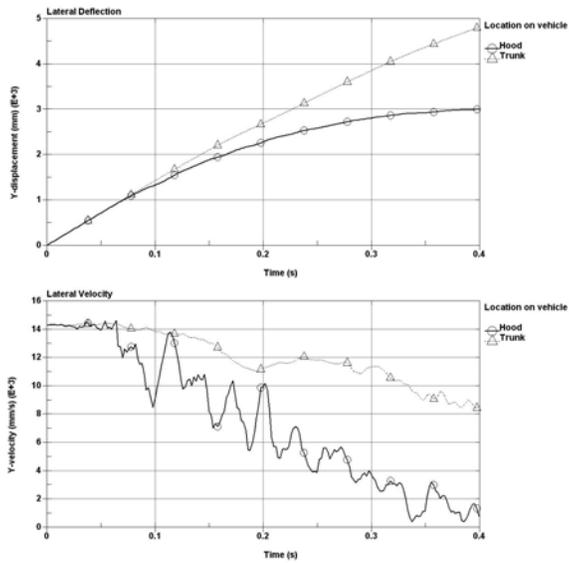


a.

b.

Fig. B.4: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 65 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

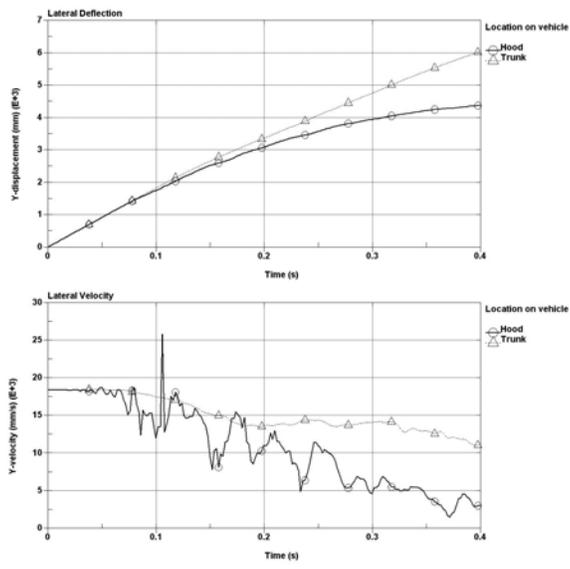


a.

b.

Fig. B.5: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 65 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

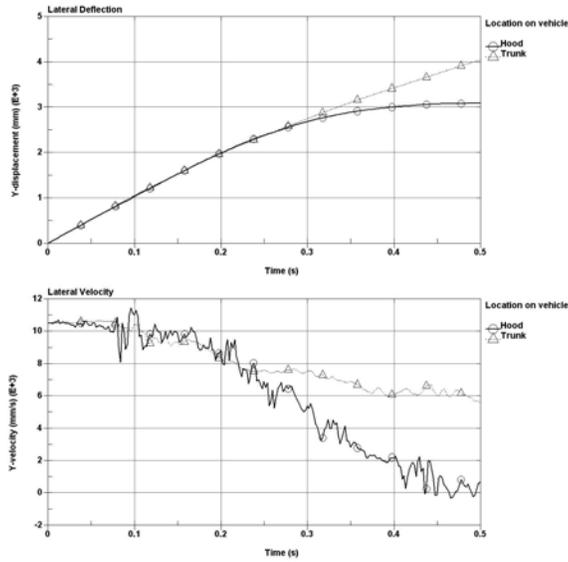


a.

b.

Fig. B.6: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 65 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

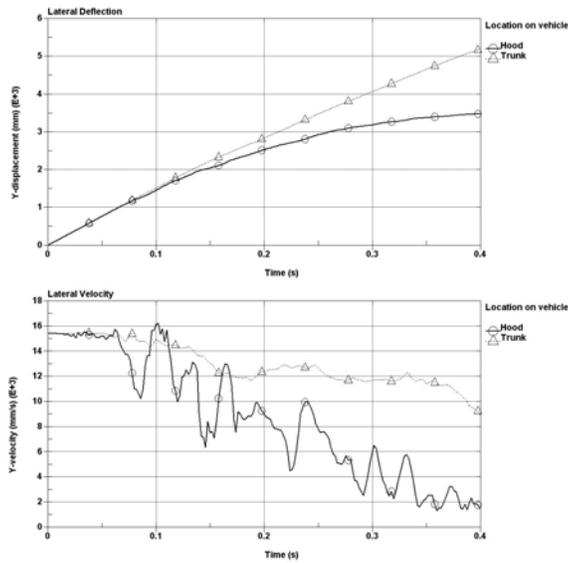


a.

b.

Fig. B.7: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 70 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

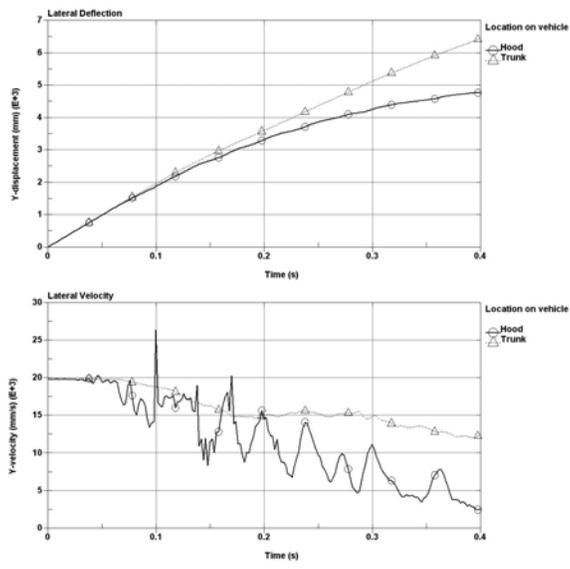


a.

b.

Fig. B.8: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 70 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

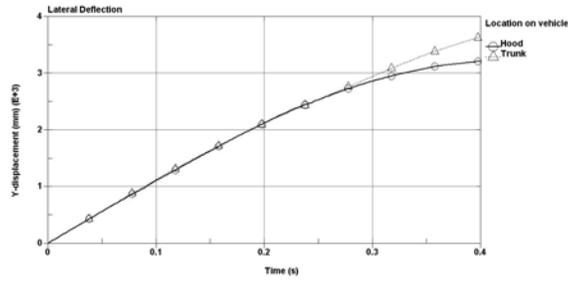


a.

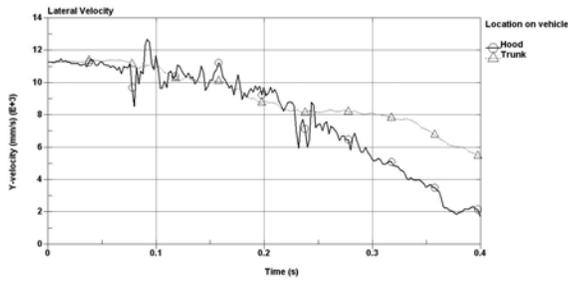
b.

Fig. B.9: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 70 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



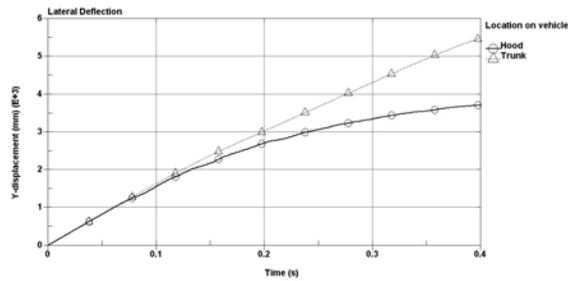
a.



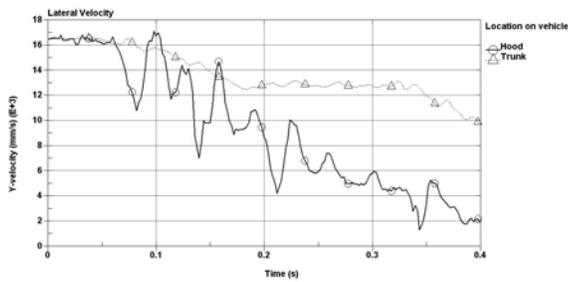
b.

Fig. B.10: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 75 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



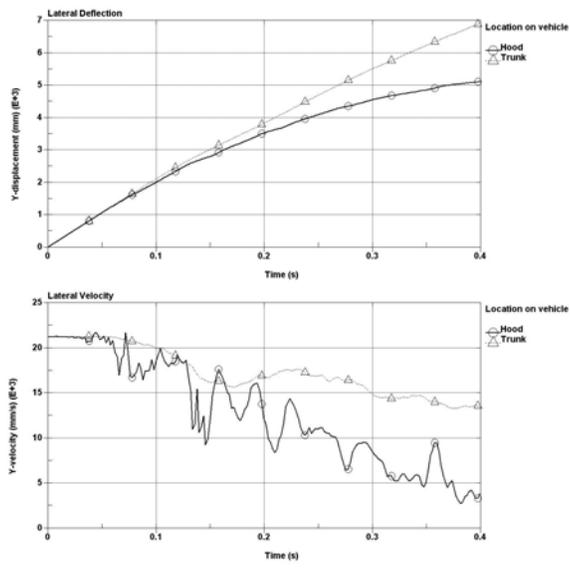
a.



b.

Fig. B.11: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 75 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

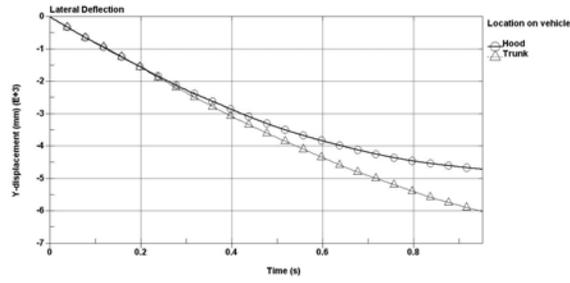


a.

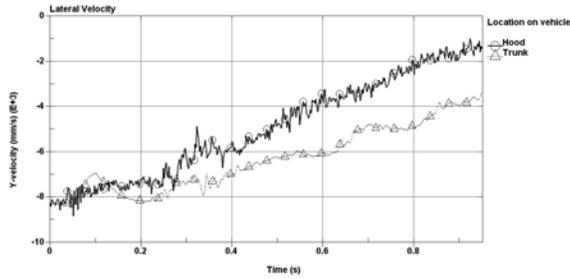
b.

Fig. B.12: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 75 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



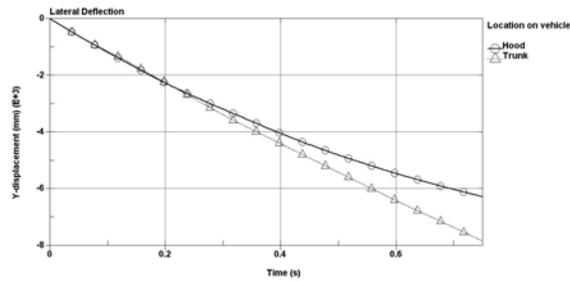
a.



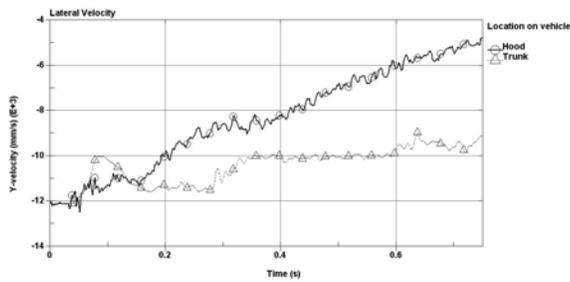
b.

Fig. B.13: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



a.



b.

Fig. B.14: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

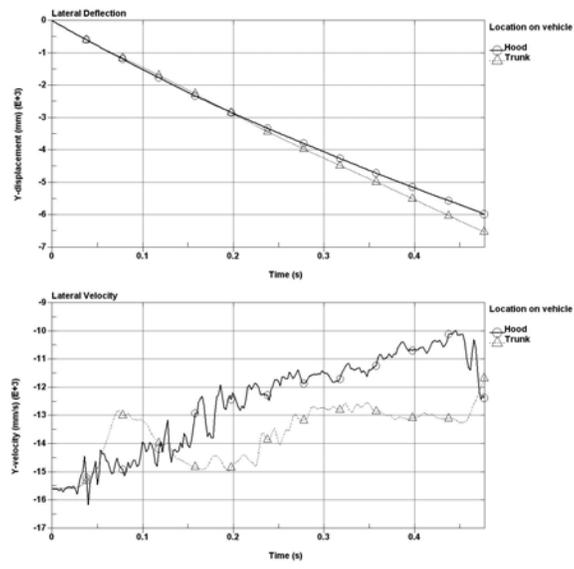
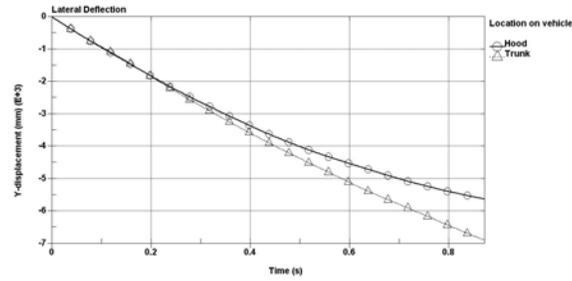
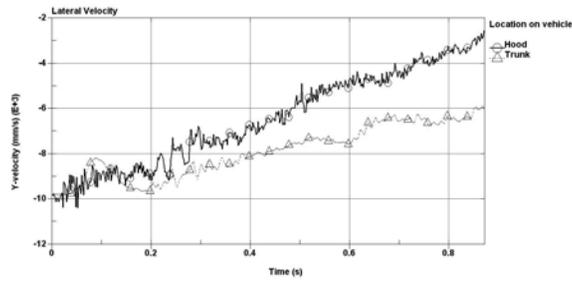


Fig. B.15: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



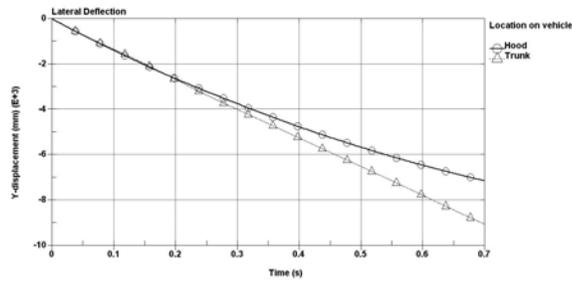
a.



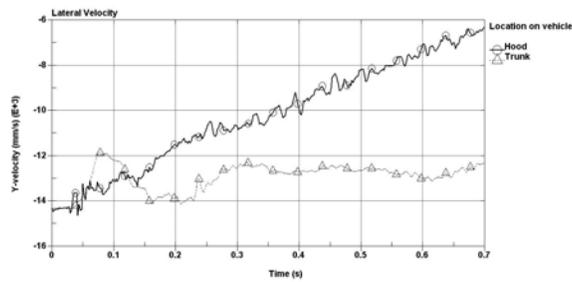
b.

Fig. B.16: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



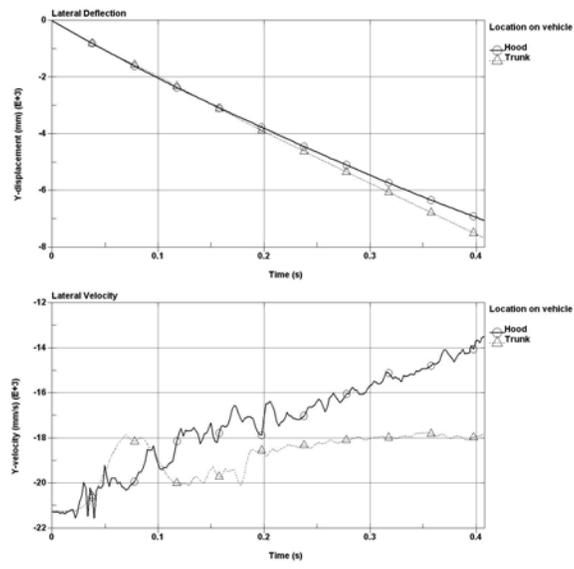
a.



b.

Fig. B.17: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

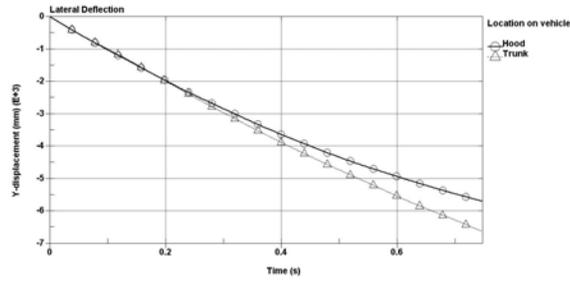


a.

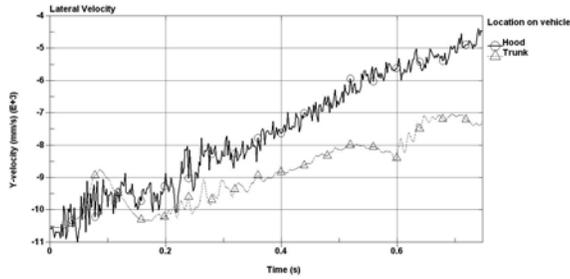
b.

Fig. B.18: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



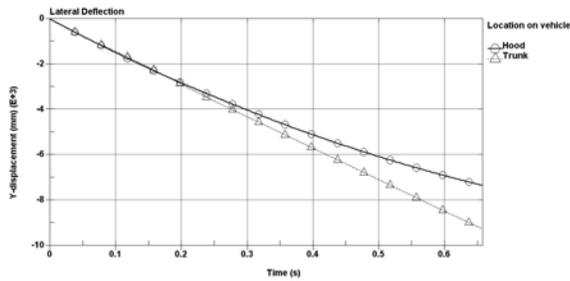
a.



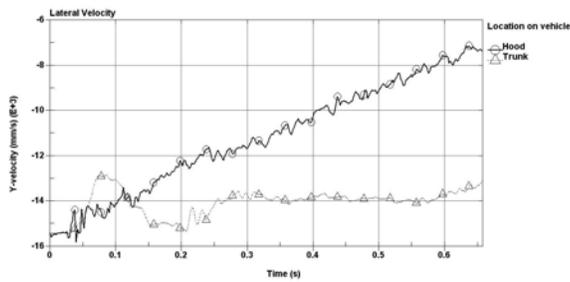
b.

Fig. B.19: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



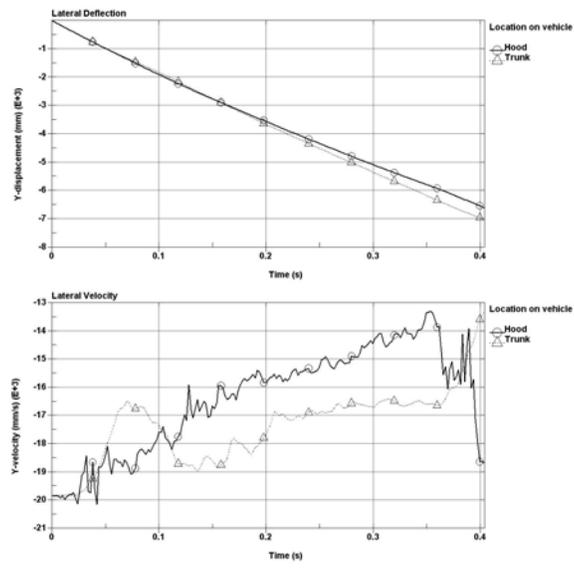
a.



b.

Fig. B.20: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

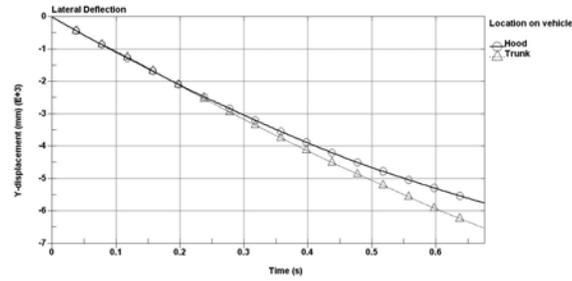


a.

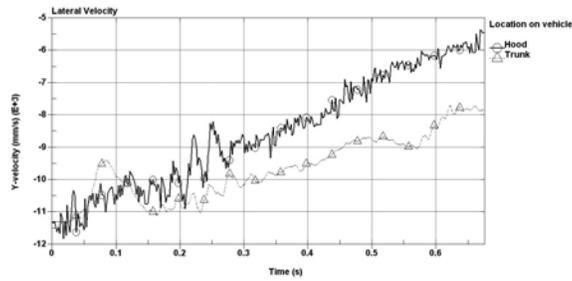
b.

Fig. B.21: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



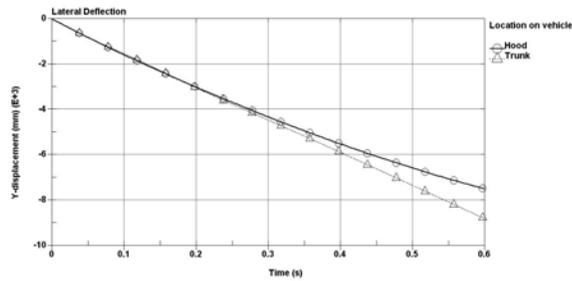
a.



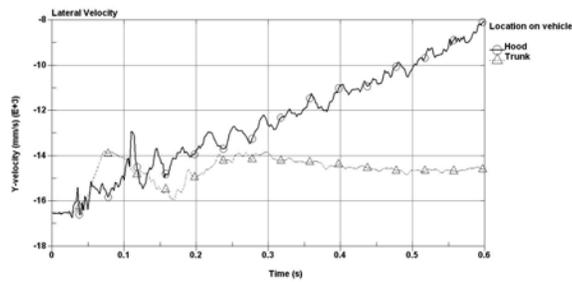
b.

Fig. B.22: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



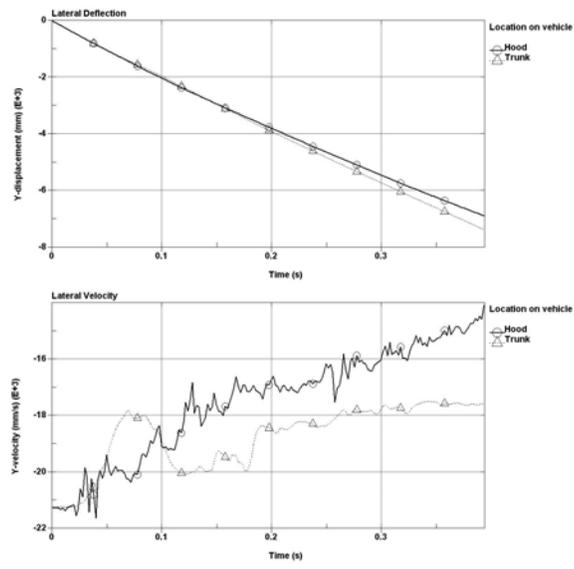
a.



b.

Fig. B.23: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

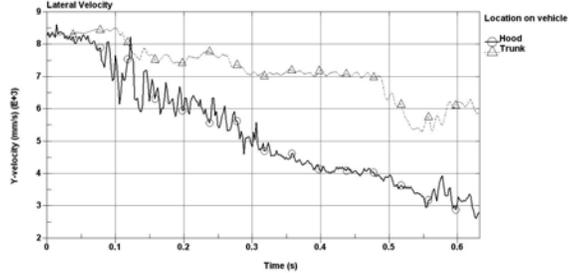
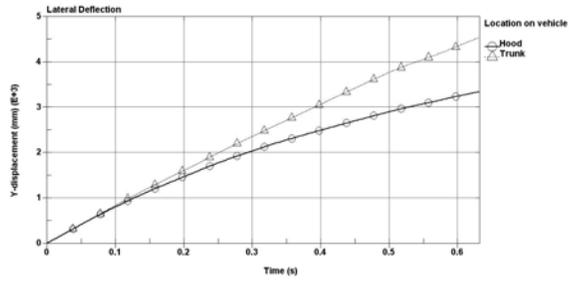


a.

b.

Fig. B.24: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the current design.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

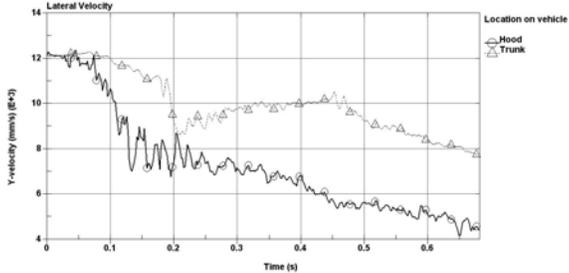
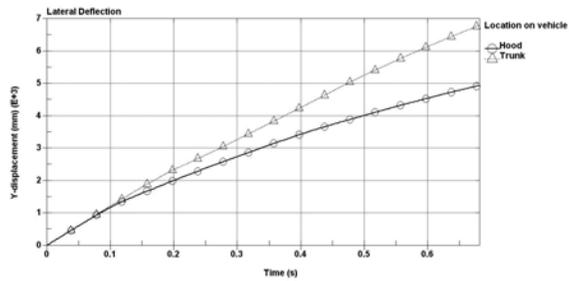


a.

b.

Fig. B.25: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 55 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

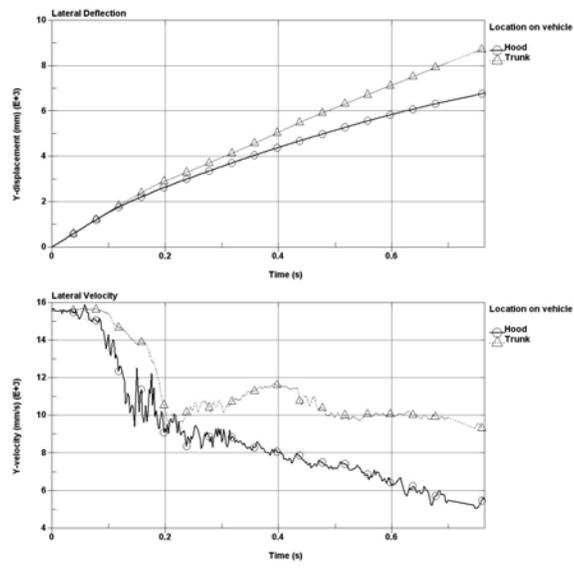


a.

b.

Fig. B.26: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 55 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

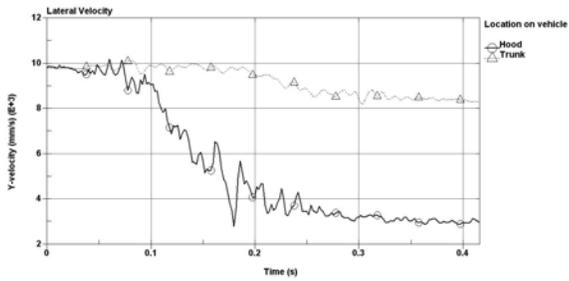
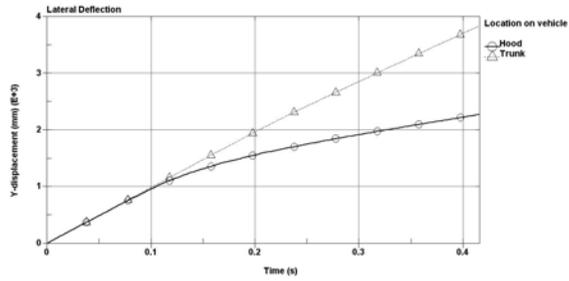


a.

b.

Fig. B.27: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 55 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

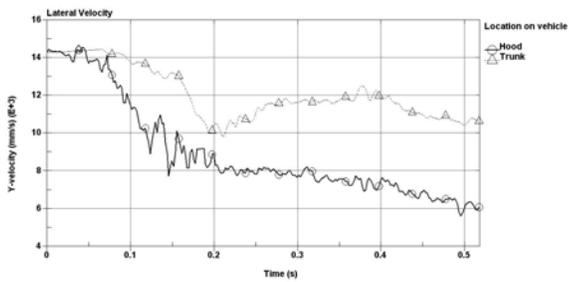
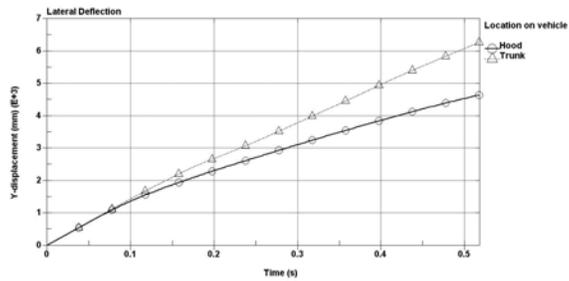


a.

b.

Fig. B.28: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 65 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

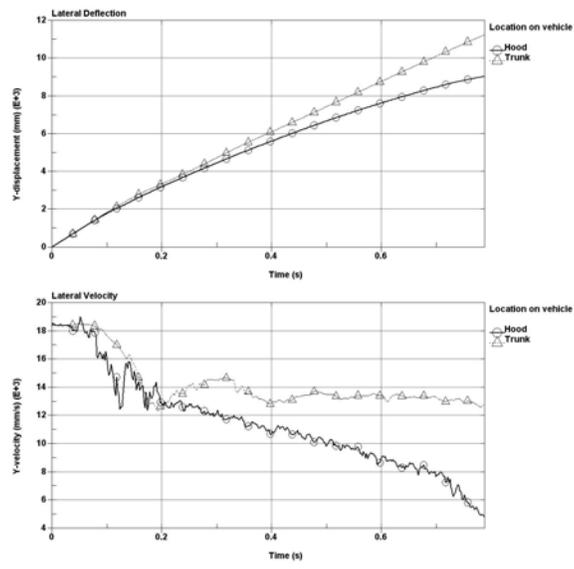


a.

b.

Fig. B.29: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 65 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

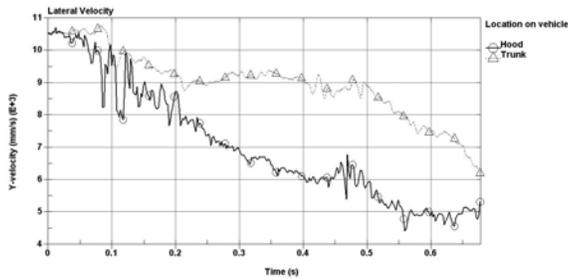
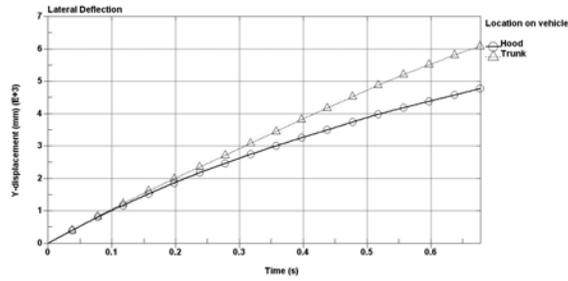


a.

b.

Fig. B.30: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 65 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

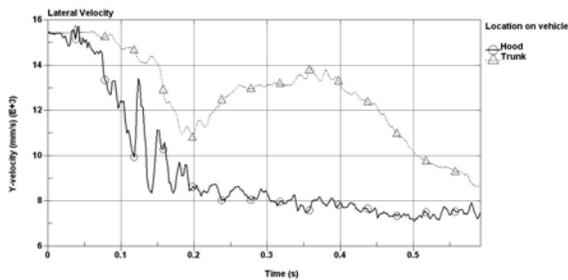
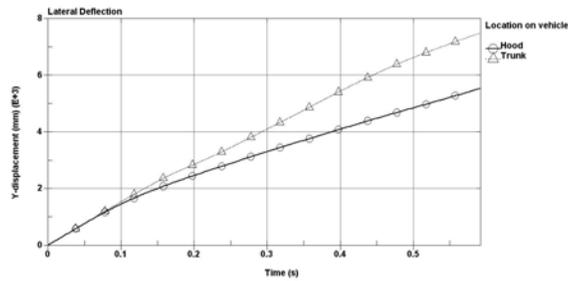


a.

b.

Fig. B.31: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 70 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

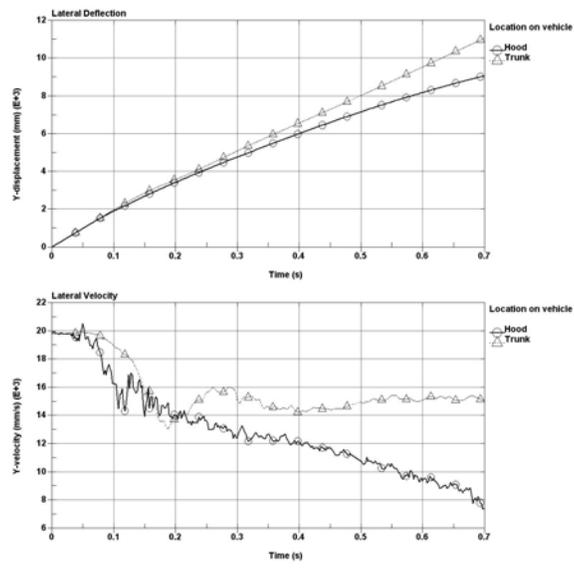


a.

b.

Fig. B.32: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 70 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

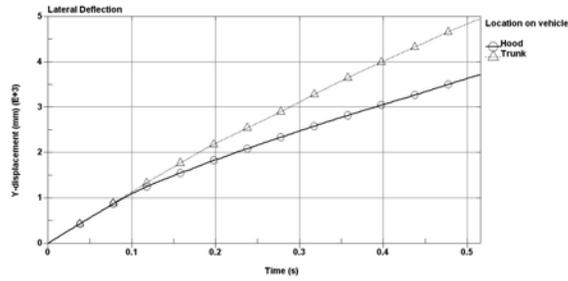


a.

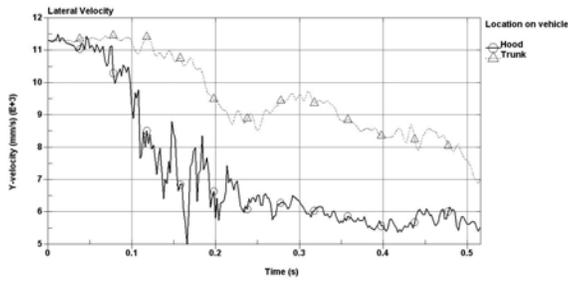
b.

Fig. B.33: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 70 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



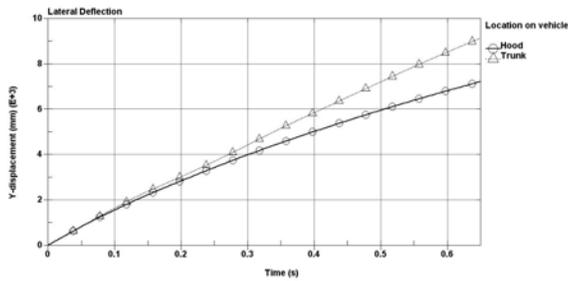
a.



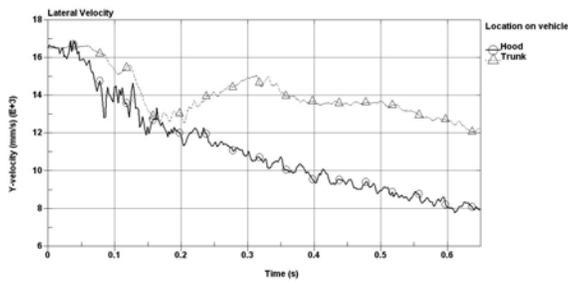
b.

Fig. B.34: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 75 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



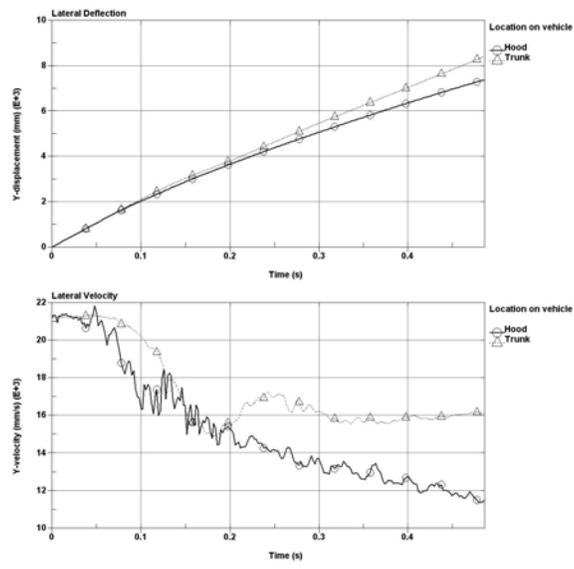
a.



b.

Fig. B.35: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 75 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

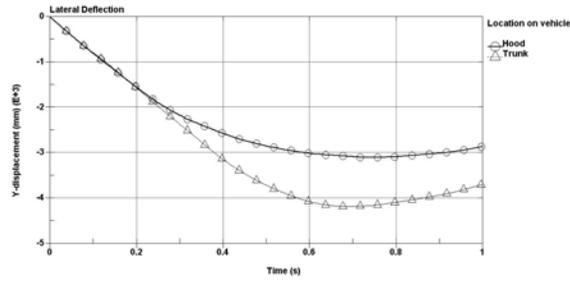


a.

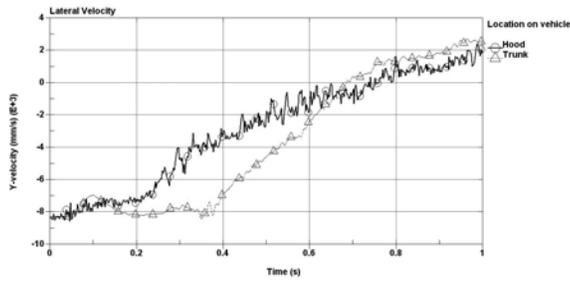
b.

Fig. B.36: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 75 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



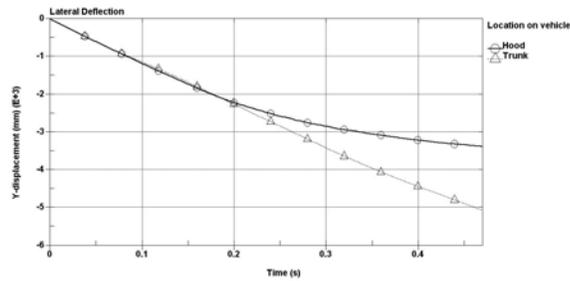
a.



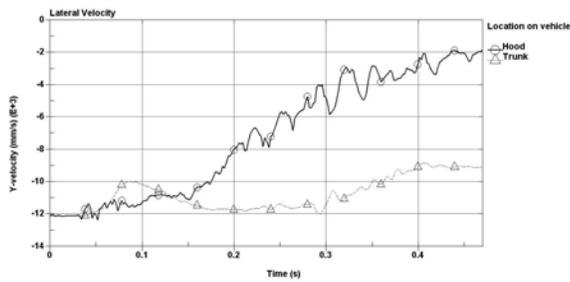
b.

Fig. B.37: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



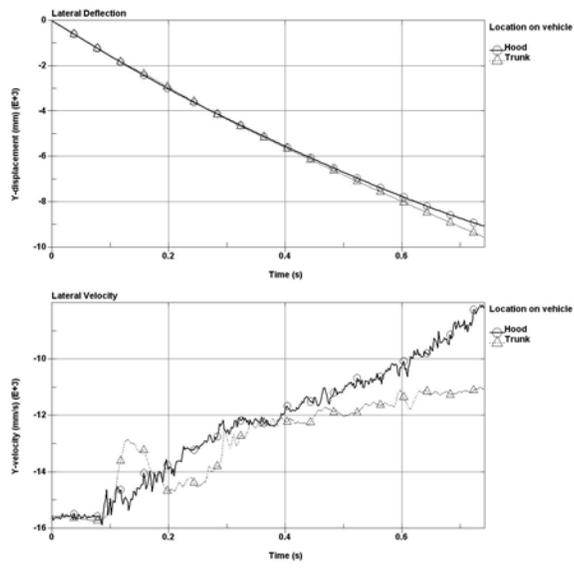
a.



b.

Fig. B.38: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

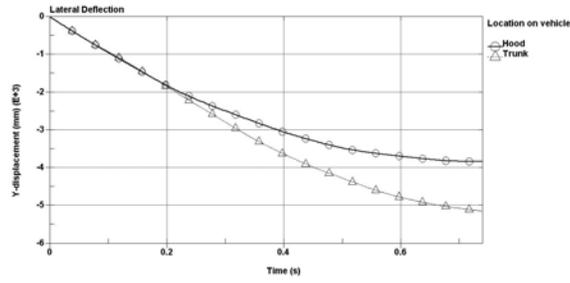


a.

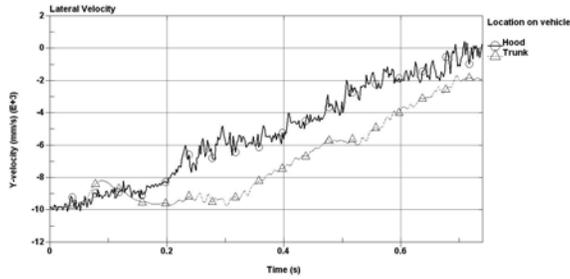
b.

Fig. B.39: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



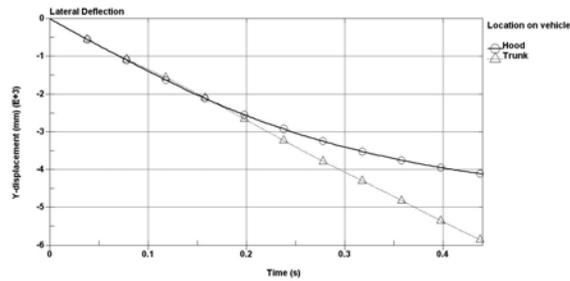
a.



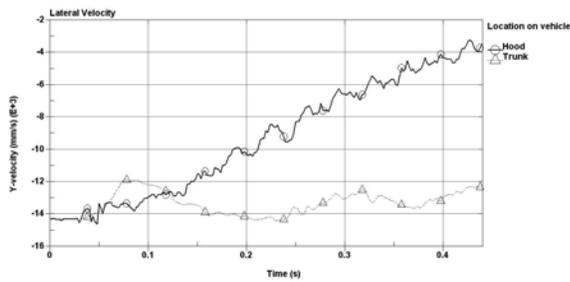
b.

Fig. B.40: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



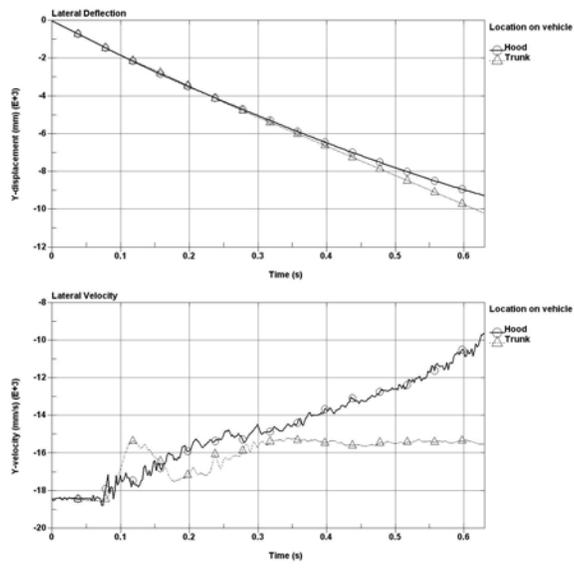
a.



b.

Fig. B.41: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

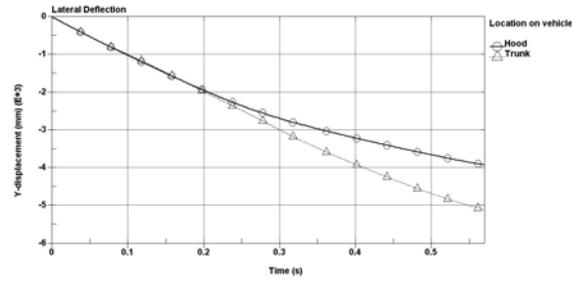


a.

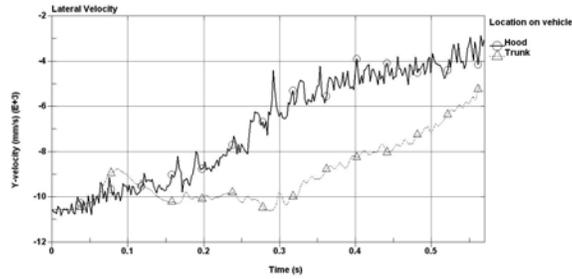
b.

Fig. B.42: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



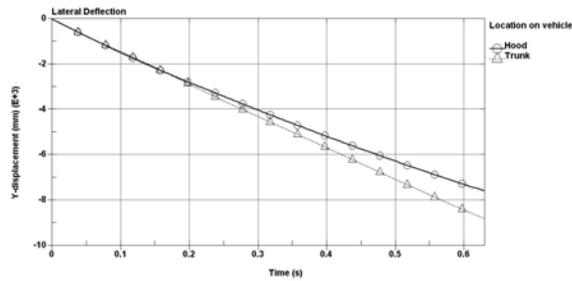
a.



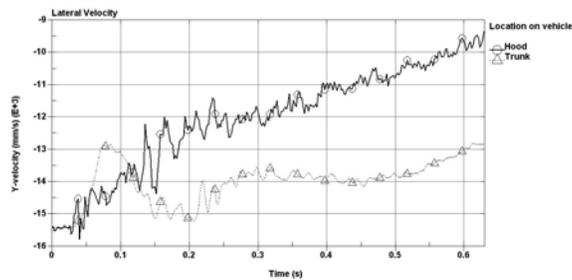
b.

Fig. B.43: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



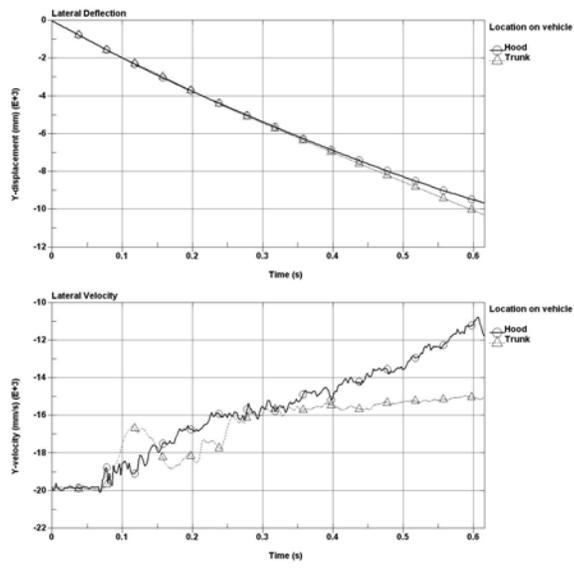
a.



b.

Fig. B.44: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

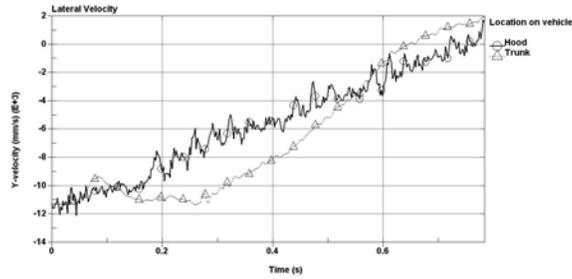
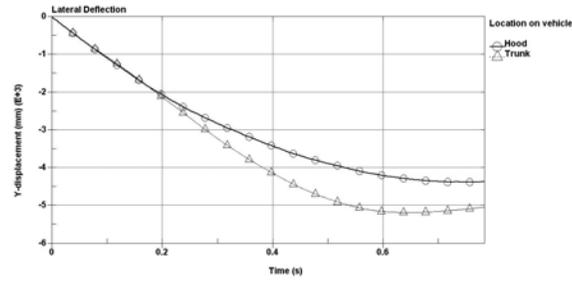


a.

b.

Fig. B.45: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

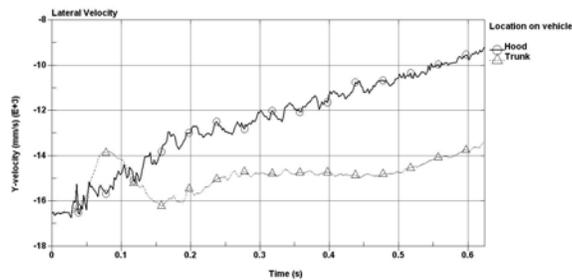
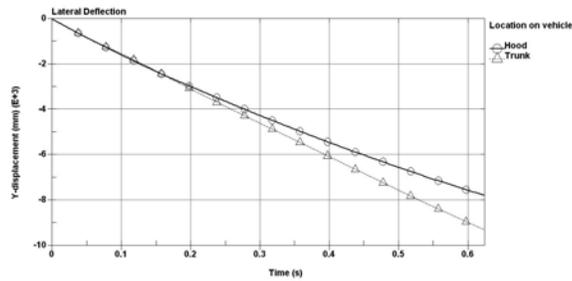


a.

b.

Fig. B.46: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

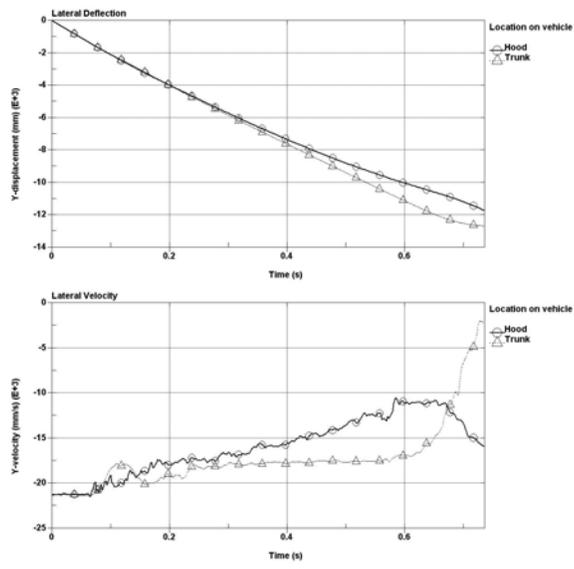


a.

b.

Fig. B.47: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

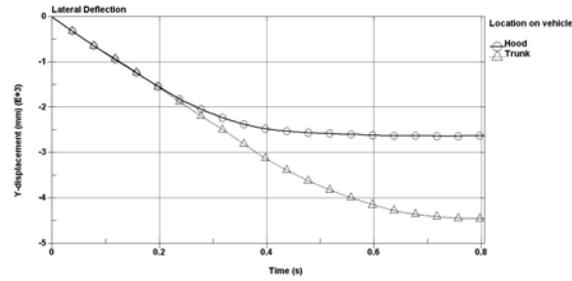


a.

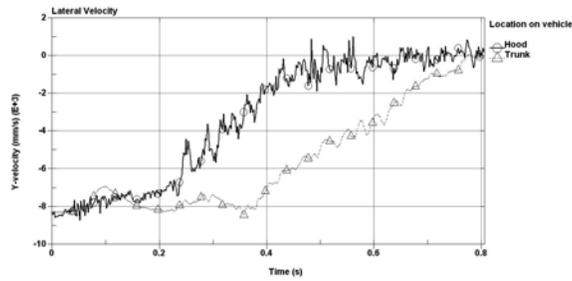
b.

Fig. B.48: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the first design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



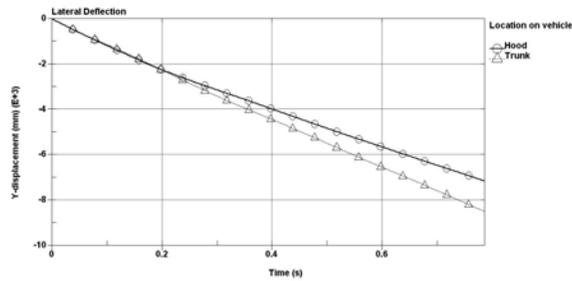
a.



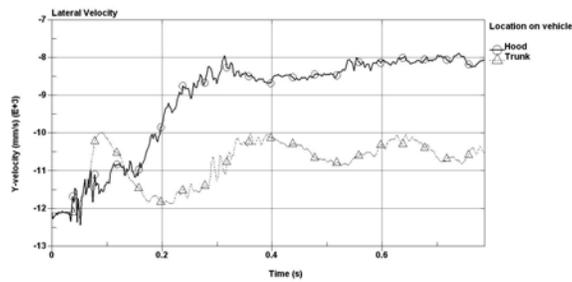
b.

Fig. B.49: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



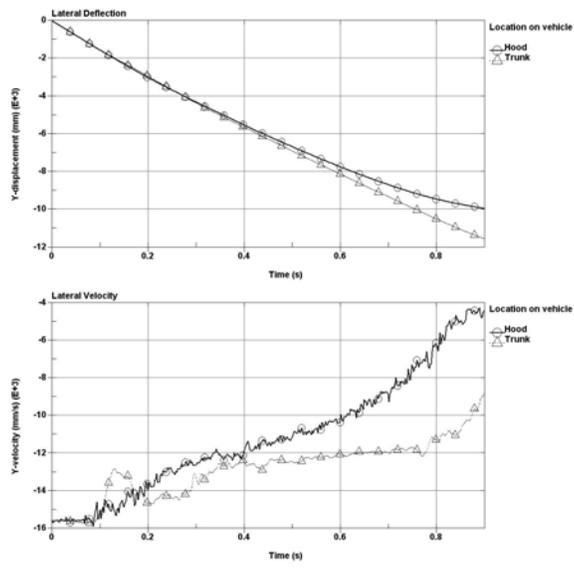
a.



b.

Fig. B.50: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the second design of Retrofit Option 1.

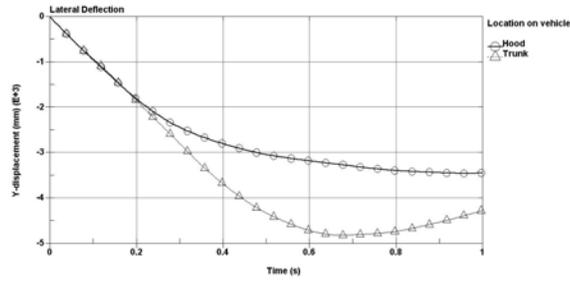
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



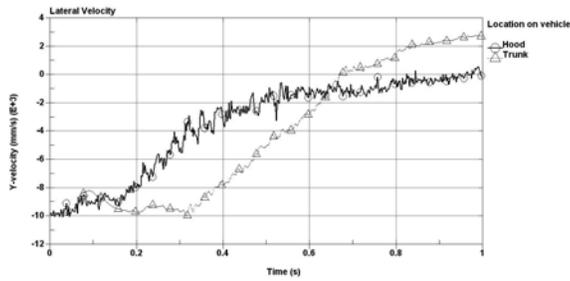
a.

b.

Fig. B.51: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the second design of Retrofit Option 1.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



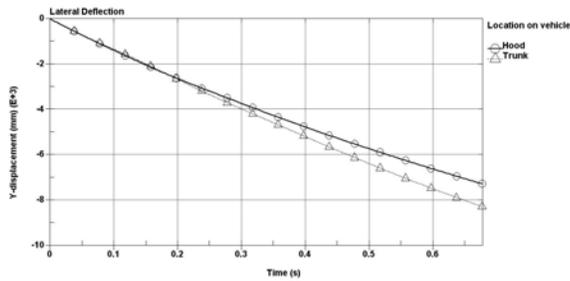
a.



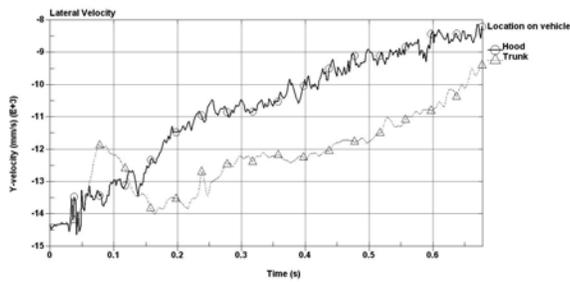
b.

Fig. B.52: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



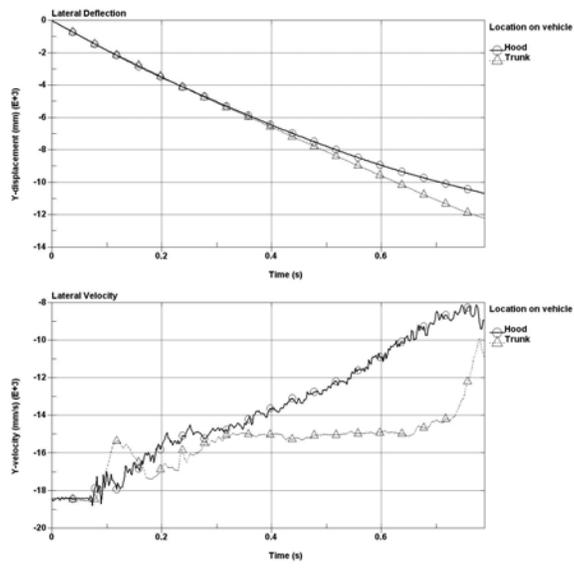
a.



b.

Fig. B.53: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

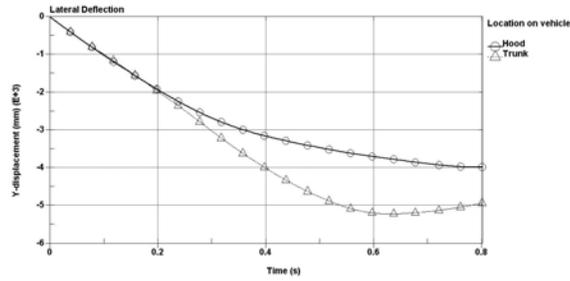


a.

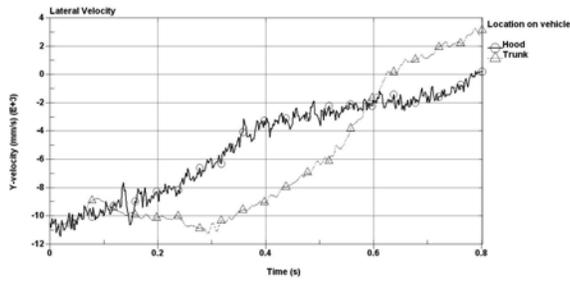
b.

Fig. B.54: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



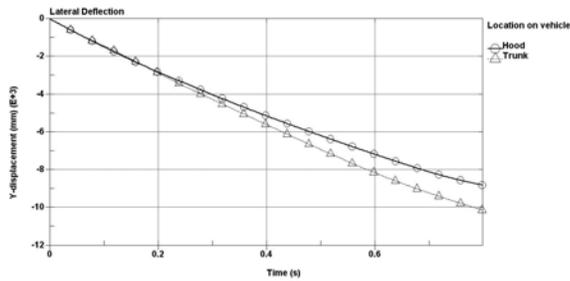
a.



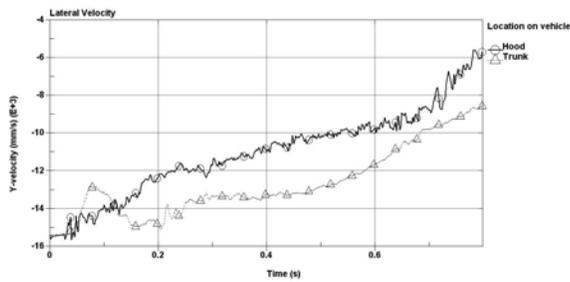
b.

Fig. B.55: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



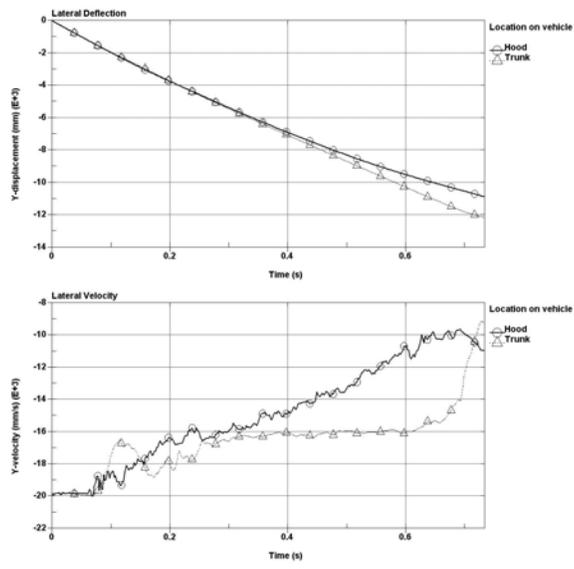
a.



b.

Fig. B.56: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

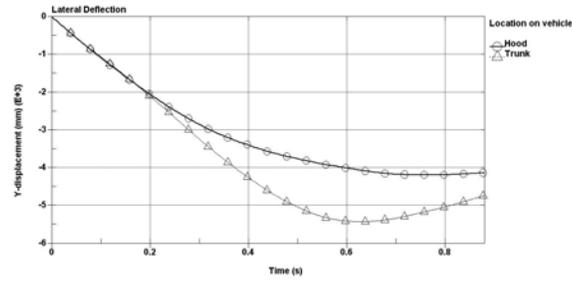


a.

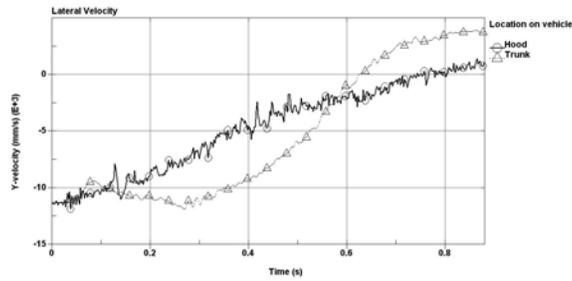
b.

Fig. B.57: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



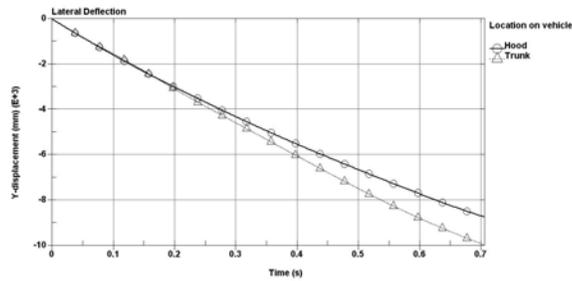
a.



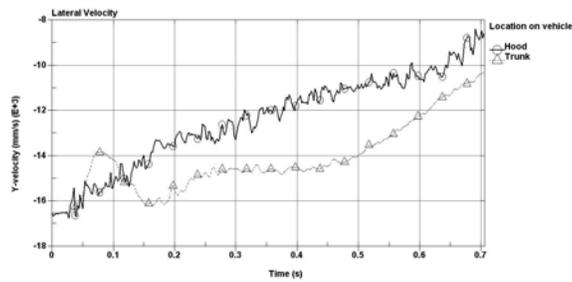
b.

Fig. B.58: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



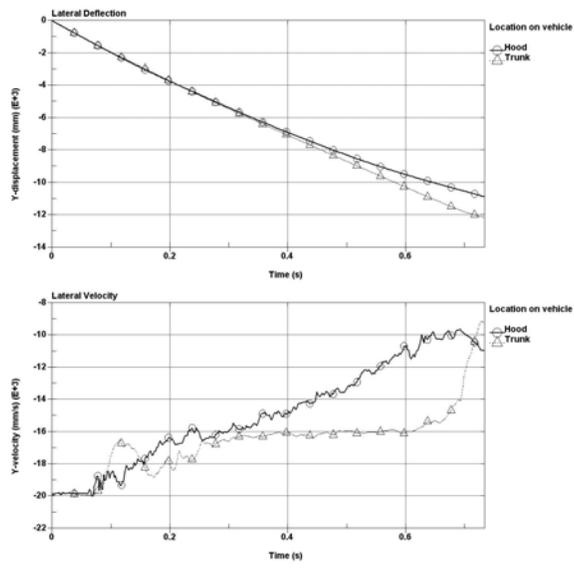
a.



b.

Fig. B.59: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

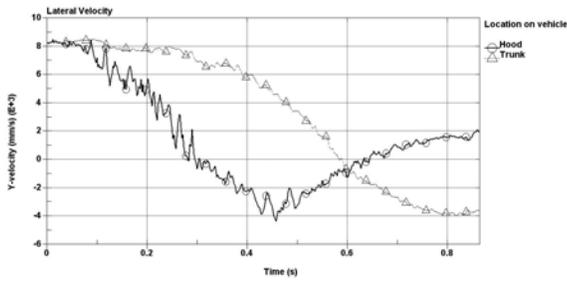
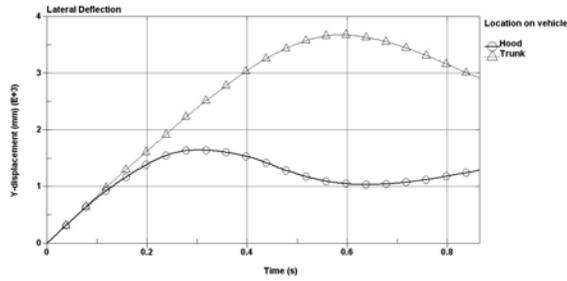


a.

b.

Fig. B.60: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the second design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

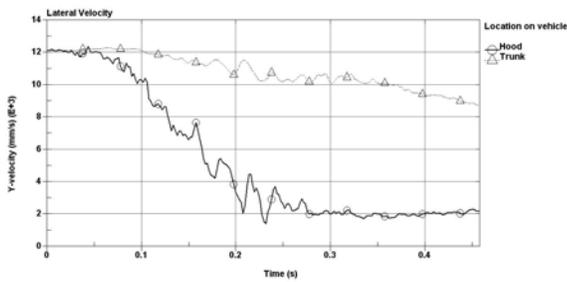
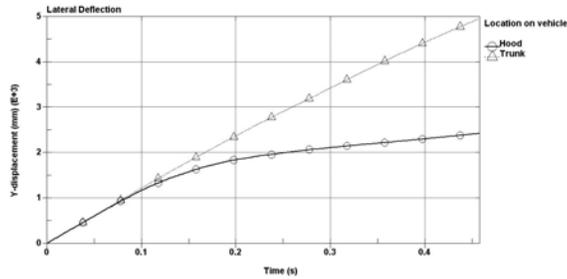


a.

b.

Fig. B.61: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 55 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

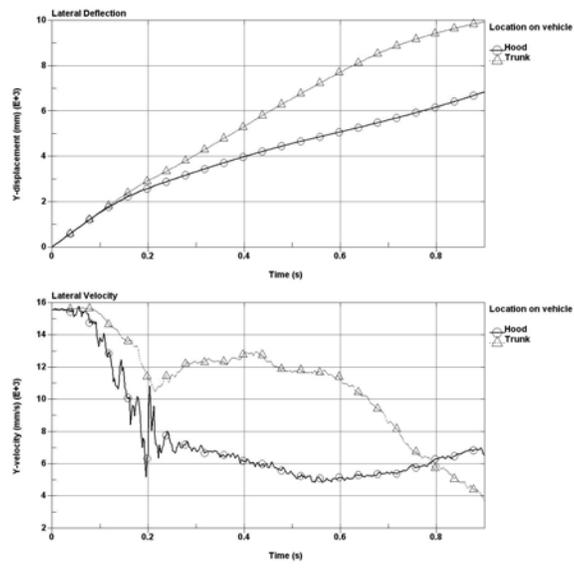


a.

b.

Fig. B.62: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 55 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

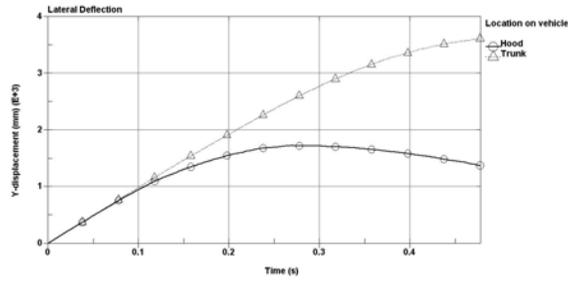


a.

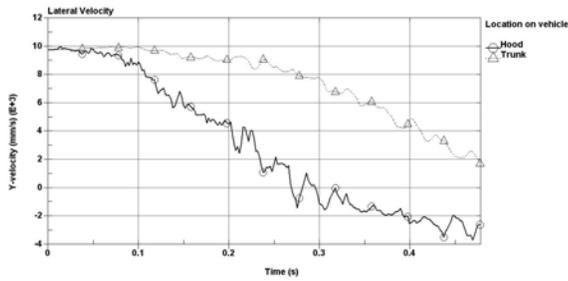
b.

Fig. B.63: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 55 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



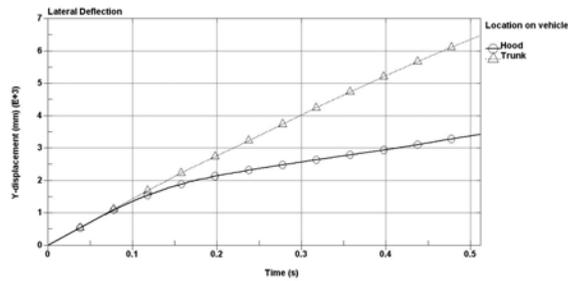
a.



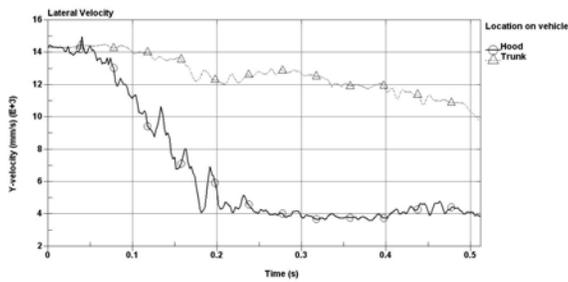
b.

Fig. B.64: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 65 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



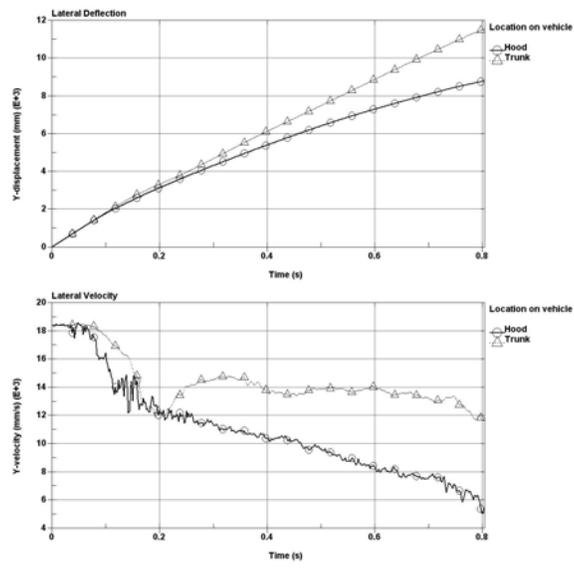
a.



b.

Fig. B.65: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 65 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

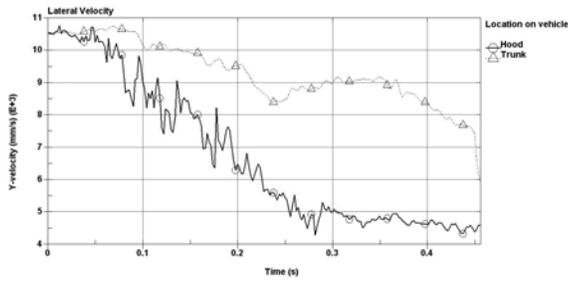
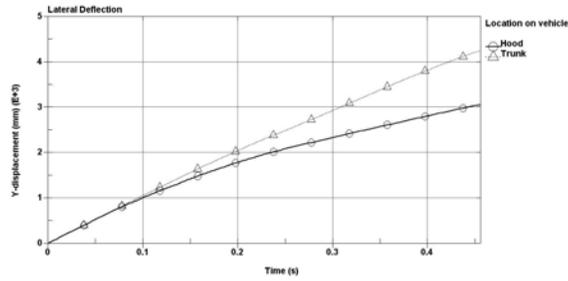


a.

b.

Fig. B.66: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 65 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

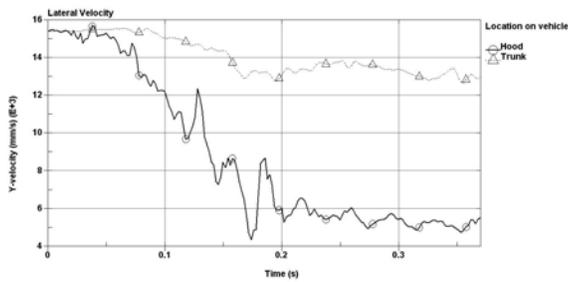
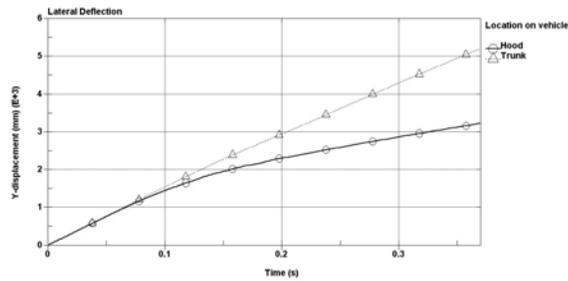


a.

b.

Fig. B.67: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 70 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

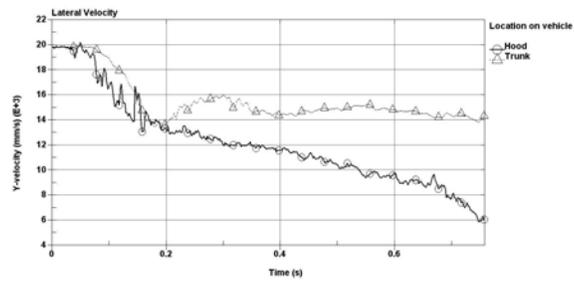
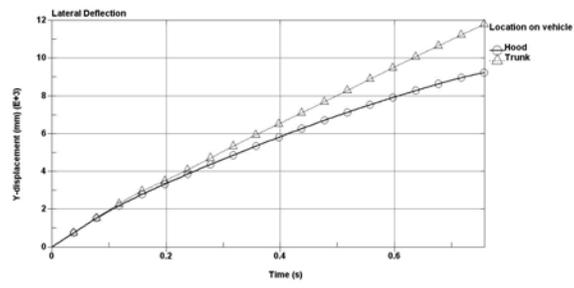


a.

b.

Fig. B.68: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 70 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

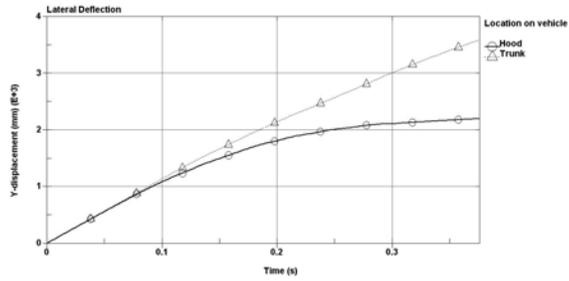


a.

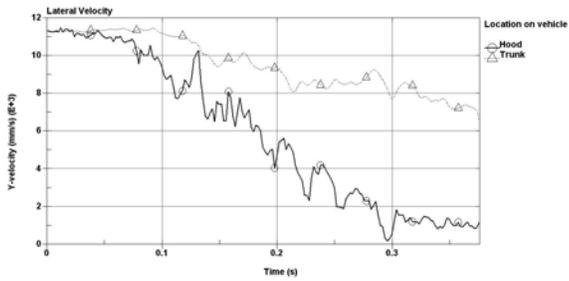
b.

Fig. B.69: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 70 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



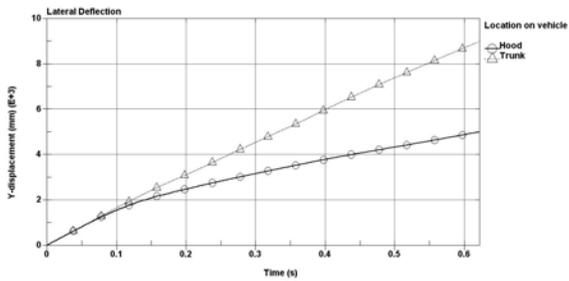
a.



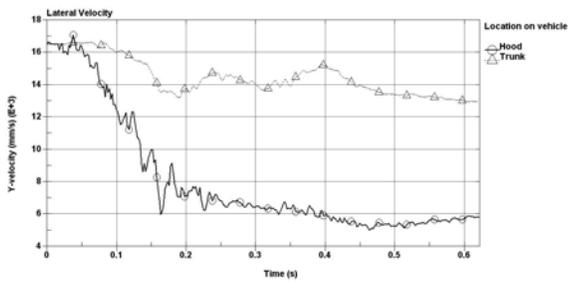
b.

Fig. B.70: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 75 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



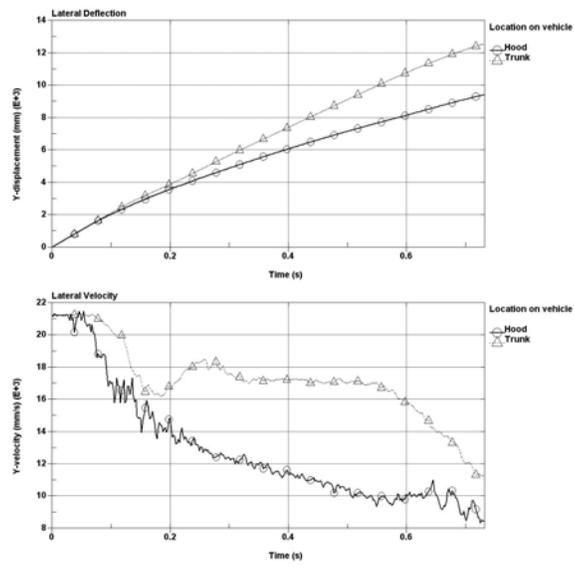
a.



b.

Fig. B.71: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 75 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

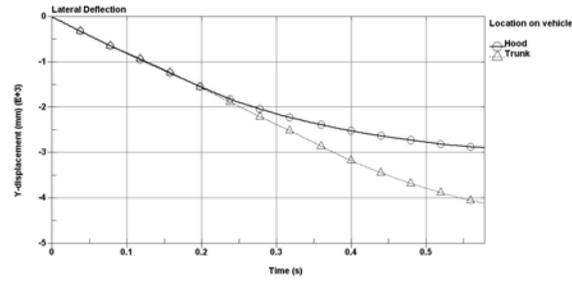


a.

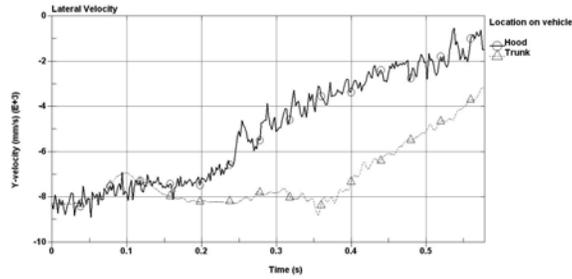
b.

Fig. B.72: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 75 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



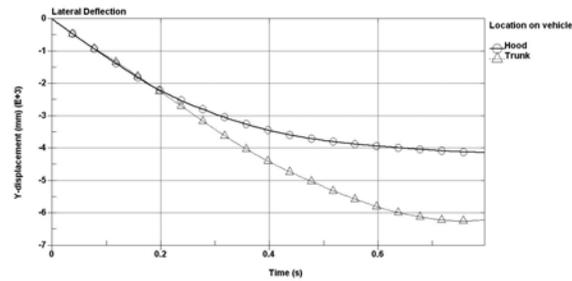
a.



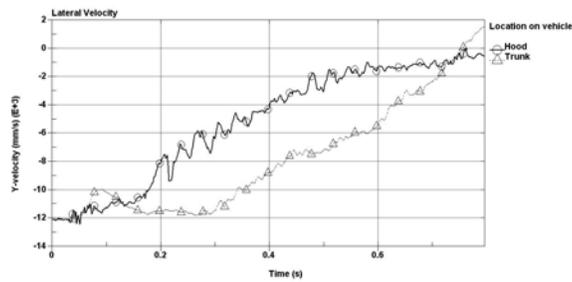
b.

Fig. B.73: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



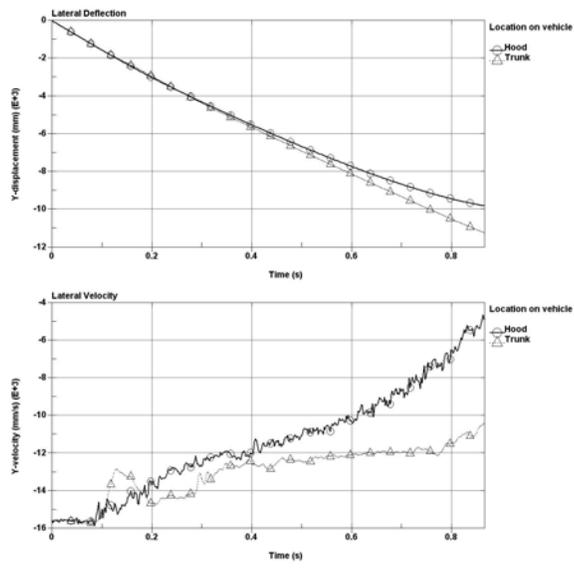
a.



b.

Fig. B.74: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

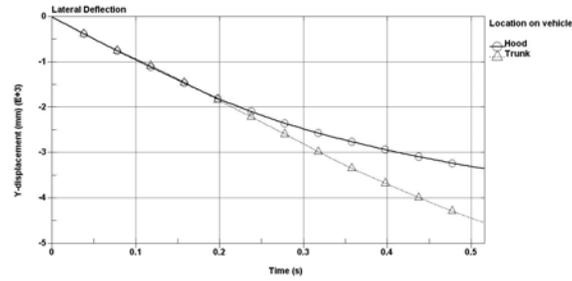


a.

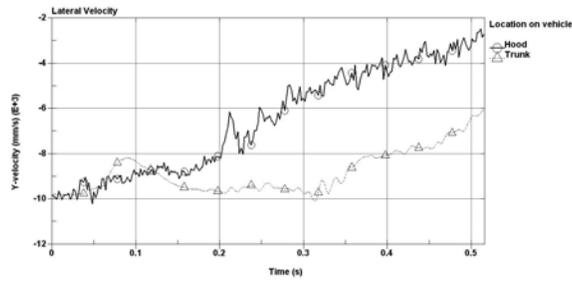
b.

Fig. B.75: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



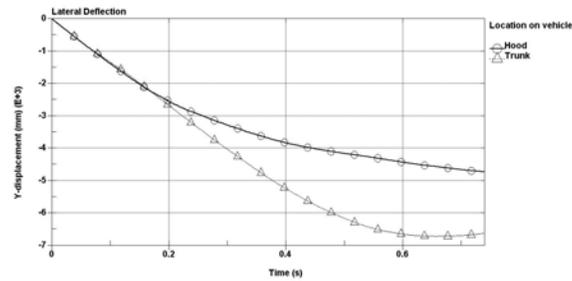
a.



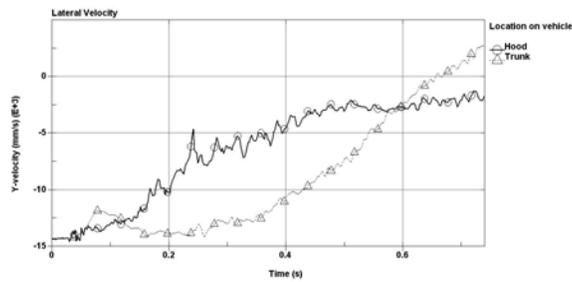
b.

Fig. B.76: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



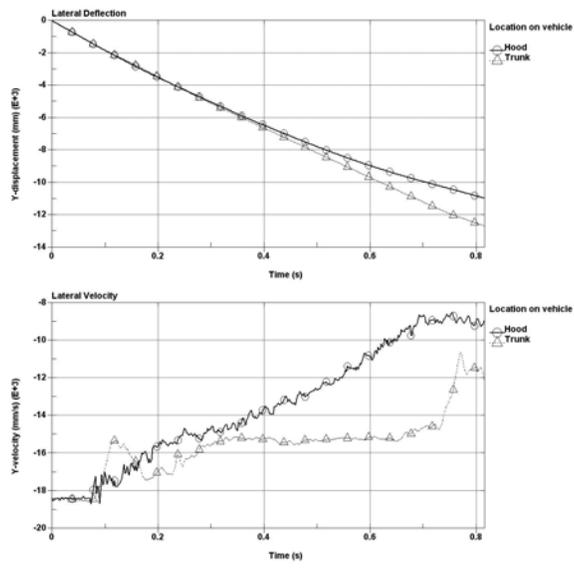
a.



b.

Fig. B.77: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

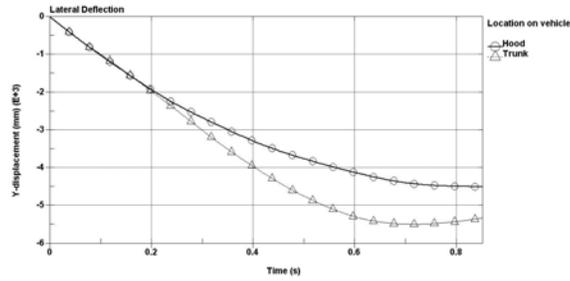


a.

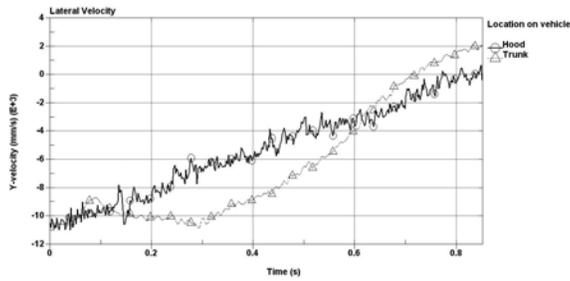
b.

Fig. B.78: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



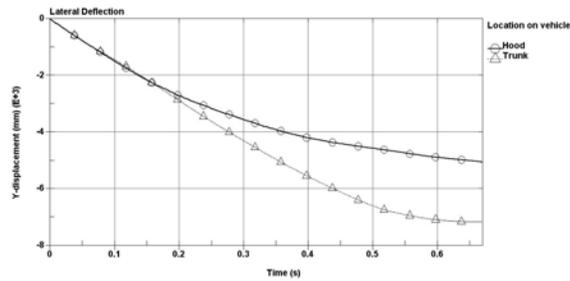
a.



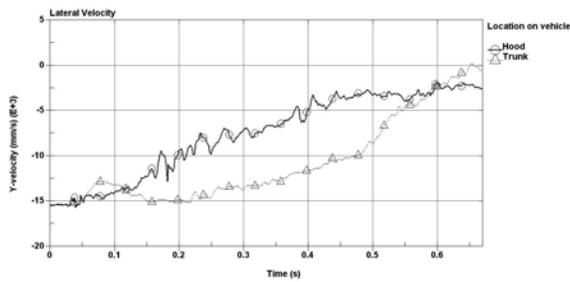
b.

Fig. B.79: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



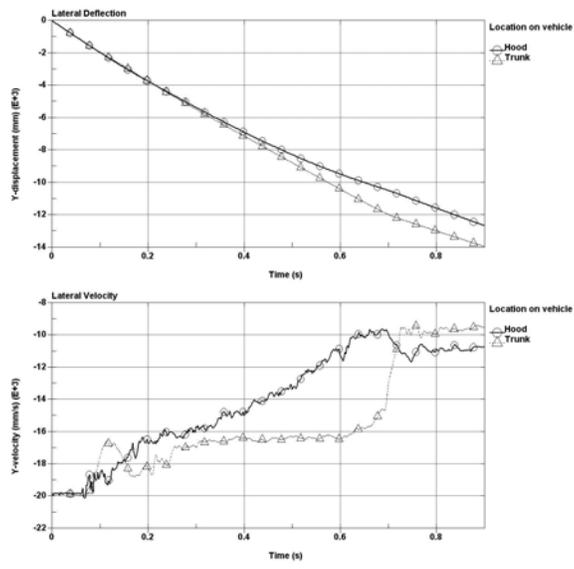
a.



b.

Fig. B.80: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

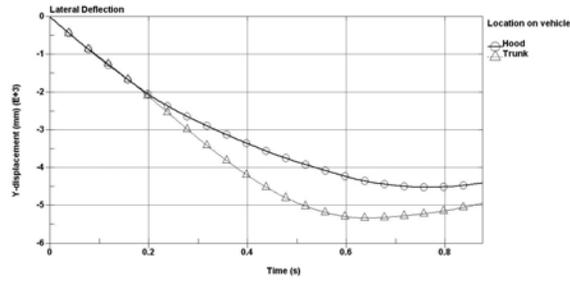


a.

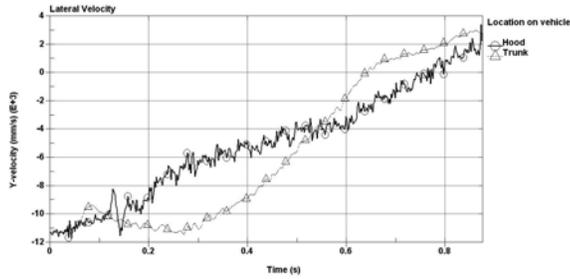
b.

Fig. B.81: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



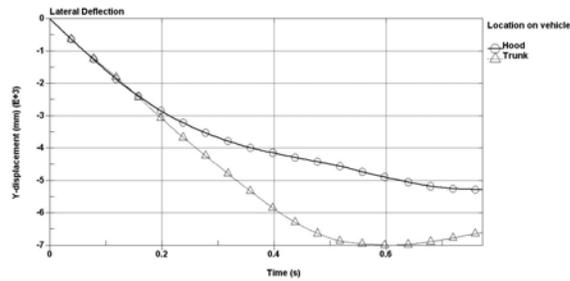
a.



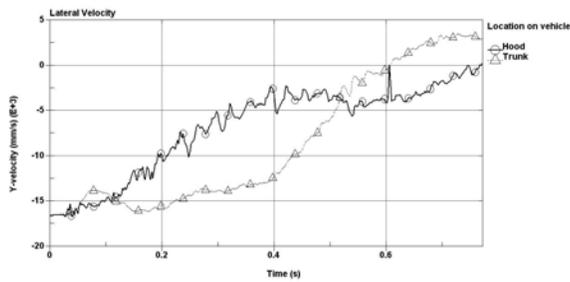
b.

Fig. B.82: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



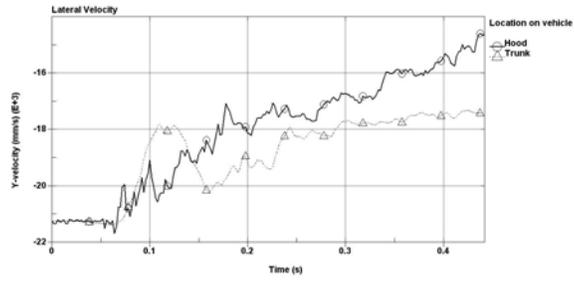
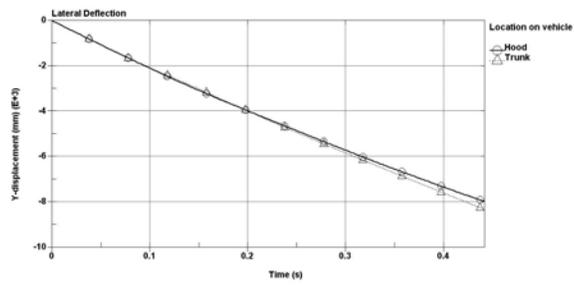
a.



b.

Fig. B.83: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

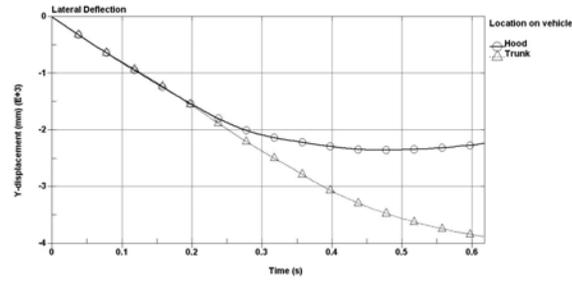


a.

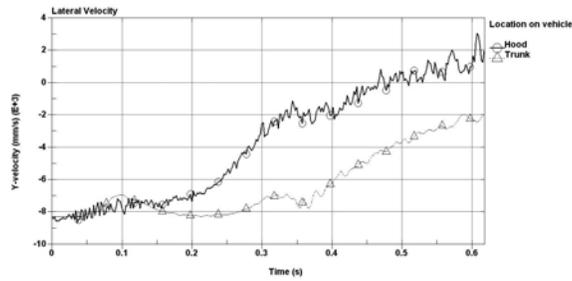
b.

Fig. B.84: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the third design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



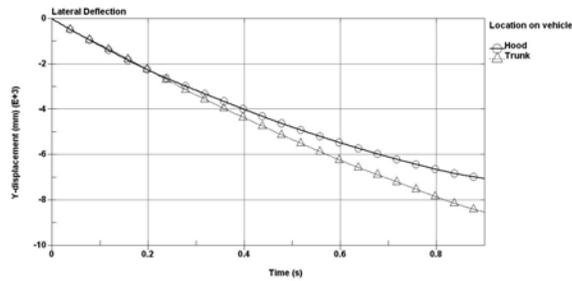
a.



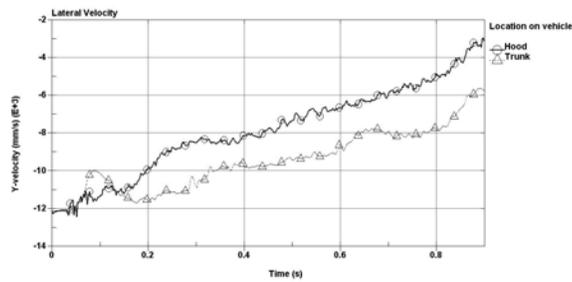
b.

Fig. B.85: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the fourth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



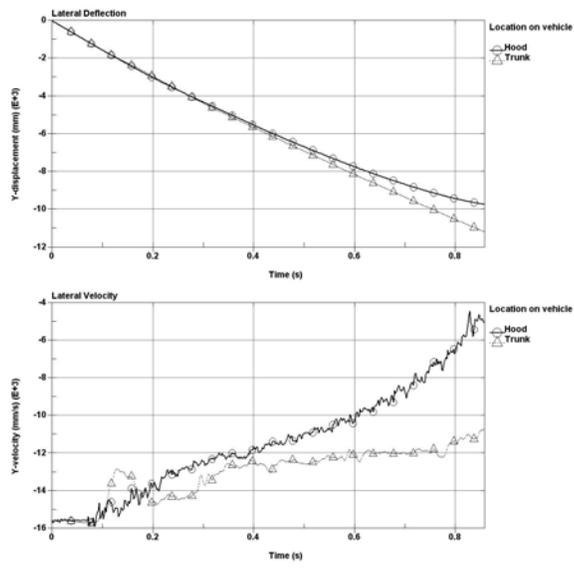
a.



b.

Fig. B.86: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the fourth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

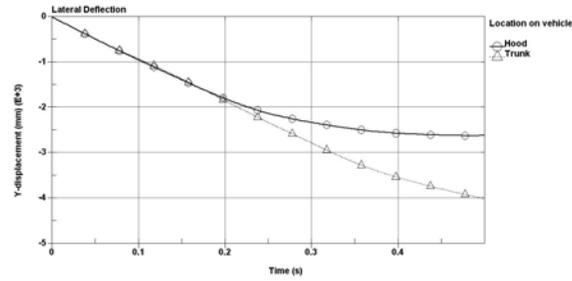


a.

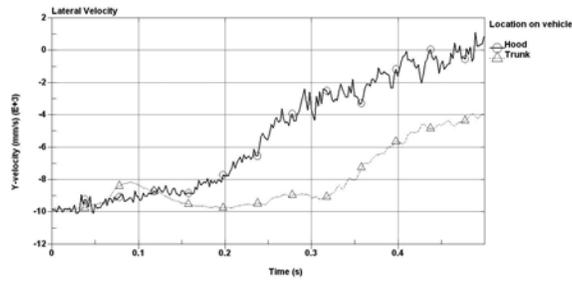
b.

Fig. B.87: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the fourth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



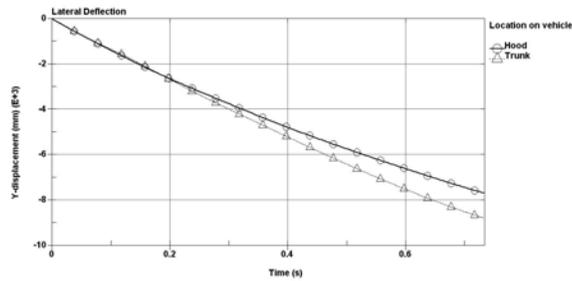
a.



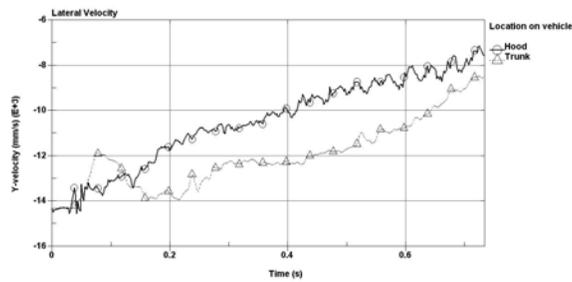
b.

Fig. B.88: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the fourth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



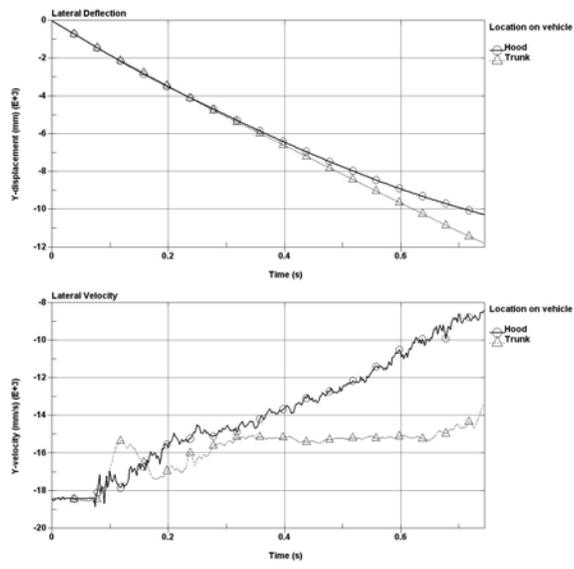
a.



b.

Fig. B.89: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the fourth design of Retrofit Option 1.

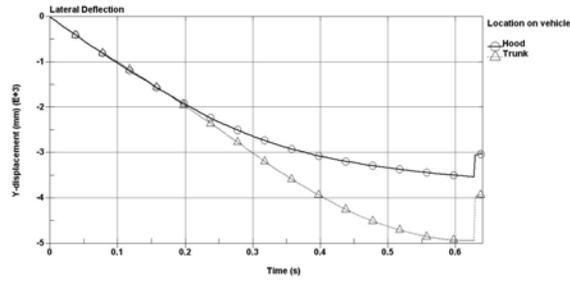
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



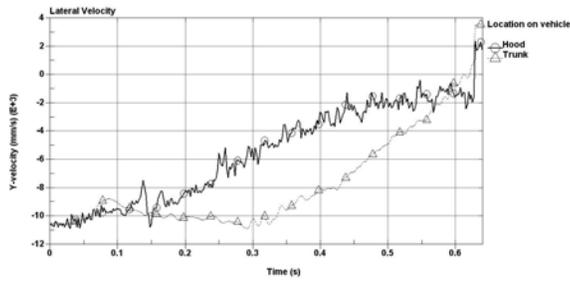
a.

b.

Fig. B.90: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the fourth design of Retrofit Option 1.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



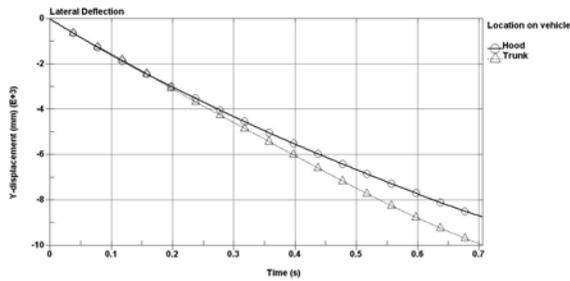
a.



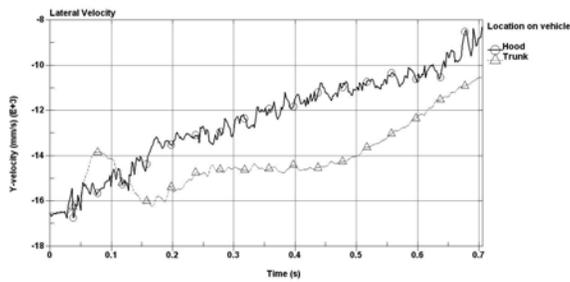
b.

Fig. B.91: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the fourth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



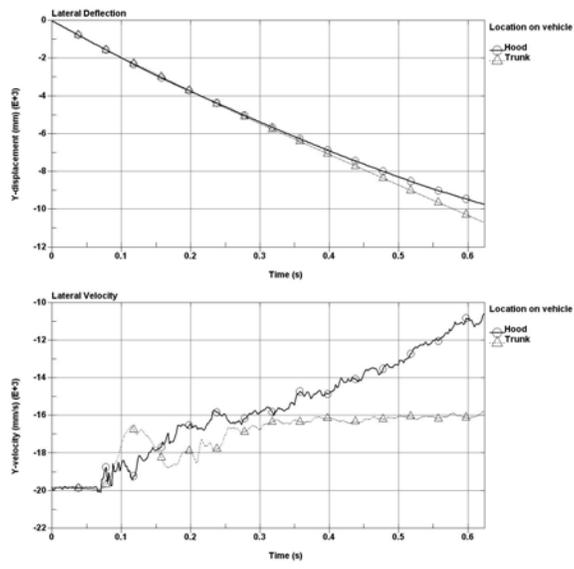
a.



b.

Fig. B.92: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the fourth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

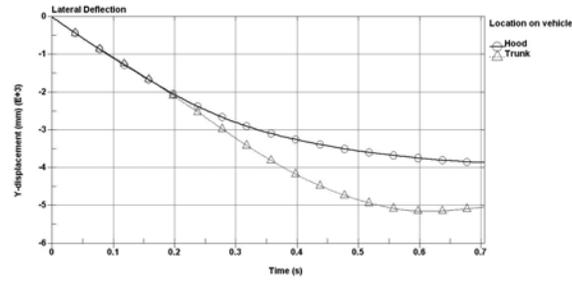


a.

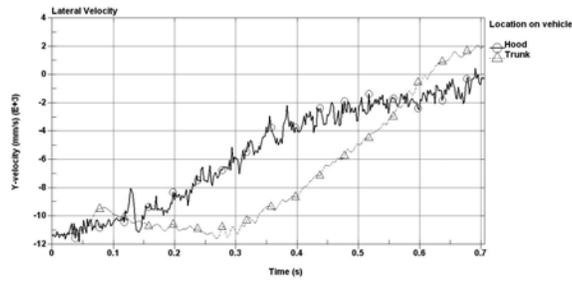
b.

Fig. B.93: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the fourth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



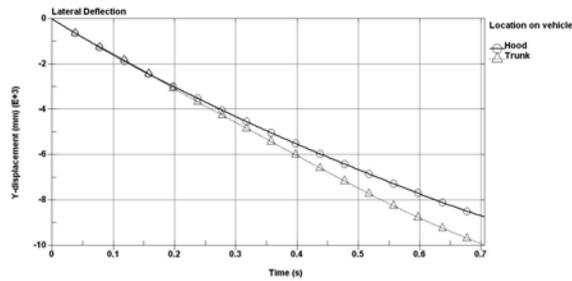
a.



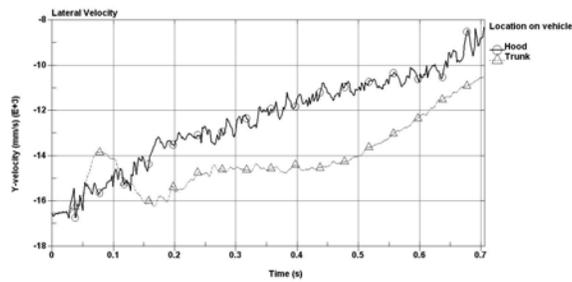
b.

Fig. B.94: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the fourth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



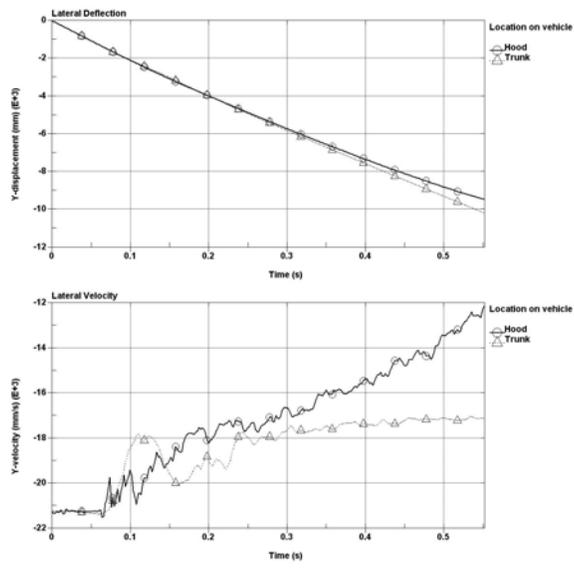
a.



b.

Fig. B.95: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the fourth design of Retrofit Option 1.

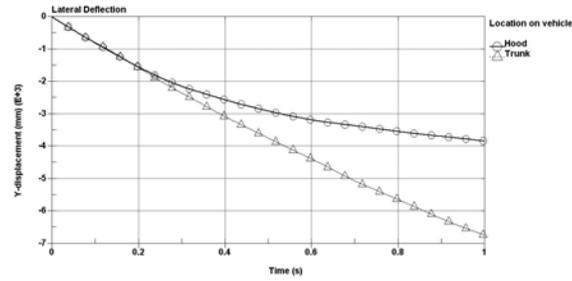
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



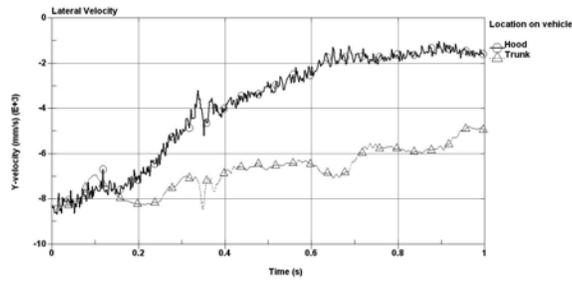
a.

b.

Fig. B.96: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the fourth design of Retrofit Option 1.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



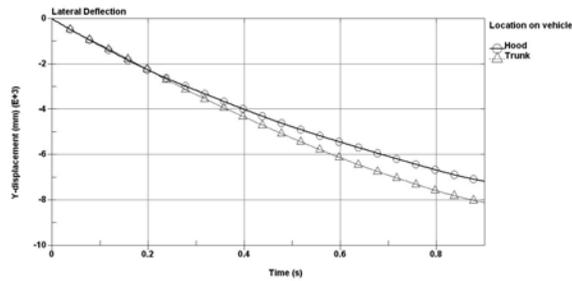
a.



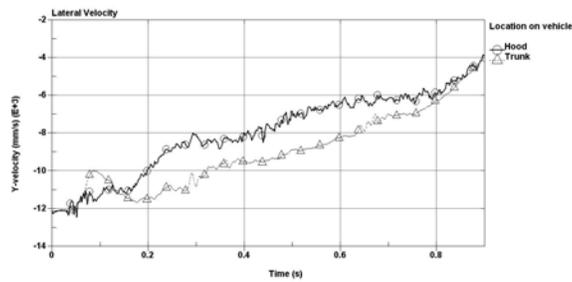
b.

Fig. B.97: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



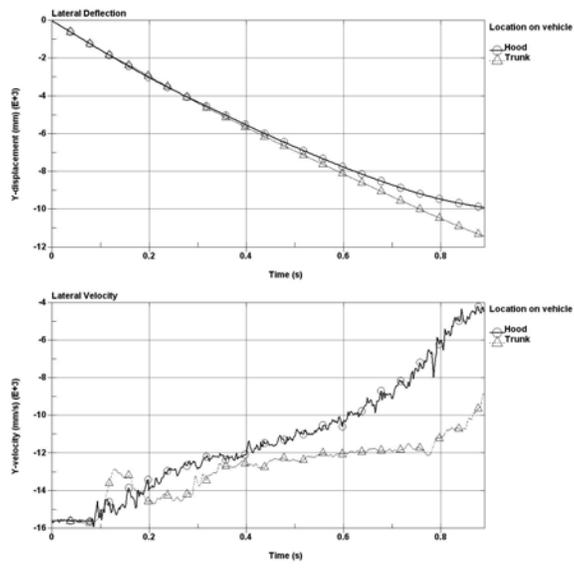
a.



b.

Fig. B.98: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

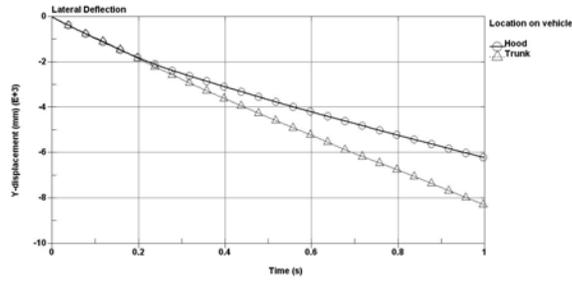


a.

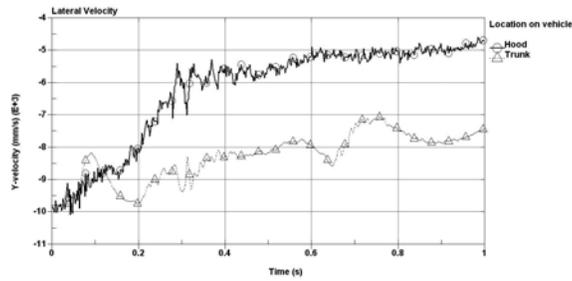
b.

Fig. B.99: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



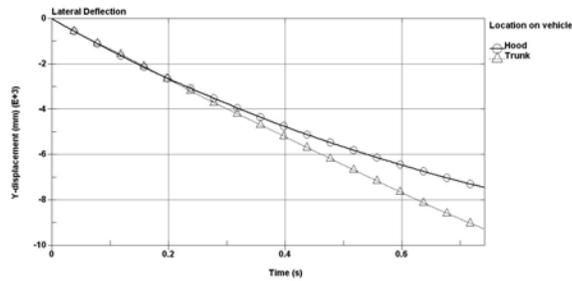
a.



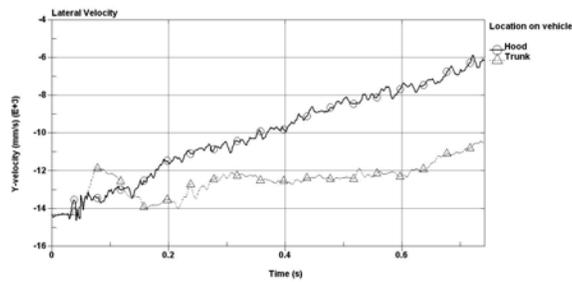
b.

Fig. B.100: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



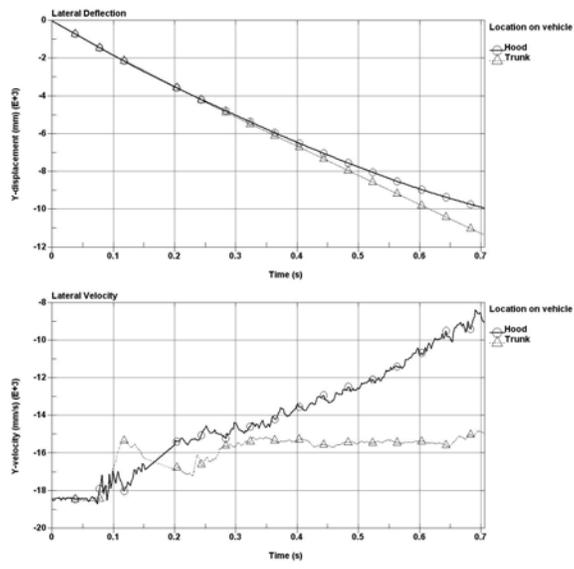
a.



b.

Fig. B.101: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

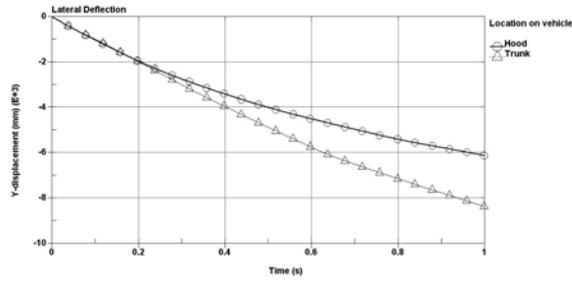


a.

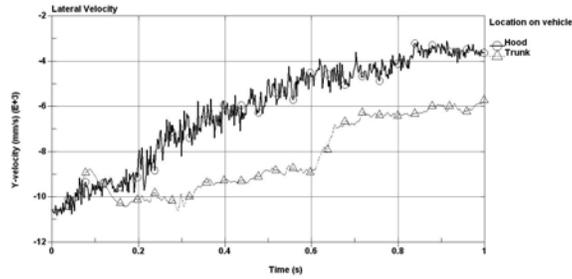
b.

Fig. B.102: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



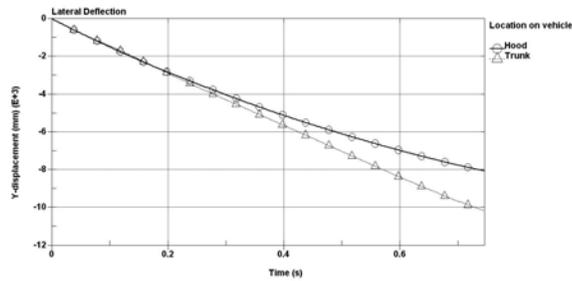
a.



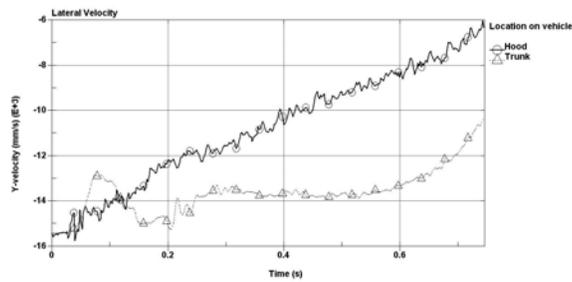
b.

Fig. B.103: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



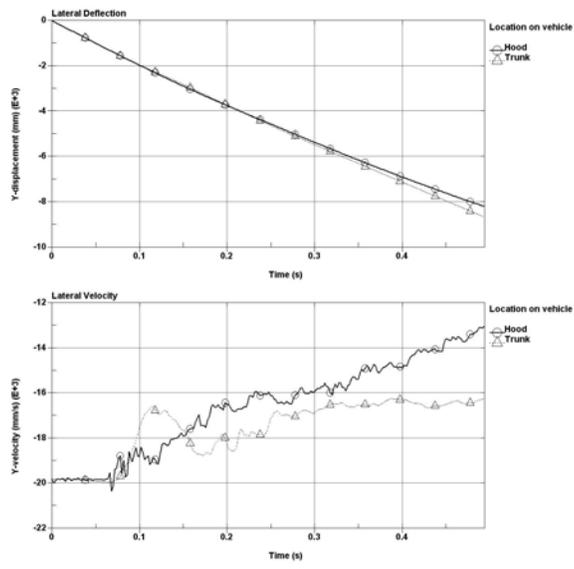
a.



b.

Fig. B.104: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

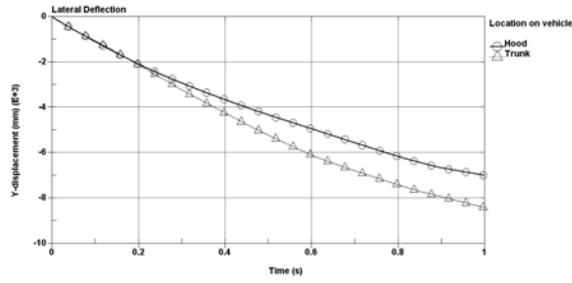


a.

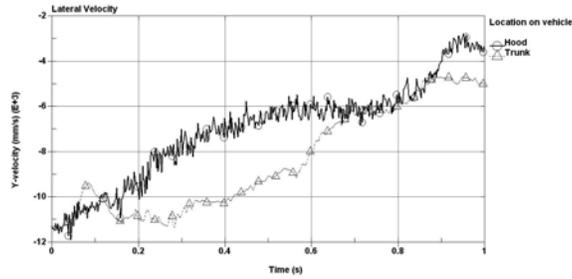
b.

Fig. B.105: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



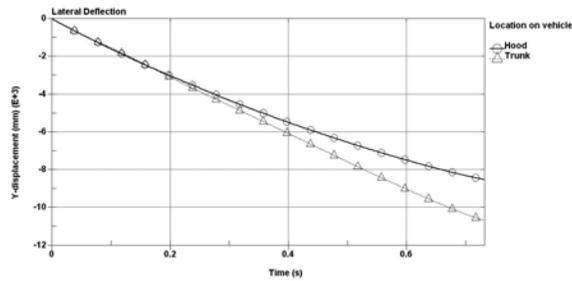
a.



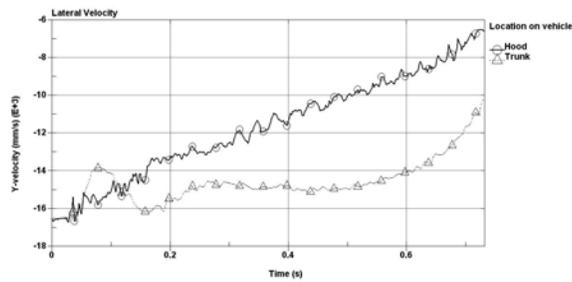
b.

Fig. B.106: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



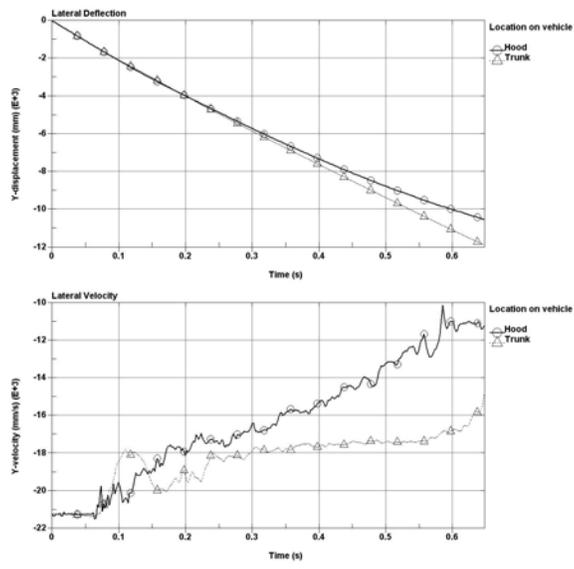
a.



b.

Fig. B.107: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

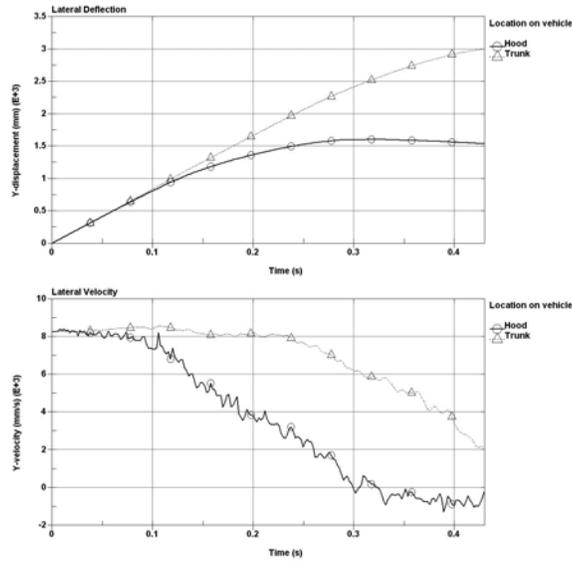


a.

b.

Fig. B.108: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the fifth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

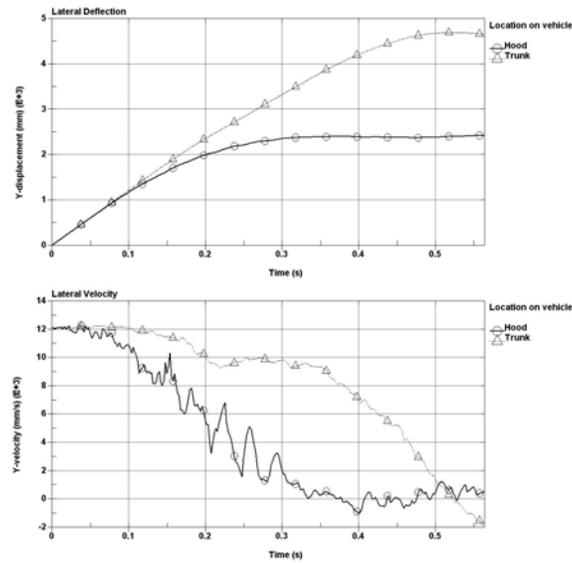


a.

b.

Fig. B.109: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

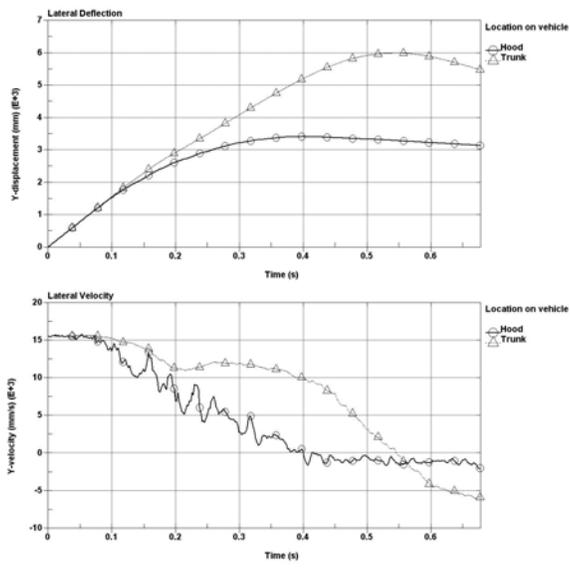


a.

b.

Fig. B.110: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

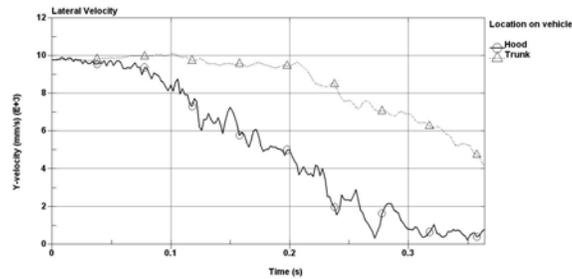
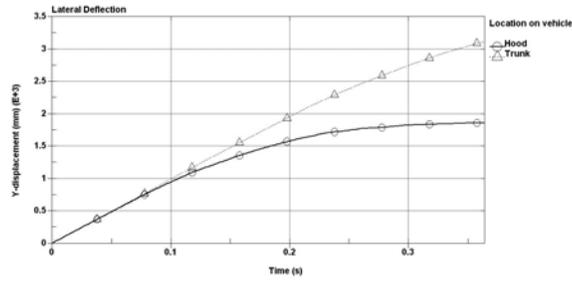


a.

b.

Fig. B.111: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

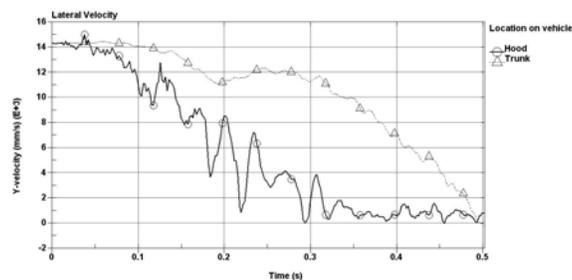
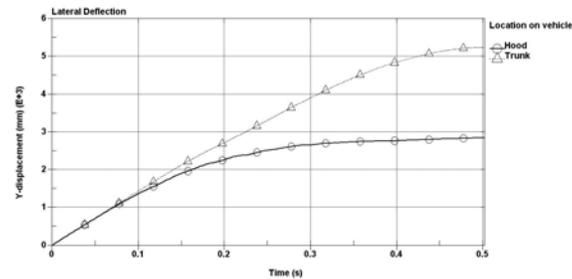


a.

b.

Fig. B.112: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

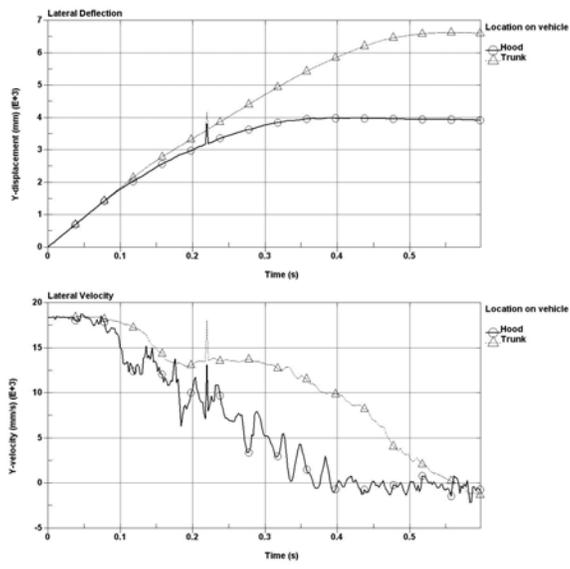


a.

b.

Fig. B.113: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

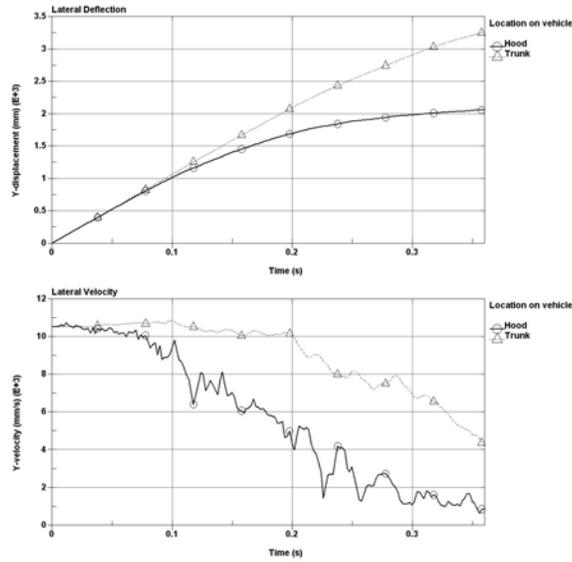


a.

b.

Fig. B.114: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

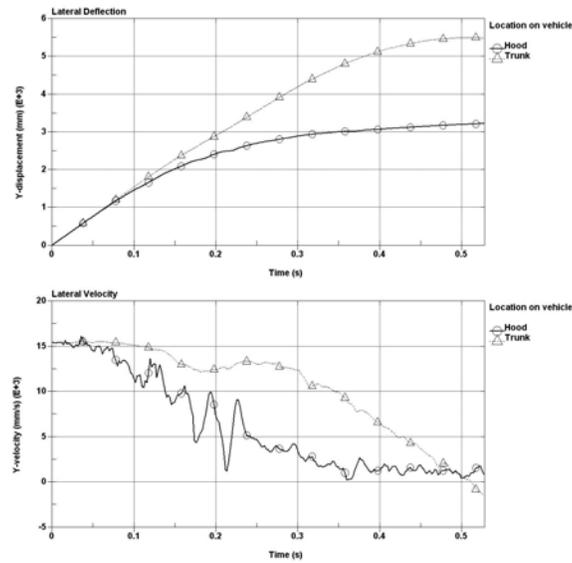


a.

b.

Fig. B.115: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

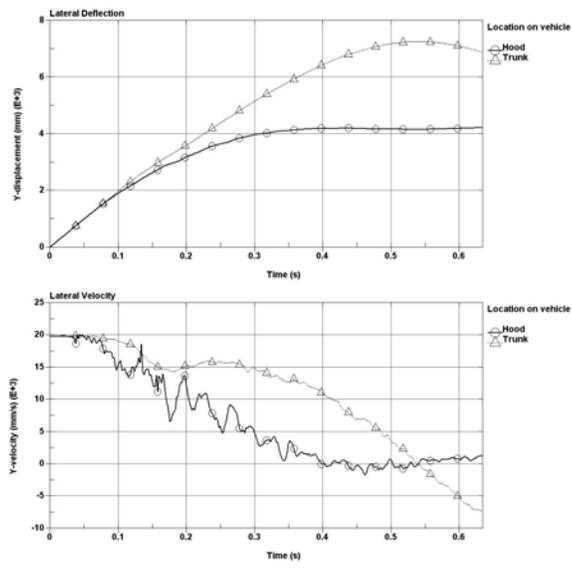


a.

b.

Fig. B.116: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 70 mph for the sixth design of Retrofit Option 1.

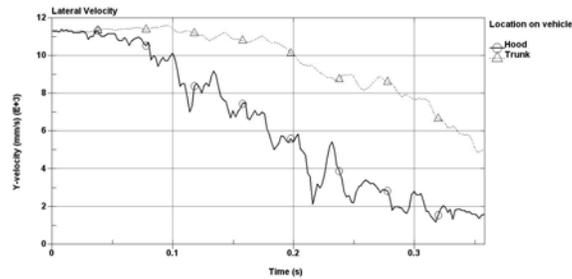
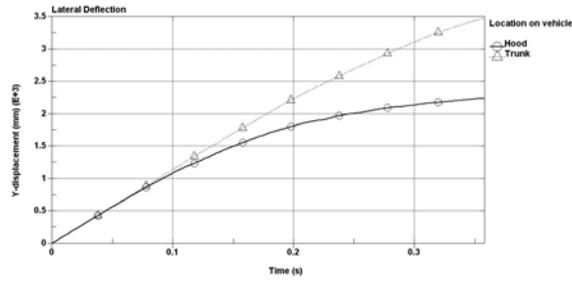
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



a.

b.

Fig. B.117: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 70 mph for the sixth design of Retrofit Option 1.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)

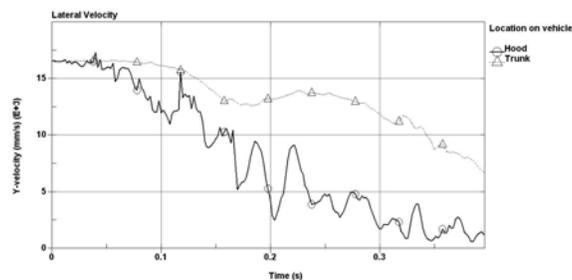
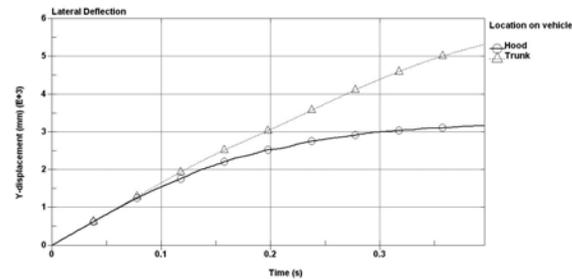


a.

b.

Fig. B.118: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

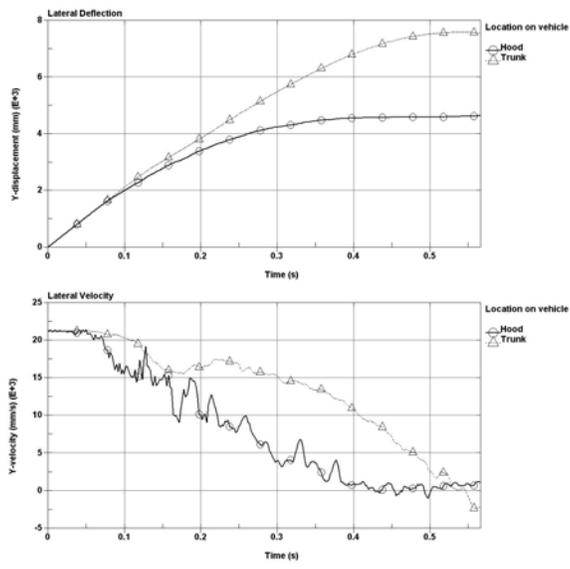


a.

b.

Fig. B.119: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 75 mph for the sixth design of Retrofit Option 1.

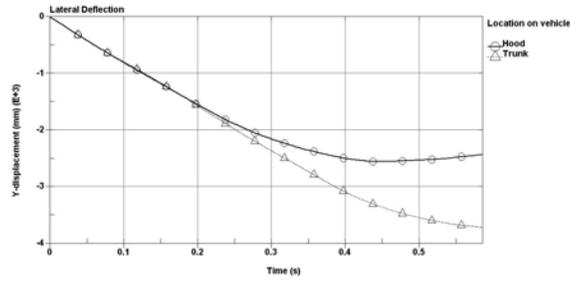
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



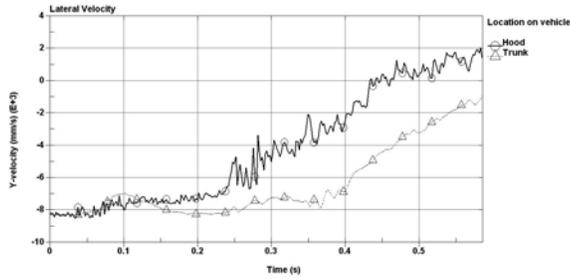
a.

b.

Fig. B.120: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 75 mph for the sixth design of Retrofit Option 1.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



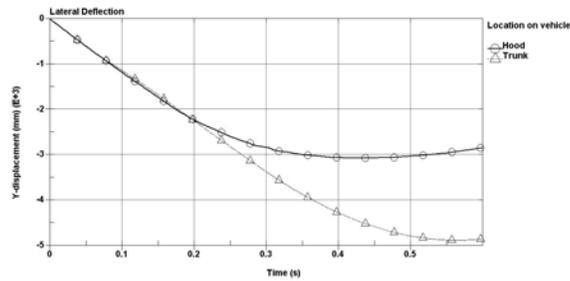
a.



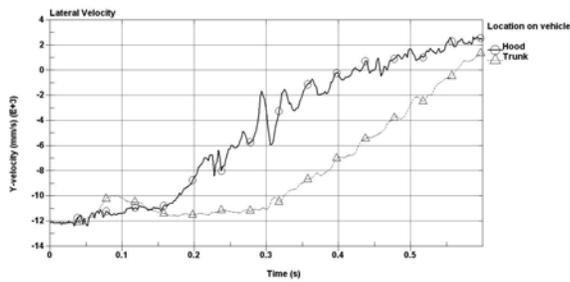
b.

Fig. B.121: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



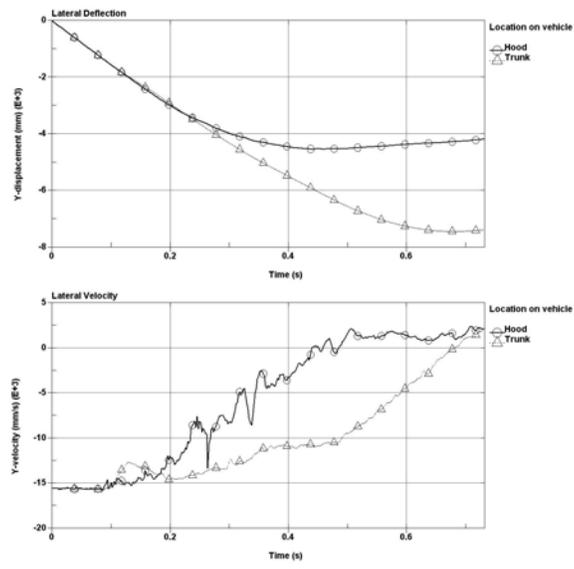
a.



b.

Fig. B.122: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

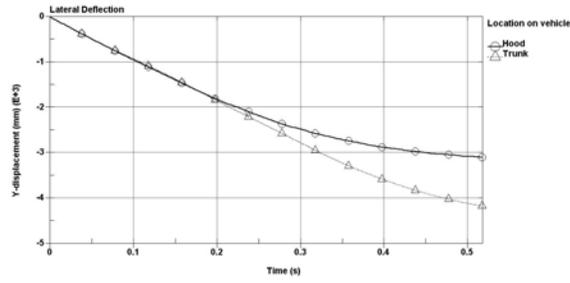


a.

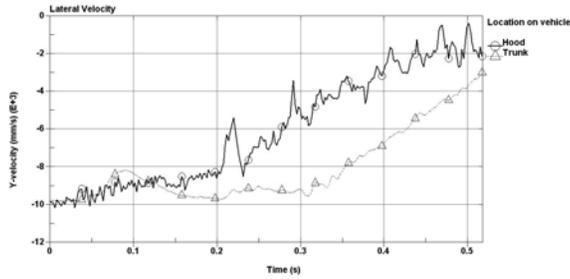
b.

Fig. B.123: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



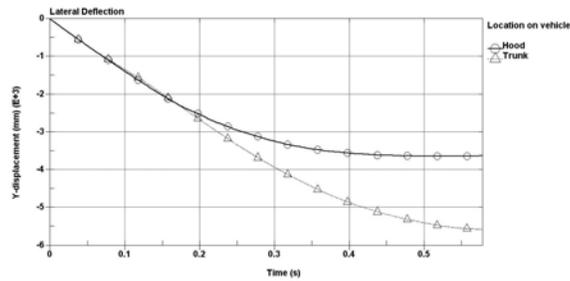
a.



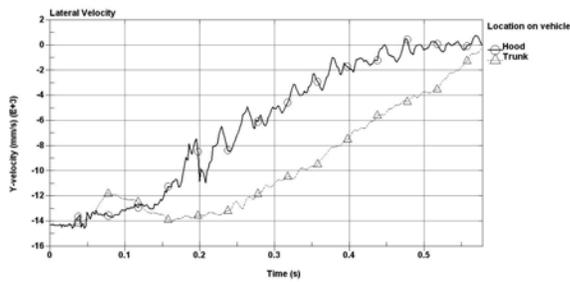
b.

Fig. B.124: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



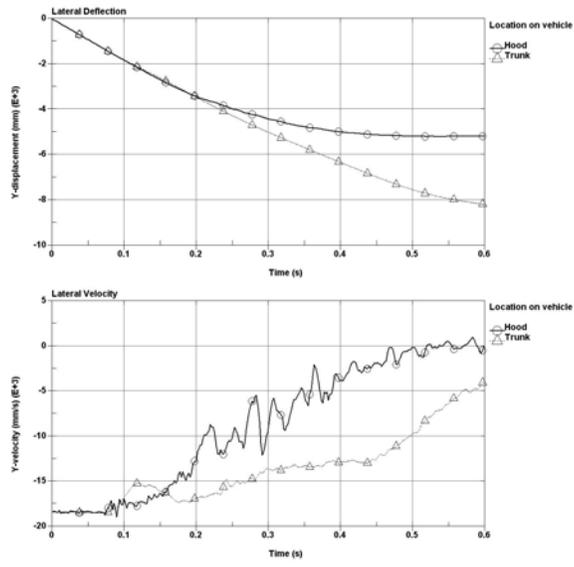
a.



b.

Fig. B.125: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the sixth design of Retrofit Option 1.

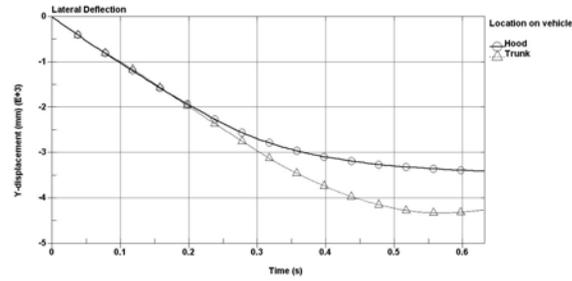
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



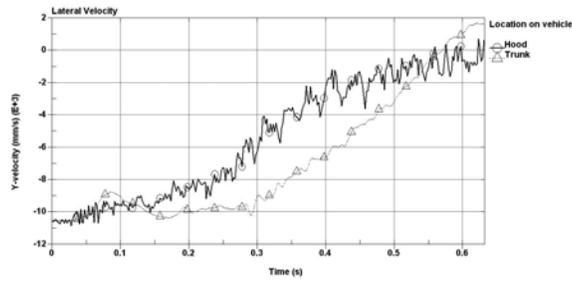
a.

b.

Fig. B.126: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the sixth design of Retrofit Option 1.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



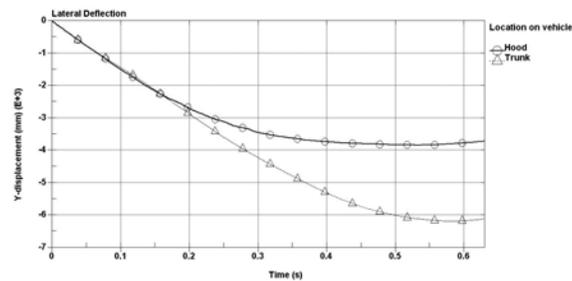
a.



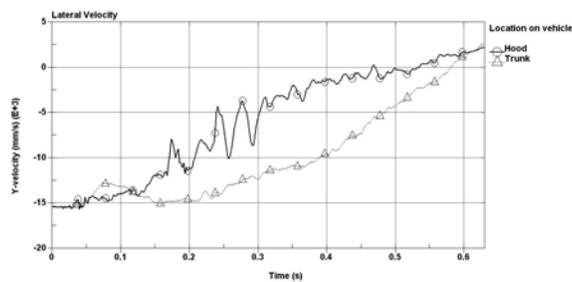
b.

Fig. B.127: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



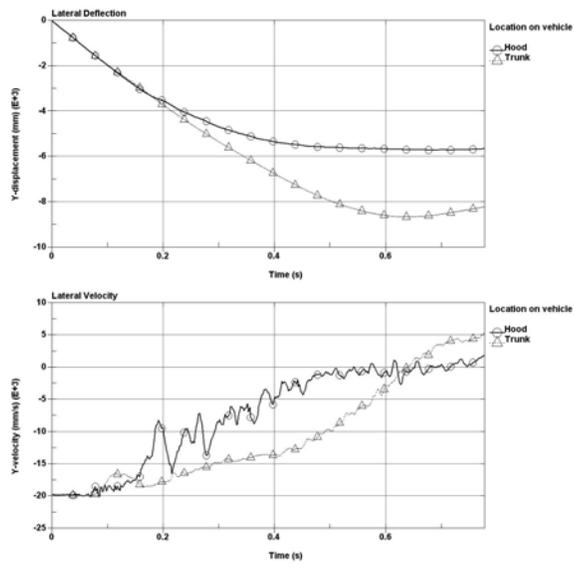
a.



b.

Fig. B.128: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

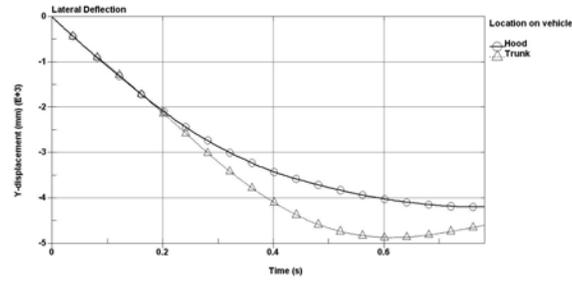


a.

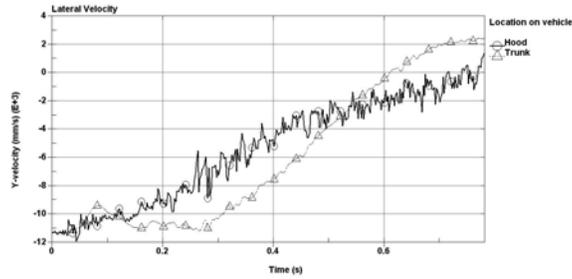
b.

Fig. B.129: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



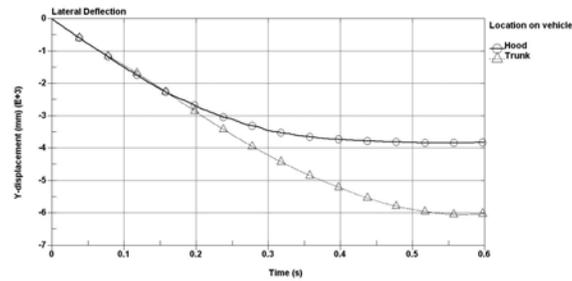
a.



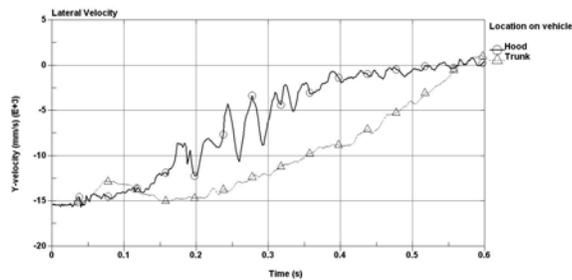
b.

Fig. B.130: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



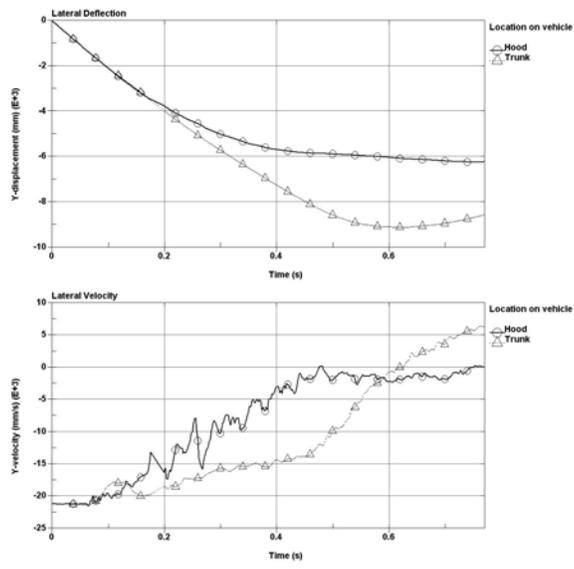
a.



b.

Fig. B.131: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

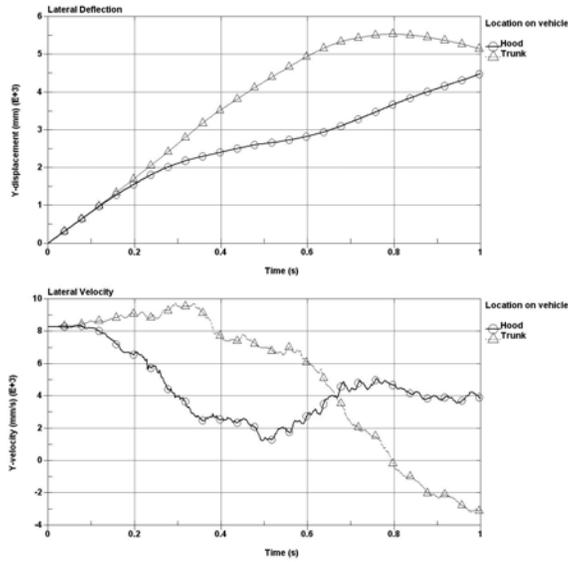


a.

b.

Fig. B.132: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

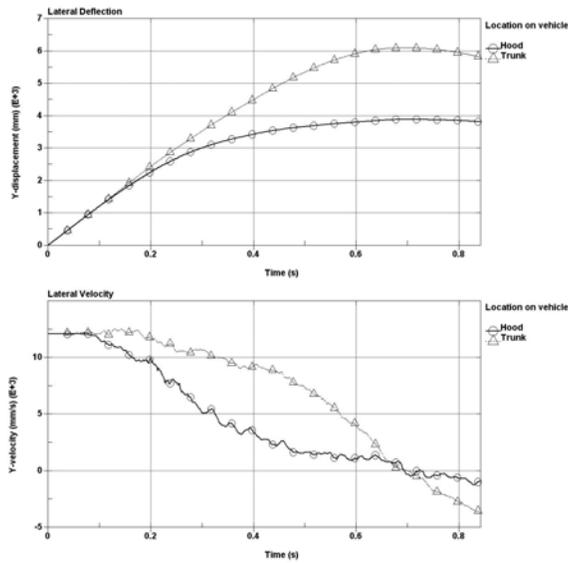


a.

b.

Fig. B.133: Traversal displacements and velocity of Ford F250 in front-side impact at 20° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

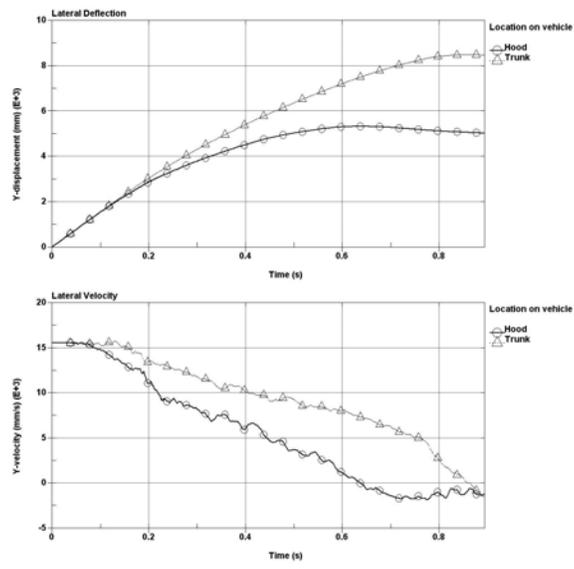


a.

b.

Fig. B.134: Traversal displacements and velocity of Ford F250 in front-side impact at 30° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

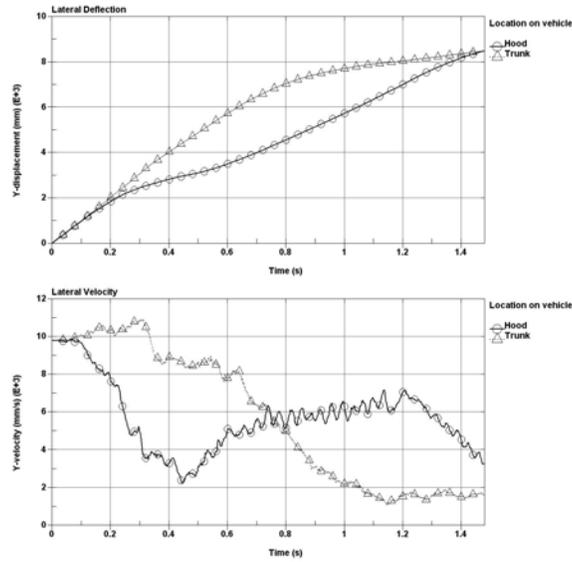


a.

b.

Fig. B.135: Traversal displacements and velocity of Ford F250 in front-side impact at 40° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

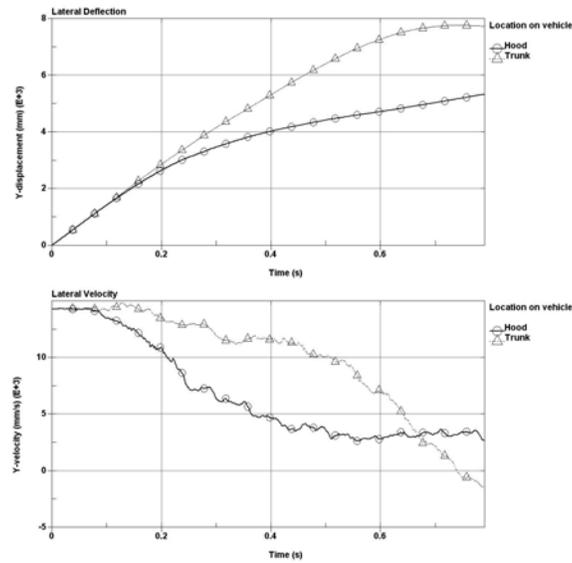


a.

b.

Fig. B.136: Traversal displacements and velocity of Ford F250 in front-side impact at 20° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

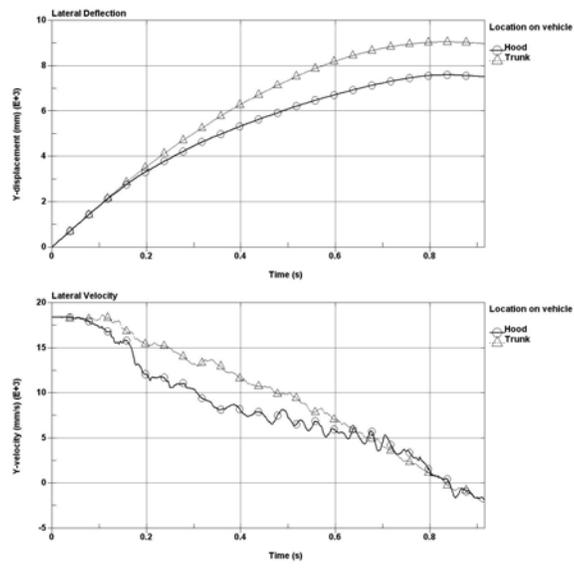


a.

b.

Fig. B.137: Traversal displacements and velocity of Ford F250 in front-side impact at 30° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

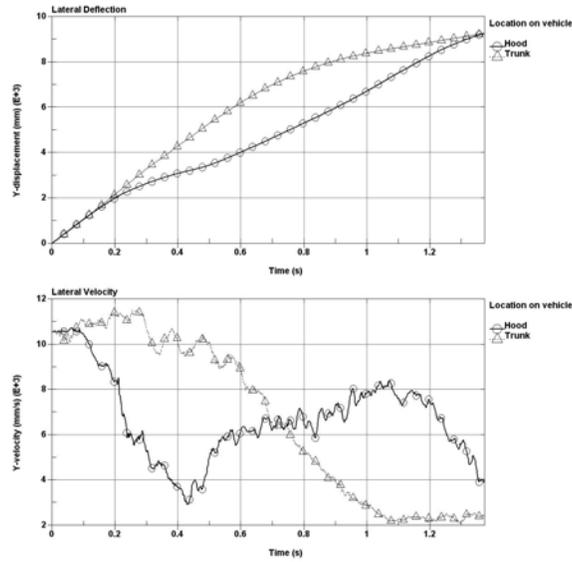


a.

b.

Fig. B.138: Traversal displacements and velocity of Ford F250 in front-side impact at 40° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

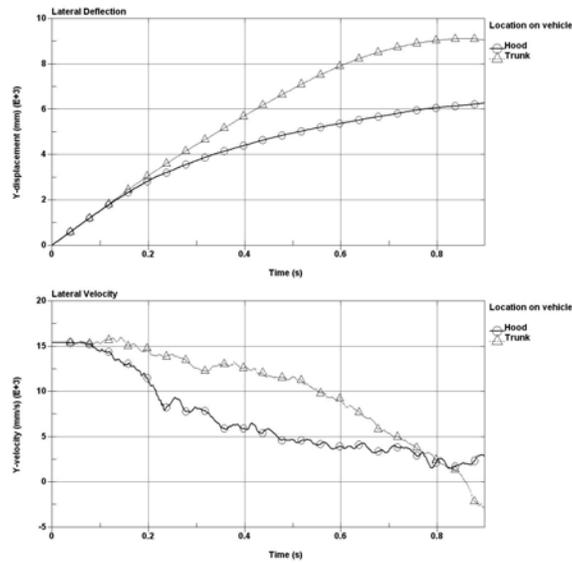


a.

b.

Fig. B.139: Traversal displacements and velocity of Ford F250 in front-side impact at 20° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

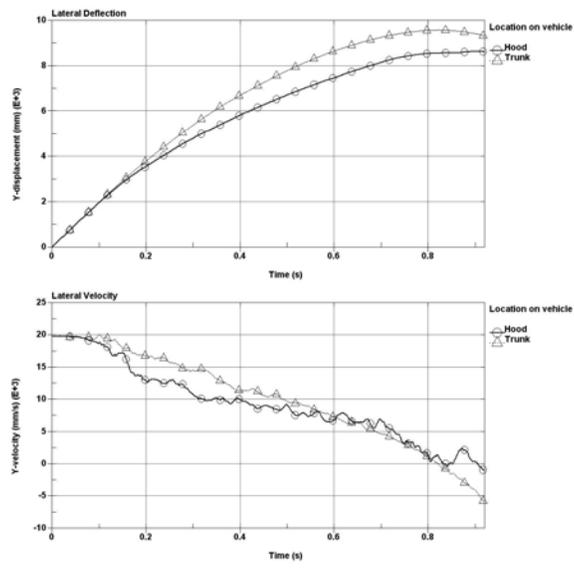


a.

b.

Fig. B.140: Traversal displacements and velocity of Ford F250 in front-side impact at 30° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

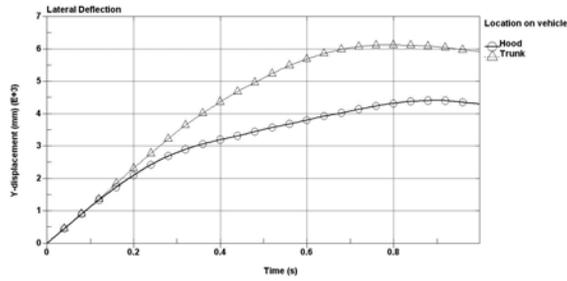


a.

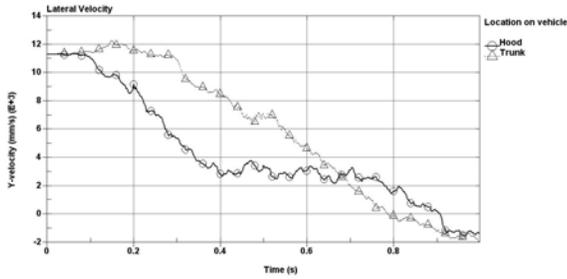
b.

Fig. B.141: Traversal displacements and velocity of Ford F250 in front-side impact at 40° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



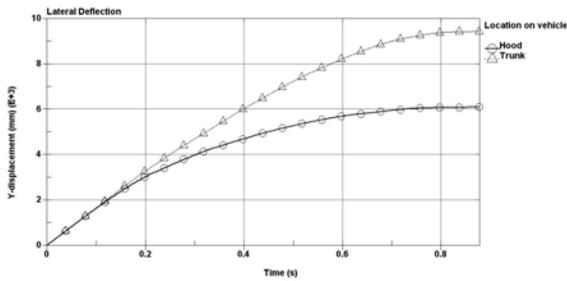
a.



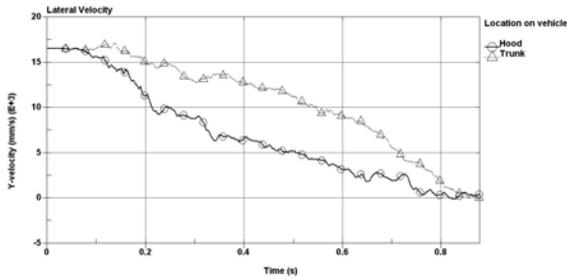
b.

Fig. B.142: Traversal displacements and velocity of Ford F250 in front-side impact at 20° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



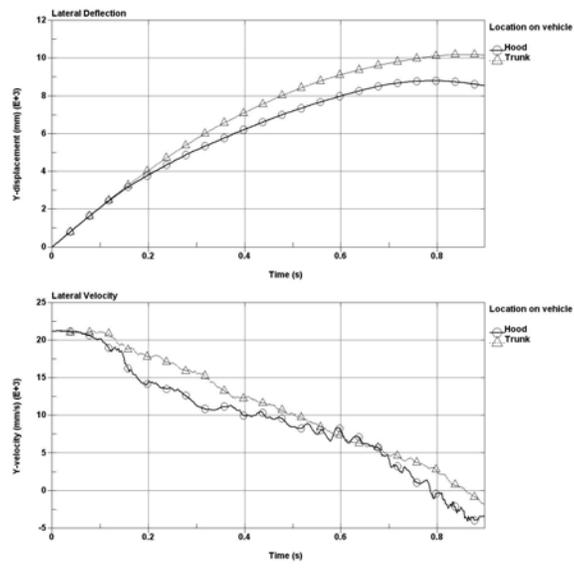
a.



b.

Fig. B.143: Traversal displacements and velocity of Ford F250 in front-side impact at 30° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

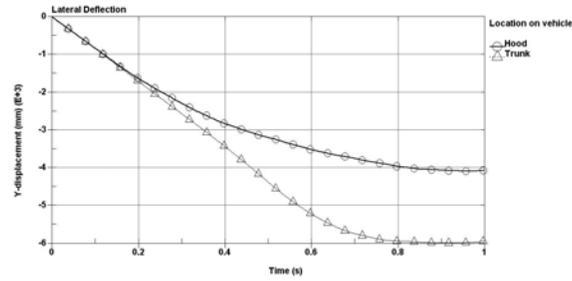


a.

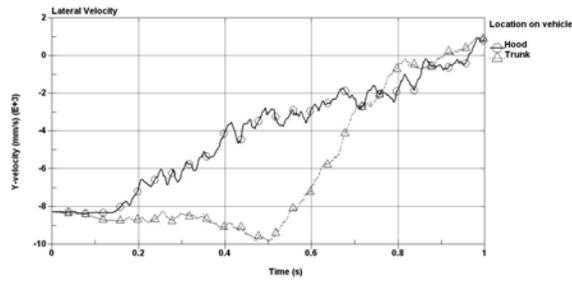
b.

Fig. B.144: Traversal displacements and velocity of Ford F250 in front-side impact at 40° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



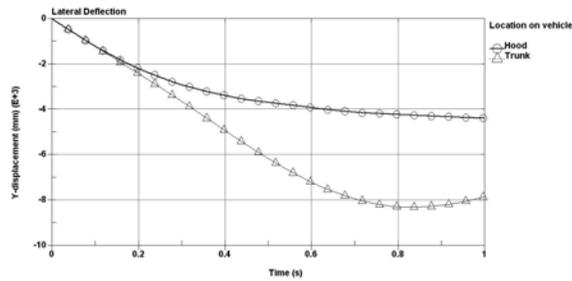
a.



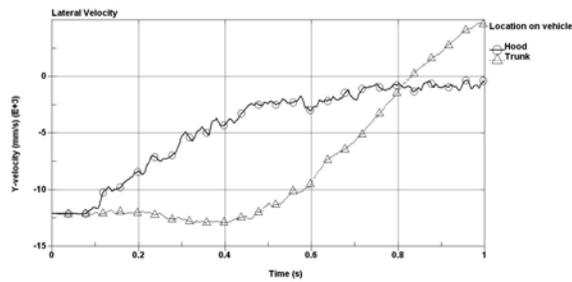
b.

Fig. B.145: Traversal displacements and velocity of Ford F250 in back-side impact at 20° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



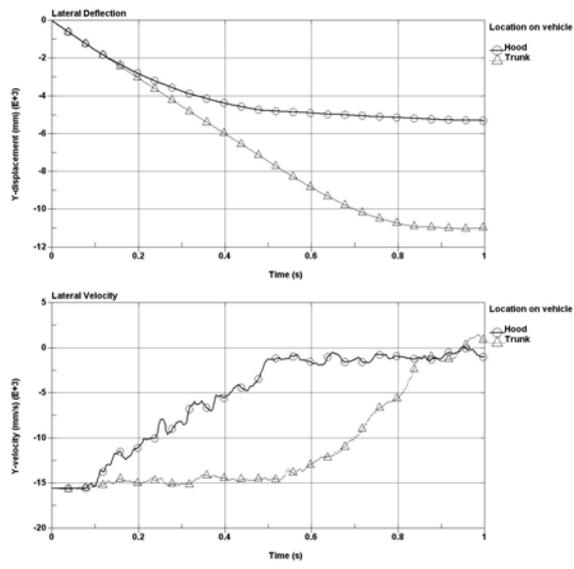
a.



b.

Fig. B.146: Traversal displacements and velocity of Ford F250 in back-side impact at 30° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

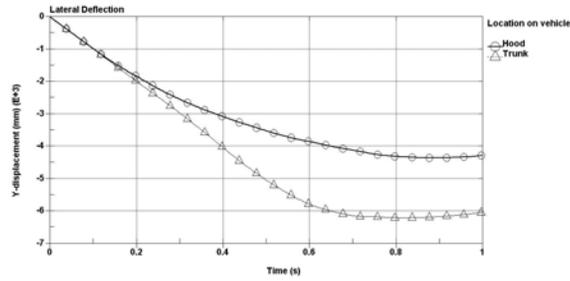


a.

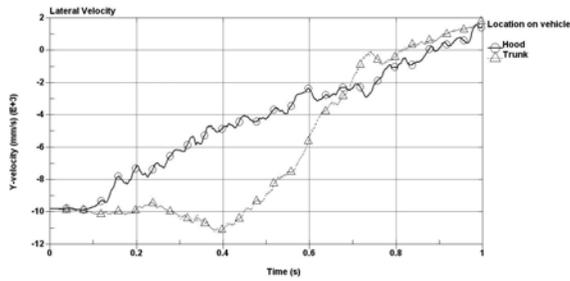
b.

Fig. B.147: Traversal displacements and velocity of Ford F250 in back-side impact at 40° and 55 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



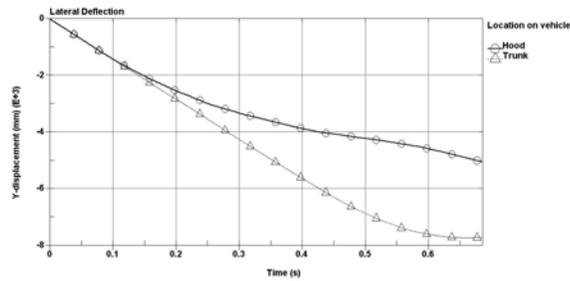
a.



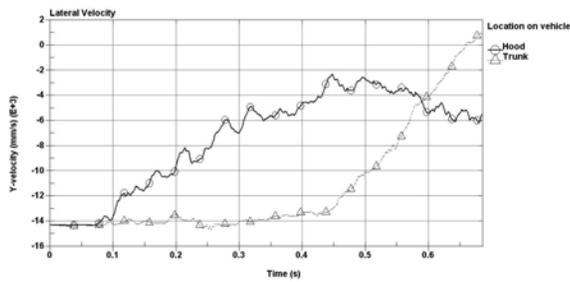
b.

Fig. B.148: Traversal displacements and velocity of Ford F250 in back-side impact at 20° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



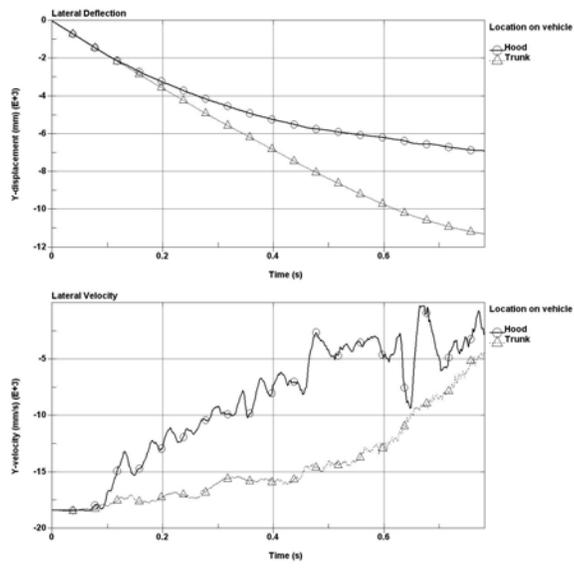
a.



b.

Fig. B.149: Traversal displacements and velocity of Ford F250 in back-side impact at 30° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

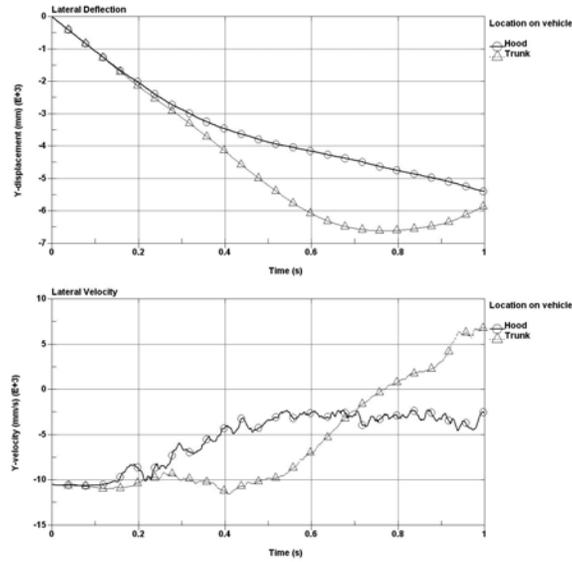


a.

b.

Fig. B.150: Traversal displacements and velocity of Ford F250 in back-side impact at 40° and 65 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

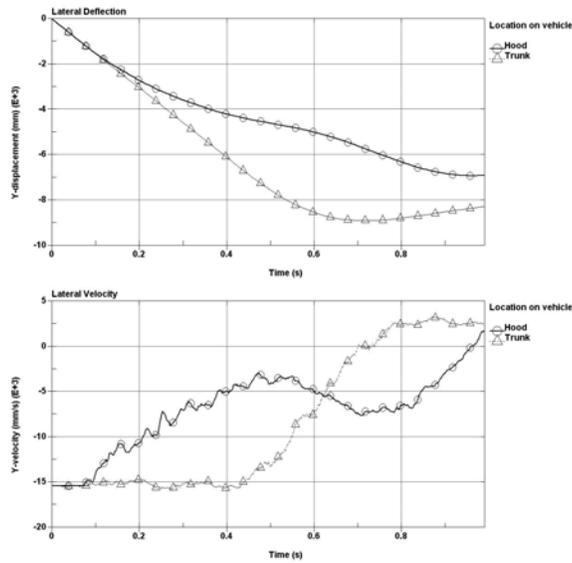


a.

b.

Fig. B.151: Traversal displacements and velocity of Ford F250 in back-side impact at 20° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

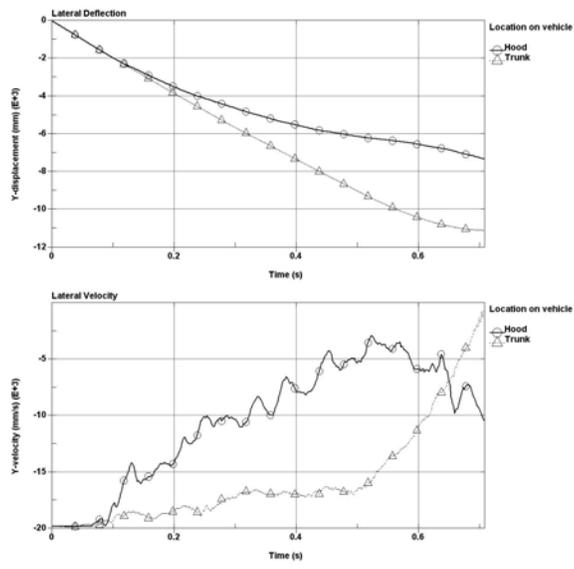


a.

b.

Fig. B.152: Traversal displacements and velocity of Ford F250 in back-side impact at 30° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

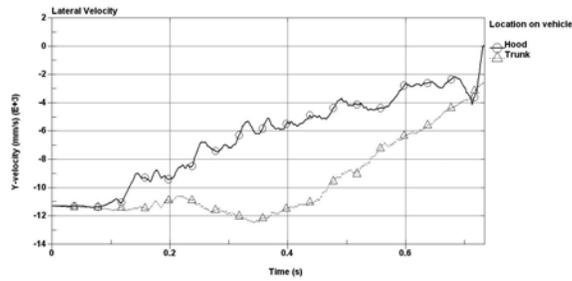
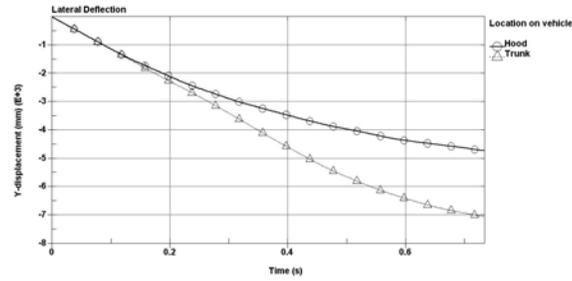


a.

b.

Fig. B.153: Traversal displacements and velocity of Ford F250 in back-side impact at 40° and 70 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

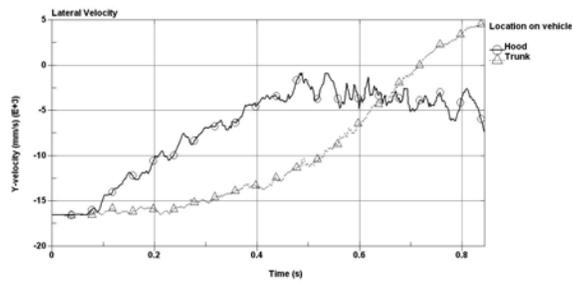
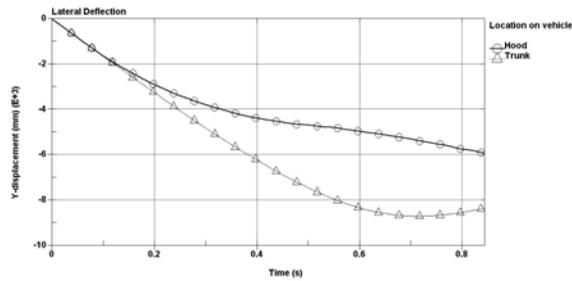


a.

b.

Fig. B.154: Traversal displacements and velocity of Ford F250 in back-side impact at 20° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

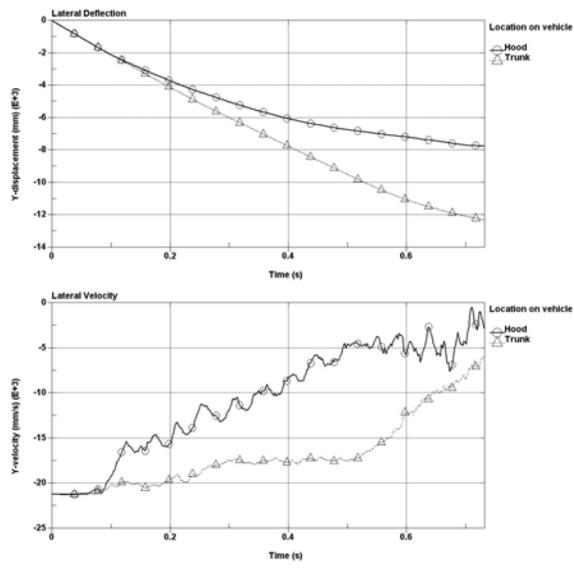


a.

b.

Fig. B.155: Traversal displacements and velocity of Ford F250 in back-side impact at 30° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

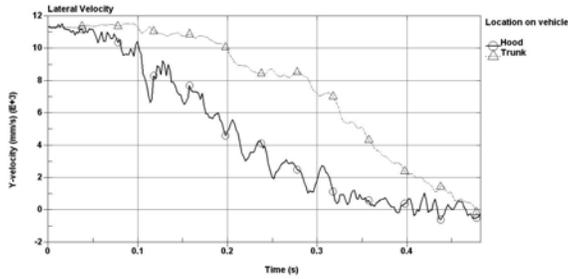
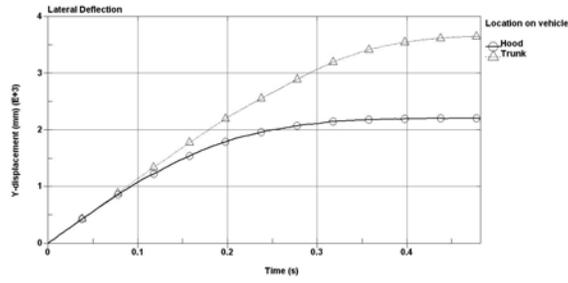


a.

b.

Fig. B.156: Traversal displacements and velocity of Ford F250 in back-side impact at 40° and 75 mph for the sixth design of Retrofit Option 1.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

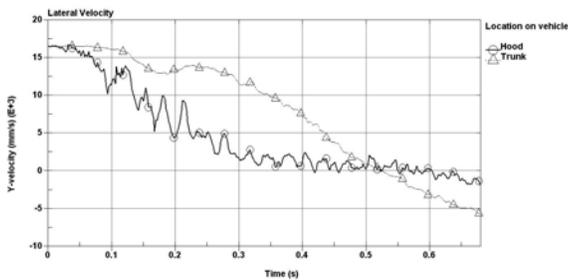
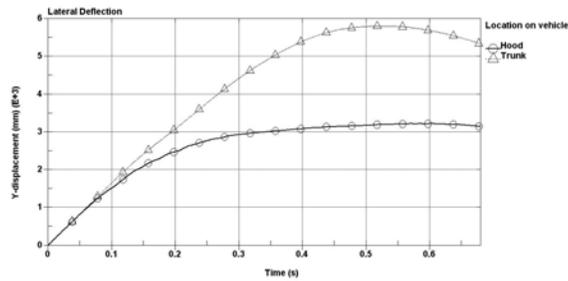


a.

b.

Fig. B.157: Traversal displacements and velocity of Dodge Neon in front-side impact at 20° and 75 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

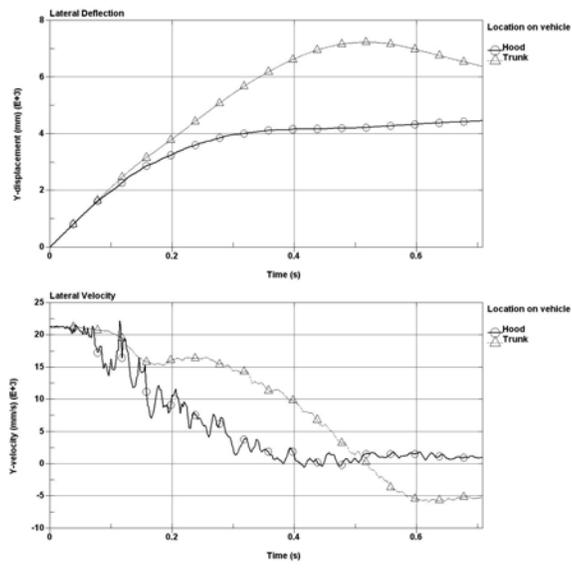


a.

b.

Fig. B.158: Traversal displacements and velocity of Dodge Neon in front-side impact at 30° and 75 mph for the first design of Retrofit Option 2.

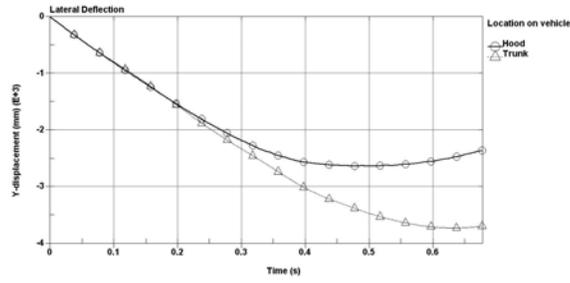
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



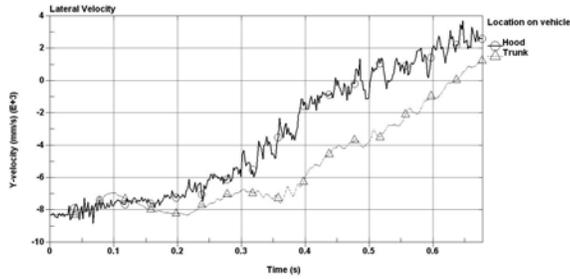
a.

b.

Fig. B.159: Traversal displacements and velocity of Dodge Neon in front-side impact at 40° and 75 mph for the first design of Retrofit Option 2.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



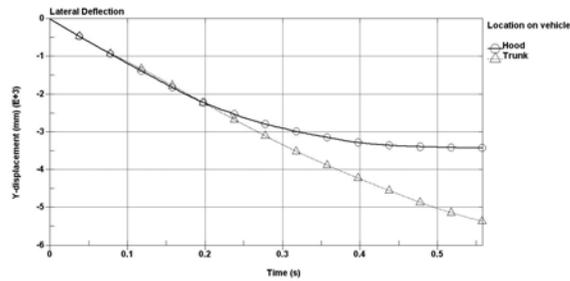
a.



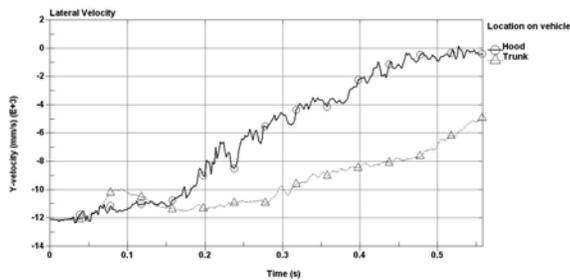
b.

Fig. B.160: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



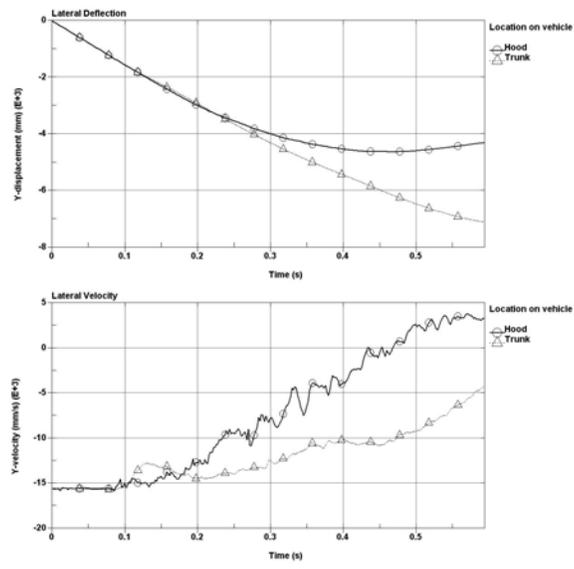
a.



b.

Fig. B.161: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

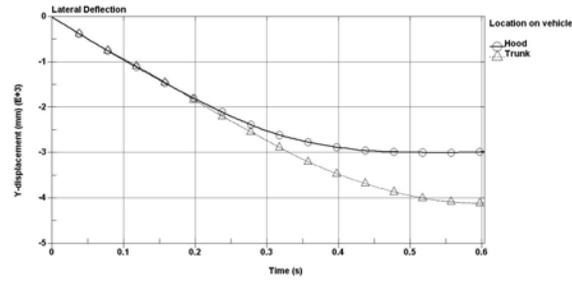


a.

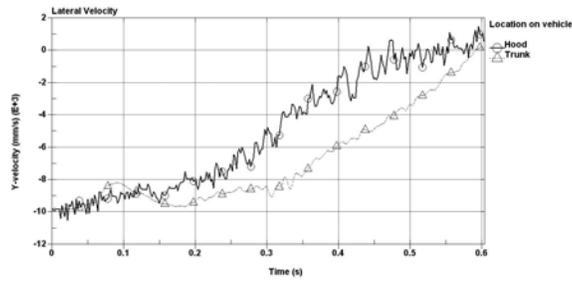
b.

Fig. B.162: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



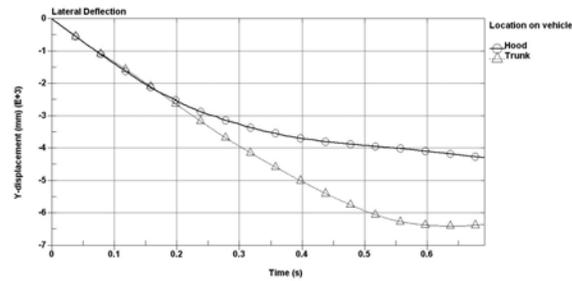
a.



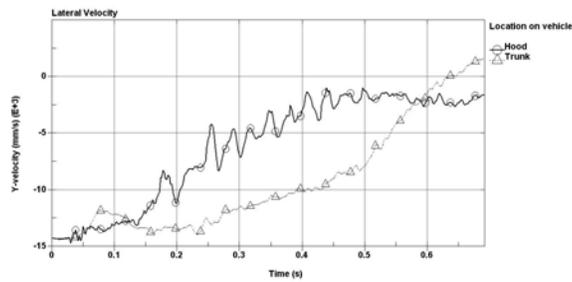
b.

Fig. B.163: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



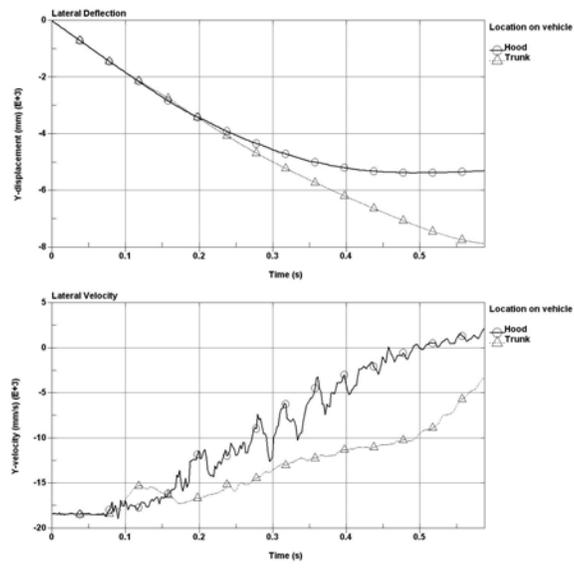
a.



b.

Fig. B.164: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

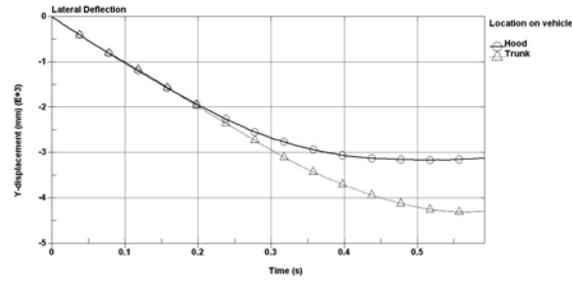


a.

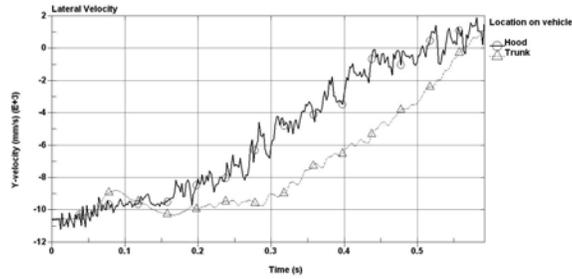
b.

Fig. B.165: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



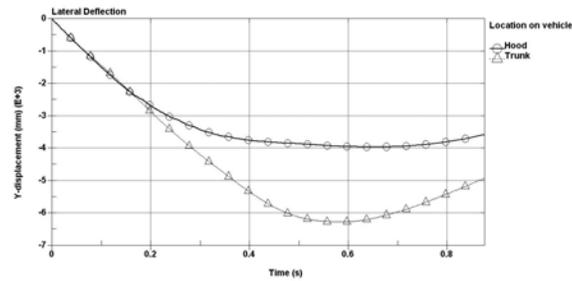
a.



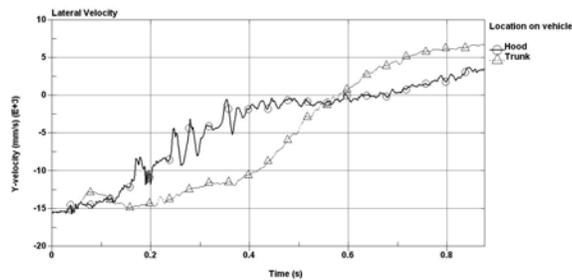
b.

Fig. B.166: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



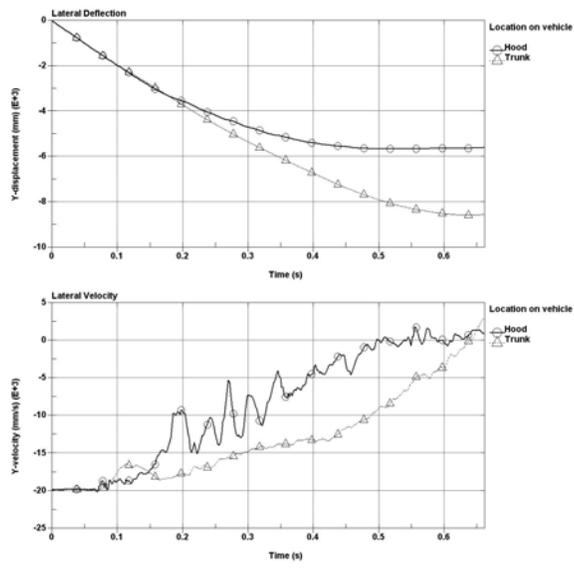
a.



b.

Fig. B.167: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the first design of Retrofit Option 2.

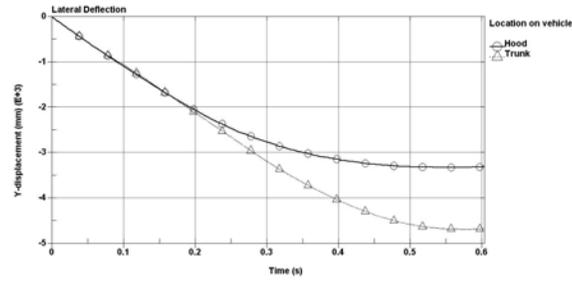
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



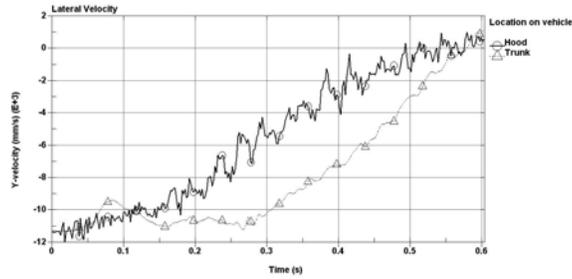
a.

b.

Fig. B.168: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the first design of Retrofit Option 2.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



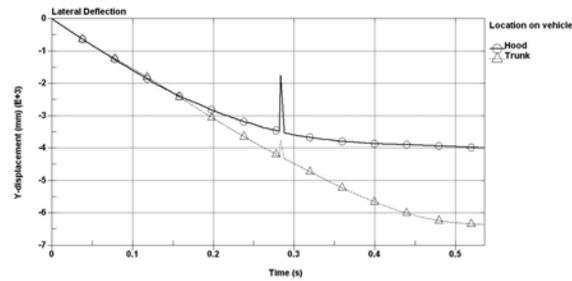
a.



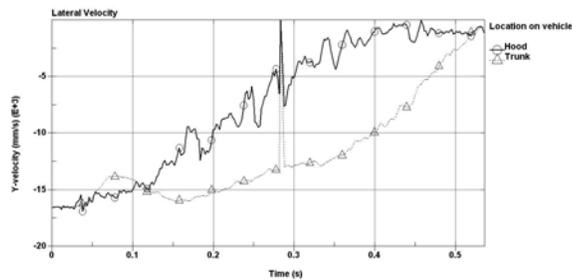
b.

Fig. B.169: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



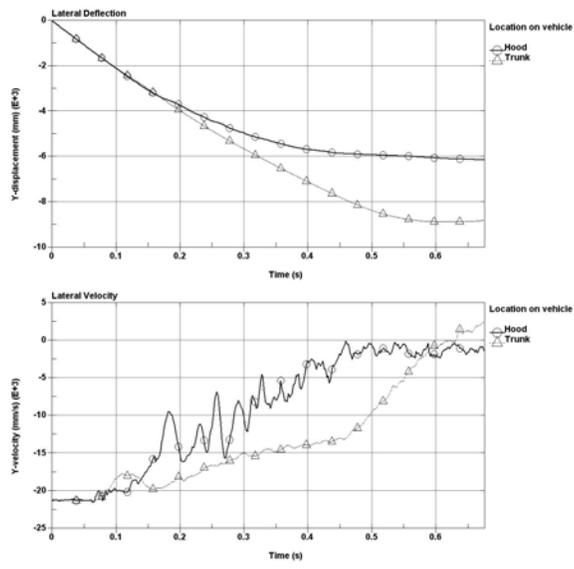
a.



b.

Fig. B.170: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

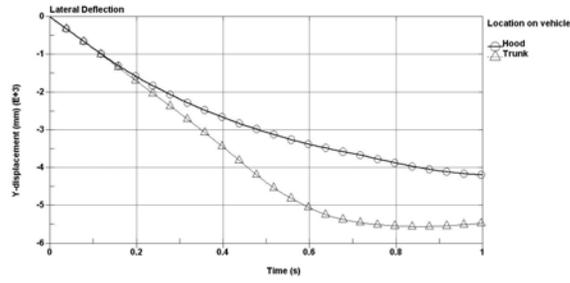


a.

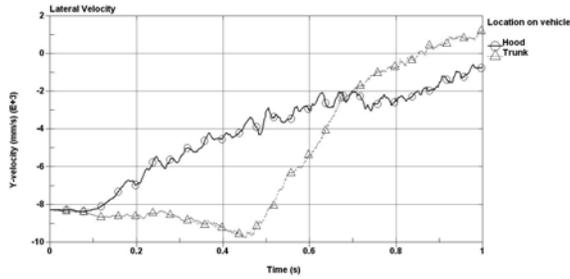
b.

Fig. B.171: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



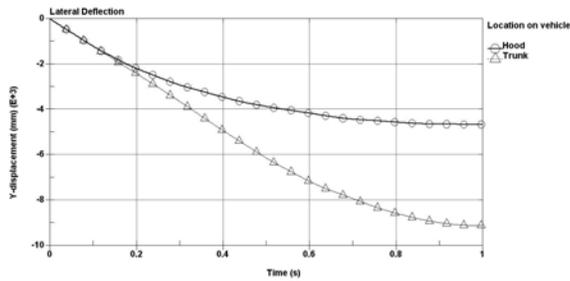
a.



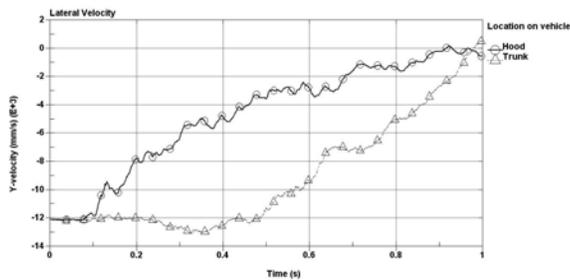
b.

Fig. B.172: Traversal displacements and velocity of Ford F250 in back-side impact at 20° and 55 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



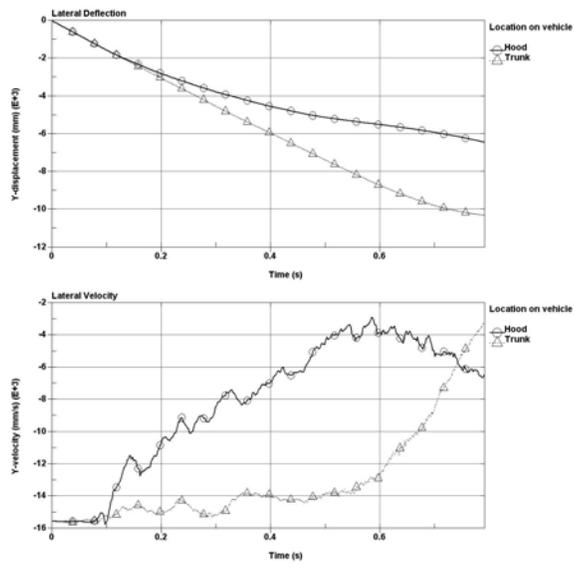
a.



b.

Fig. B.173: Traversal displacements and velocity of Ford F250 in back-side impact at 30° and 55 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

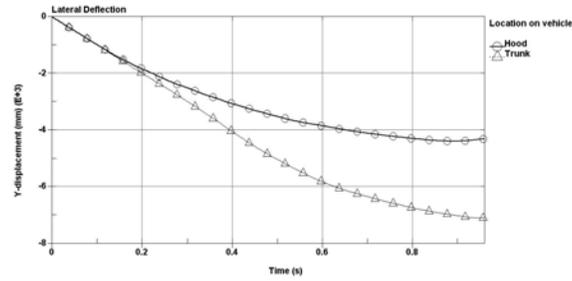


a.

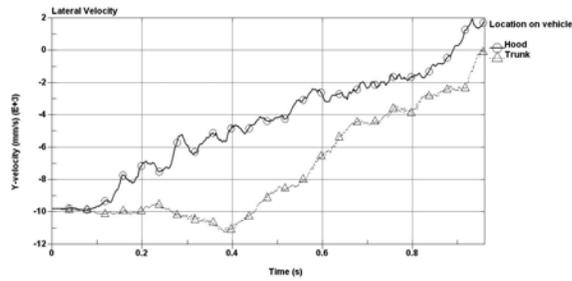
b.

Fig. B.174: Traversal displacements and velocity of Ford F250 in back-side impact at 40° and 55 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



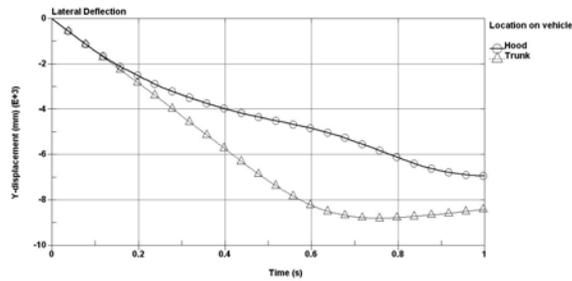
a.



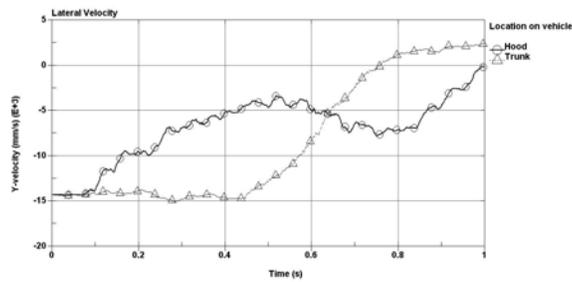
b.

Fig. B.175: Traversal displacements and velocity of Ford F250 in back-side impact at 20° and 65 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



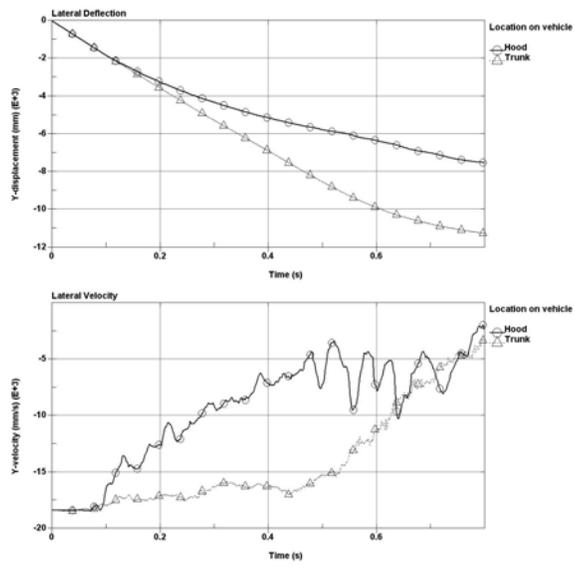
a.



b.

Fig. B.176: Traversal displacements and velocity of Ford F250 in back-side impact at 30° and 65 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

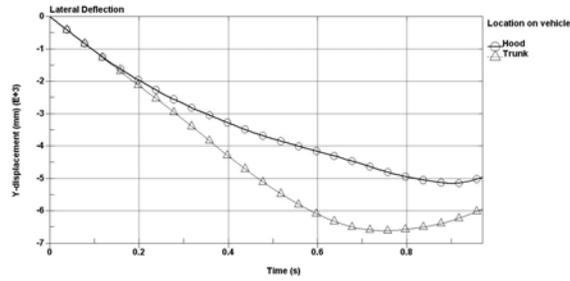


a.

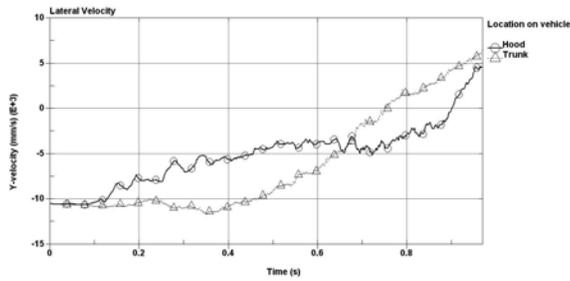
b.

Fig. B.177: Traversal displacements and velocity of Ford F250 in back-side impact at 40° and 65 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



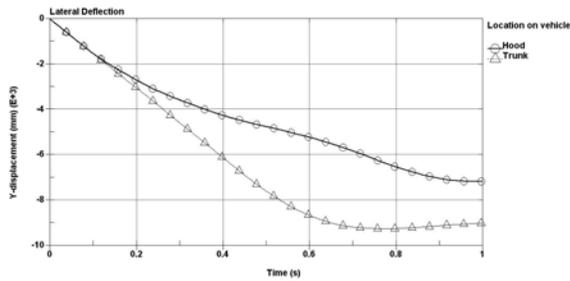
a.



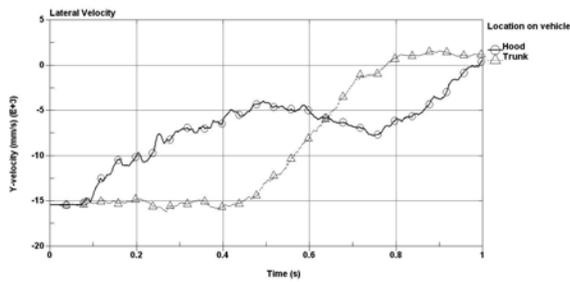
b.

Fig. B.178: Traversal displacements and velocity of Ford F250 in back-side impact at 20° and 70 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



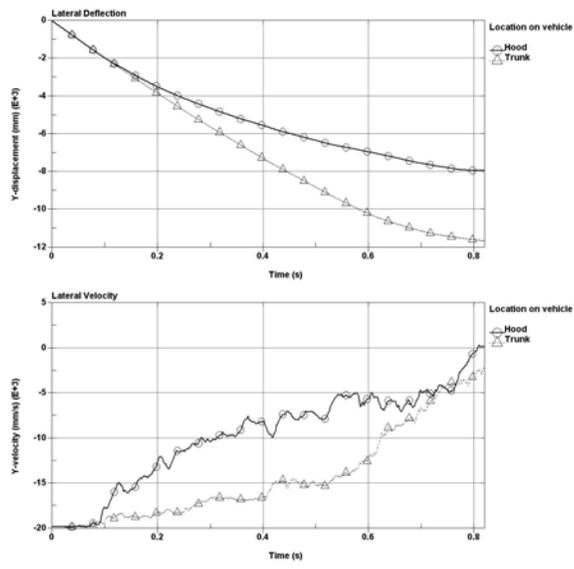
a.



b.

Fig. B.179: Traversal displacements and velocity of Ford F250 in back-side impact at 30° and 70 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

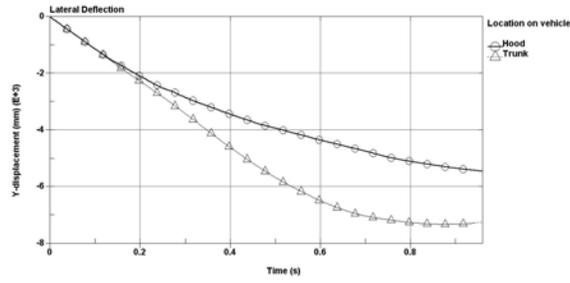


a.

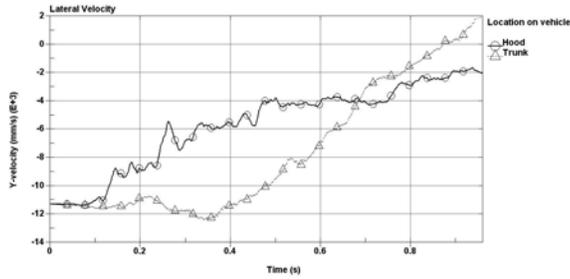
b.

Fig. B.180: Traversal displacements and velocity of Ford F250 in back-side impact at 40° and 70 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



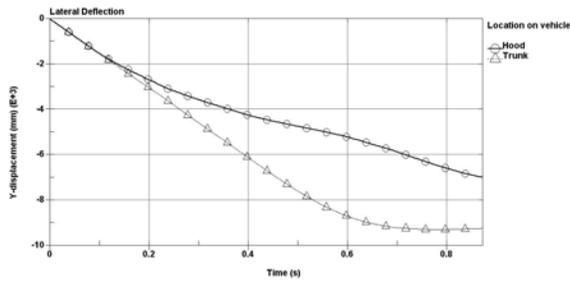
a.



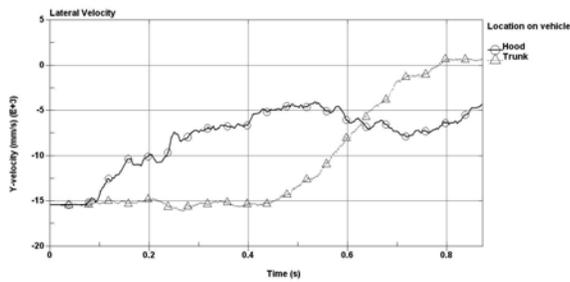
b.

Fig. B.181: Traversal displacements and velocity of Ford F250 in back-side impact at 20° and 75 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



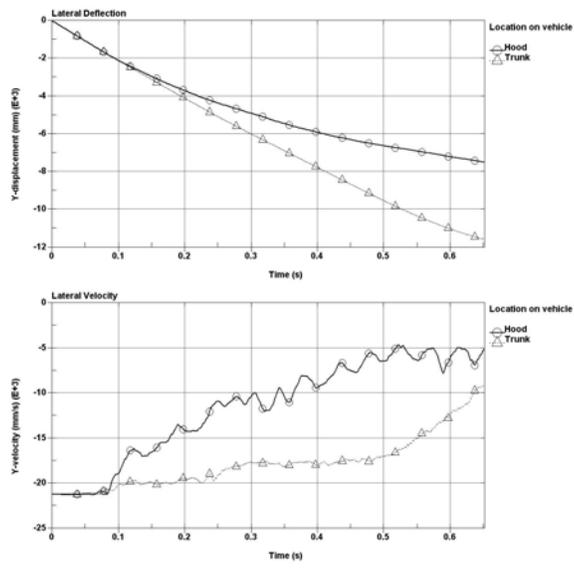
a.



b.

Fig. B.182: Traversal displacements and velocity of Ford F250 in back-side impact at 30° and 75 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)

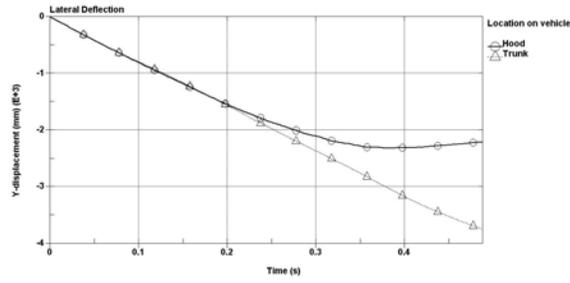


a.

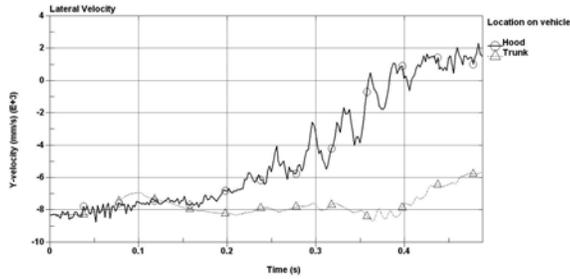
b.

Fig. B.183: Traversal displacements and velocity of Ford F250 in back-side impact at 40° and 75 mph for the first design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



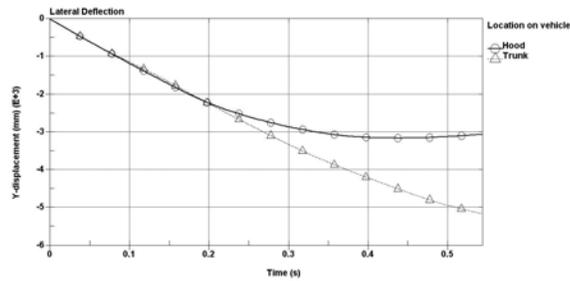
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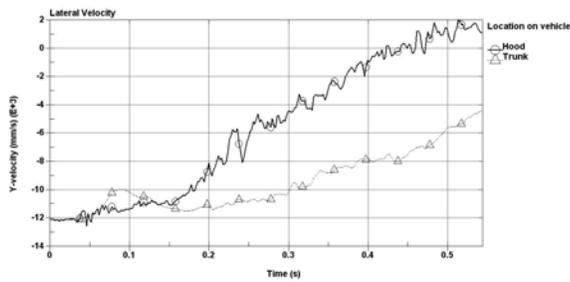
b.

Fig. B.184: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 55 mph for the second design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



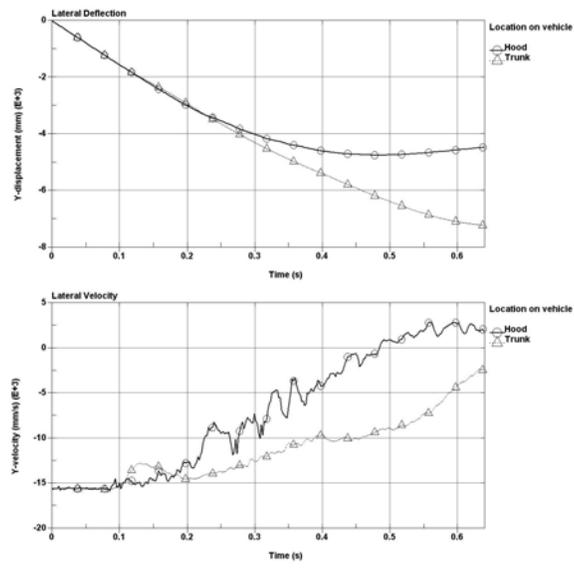
a.



b.

Fig. B.185: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 55 mph for the second design of Retrofit Option 2.

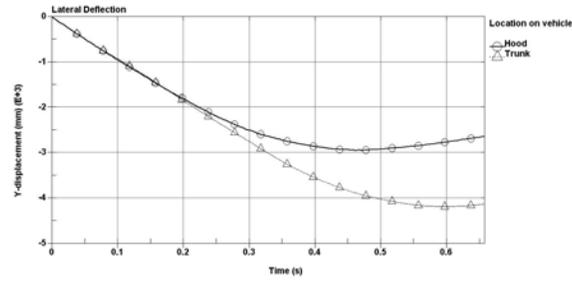
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



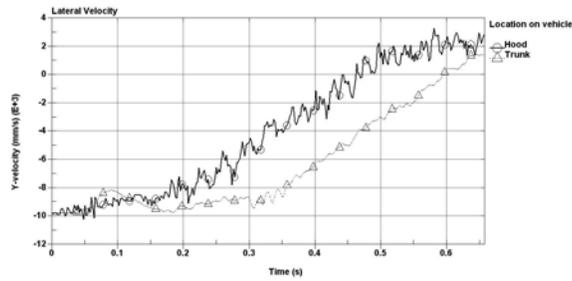
a.

b.

Fig. B.186: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 55 mph for the second design of Retrofit Option 2.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



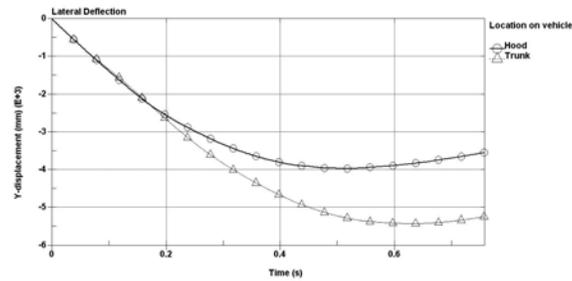
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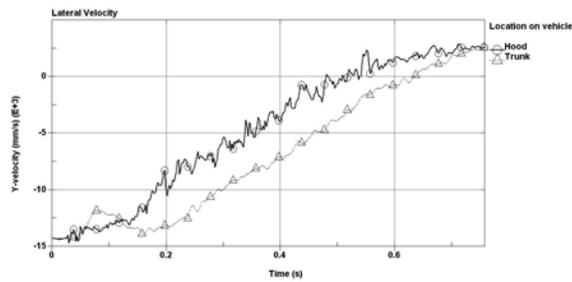
b.

Fig. B.187: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 65 mph for the second design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



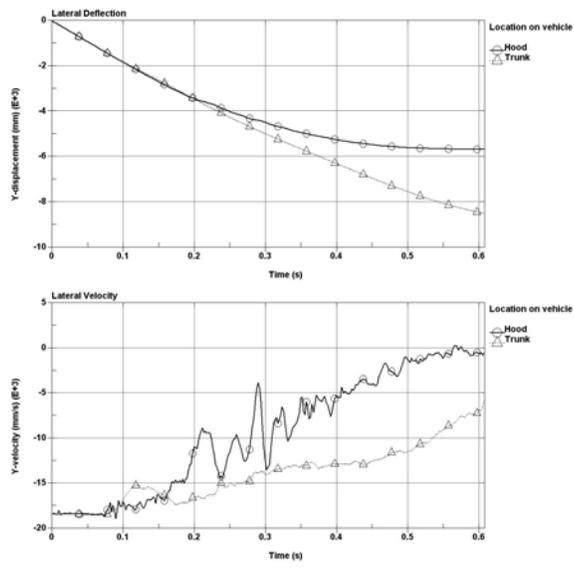
a.



b.

Fig. B.188: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 65 mph for the second design of Retrofit Option 2.

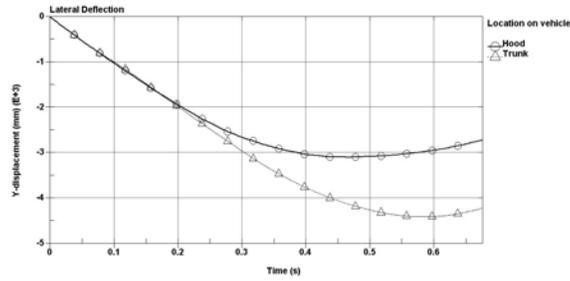
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



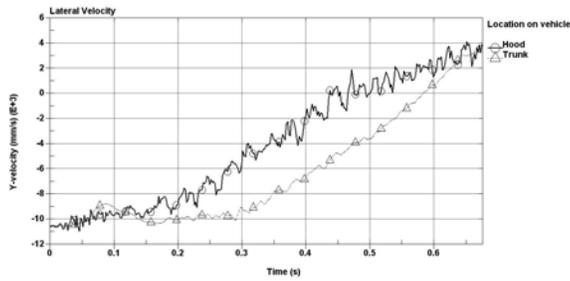
a.

b.

Fig. B.189: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 65 mph for the second design of Retrofit Option 2.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



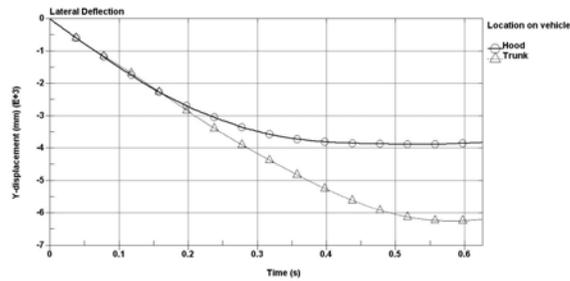
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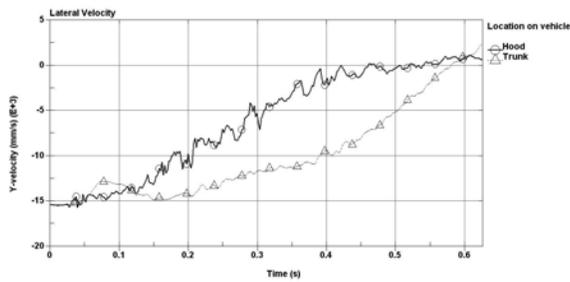
b.

Fig. B.190: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 70 mph for the second design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



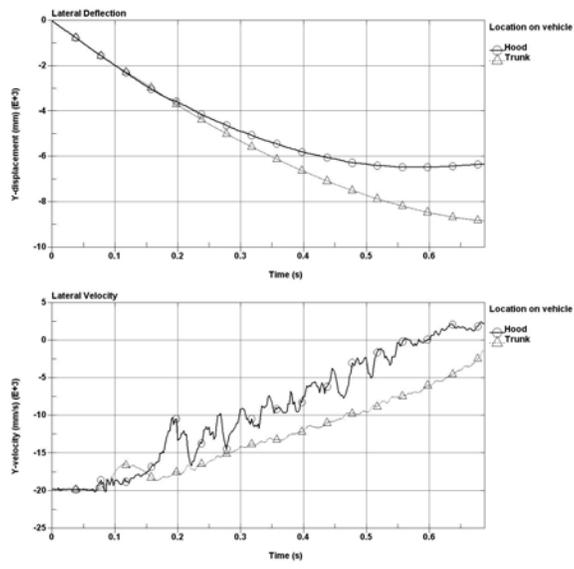
a.



b.

Fig. B.191: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 70 mph for the second design of Retrofit Option 2.

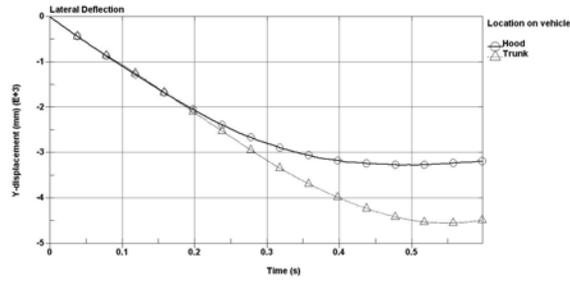
a. Traversal displacement (mm); and b. traversal velocity (mm/s)



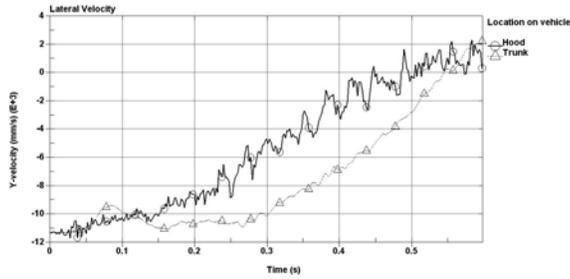
a.

b.

Fig. B.192: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 70 mph for the second design of Retrofit Option 2.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)



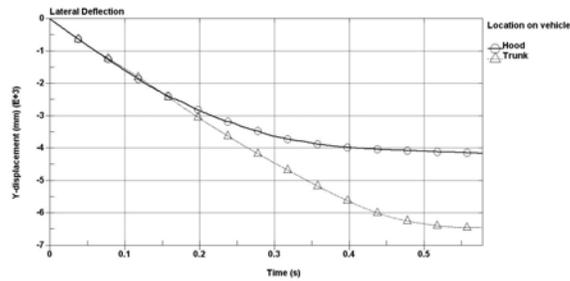
a.



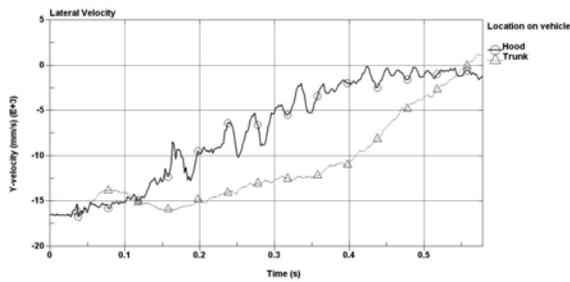
b.

Fig. B.193: Traversal displacements and velocity of Dodge Neon in back-side impact at 20° and 75 mph for the second design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



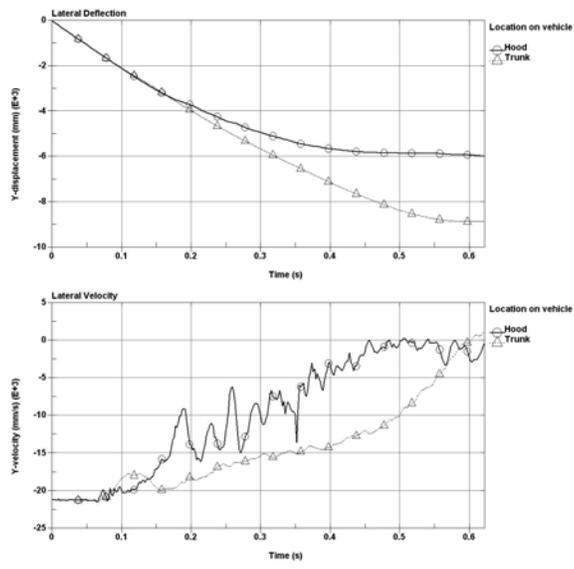
a.



b.

Fig. B.194: Traversal displacements and velocity of Dodge Neon in back-side impact at 30° and 75 mph for the second design of Retrofit Option 2.

a. Traversal displacement (mm); and b. traversal velocity (mm/s)



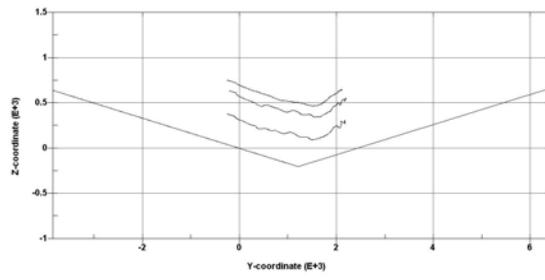
a.

b.

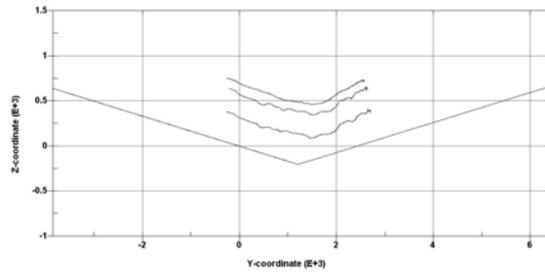
Fig. B.195: Traversal displacements and velocity of Dodge Neon in back-side impact at 40° and 75 mph for the second design of Retrofit Option 2.  
 a. Traversal displacement (mm); and b. traversal velocity (mm/s)

## **APPENDIX C. TRACES OF VEHICLE FRONTAL NODES IN IMPACT SIMULATIONS**

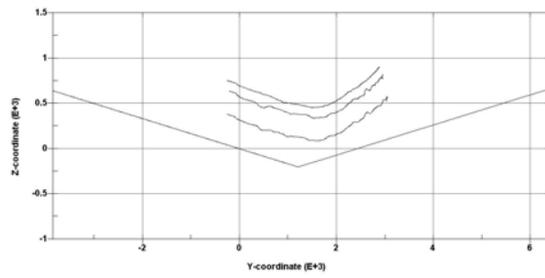
This appendix presents traces of three vehicle frontal nodes; the nodes are located at the bottom of the bumper, the top of the bumper, and the top of the front corner of the fender.



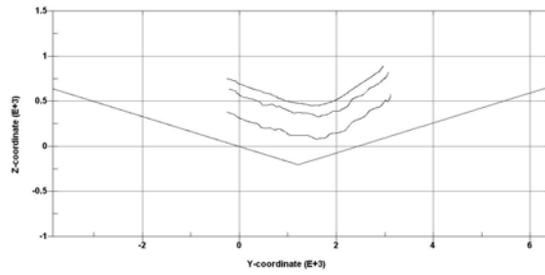
a.



b.

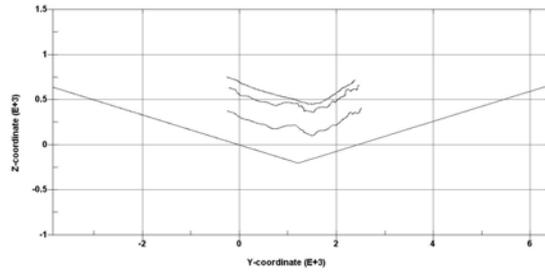


c.

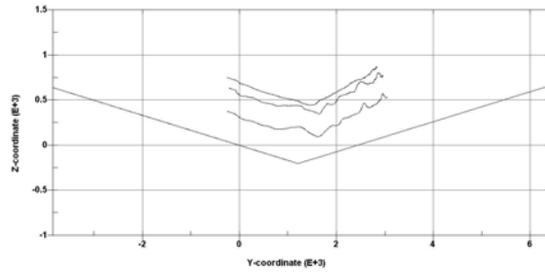


d.

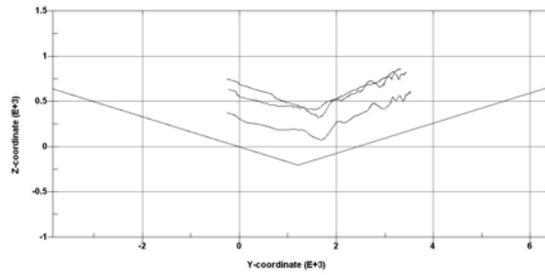
Fig. C.1: Bumper heights in front-side impacts by Dodge Neon at 20° for the current design.  
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



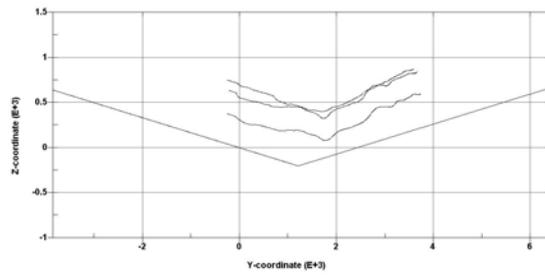
a.



b.

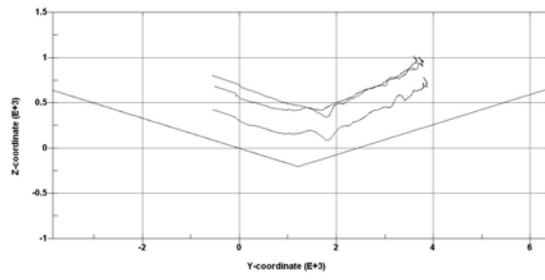


c.

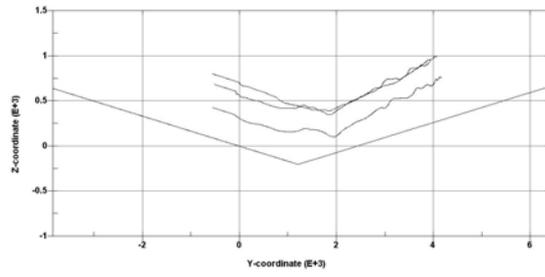


d.

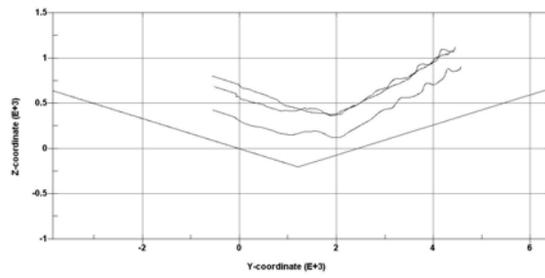
Fig. C.2: Bumper heights in front-side impacts by Dodge Neon at 30° for the current design.  
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



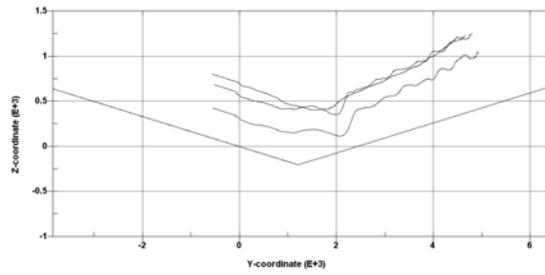
a.



b.

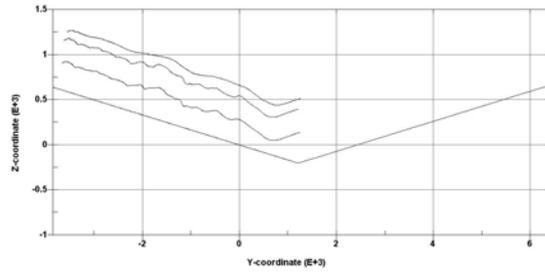


c.

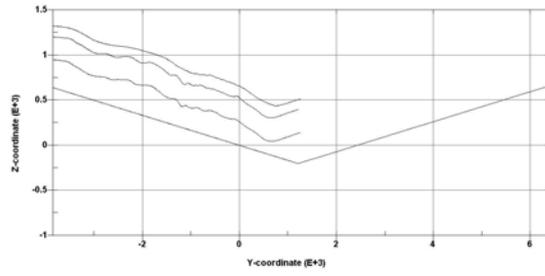


d.

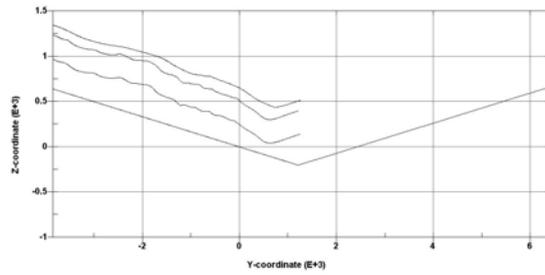
Fig. C.3: Bumper heights in front-side impacts by Dodge Neon at 40° for the current design.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



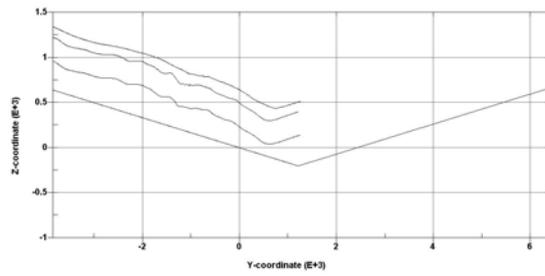
a.



b.

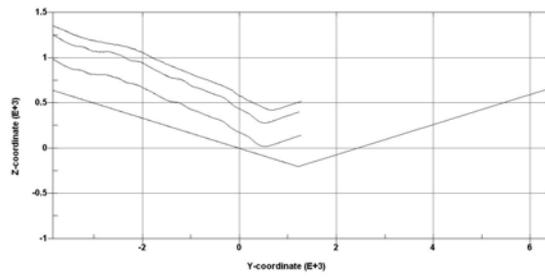


c.

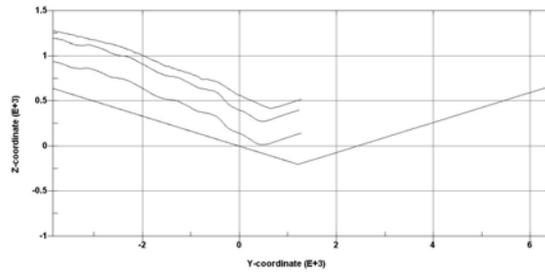


d.

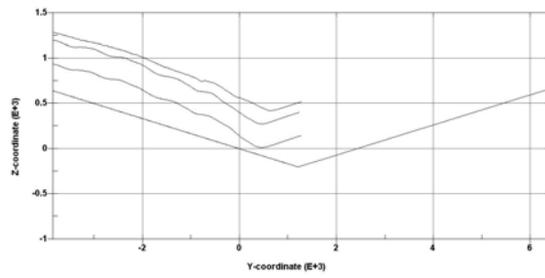
Fig. C.4: Bumper heights in back-side impacts by Dodge Neon at 20° for the current design.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



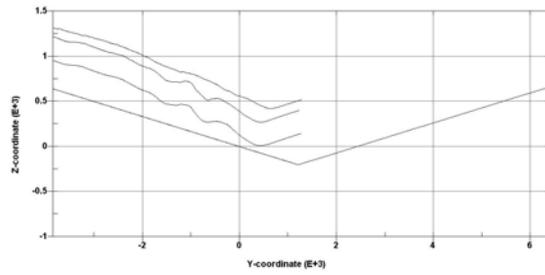
a.



b.

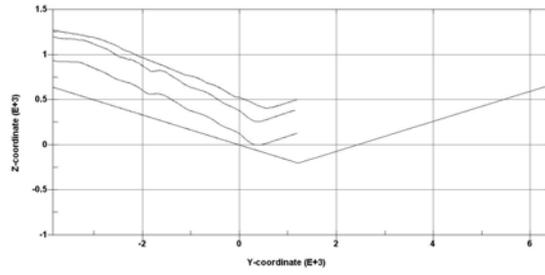


c.

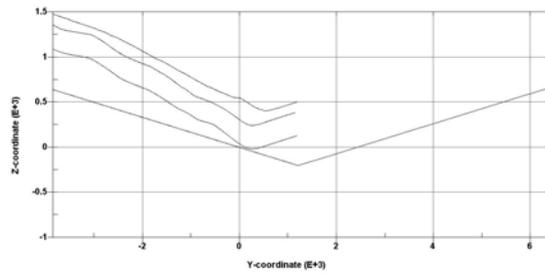


d.

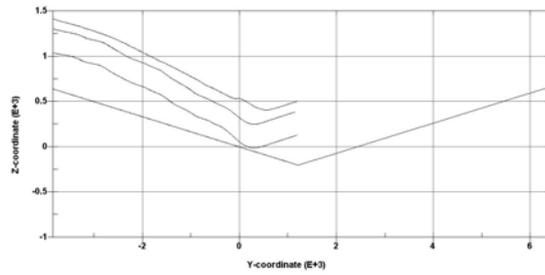
Fig. C.5: Bumper heights in back-side impacts by Dodge Neon at 30° for the current design.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



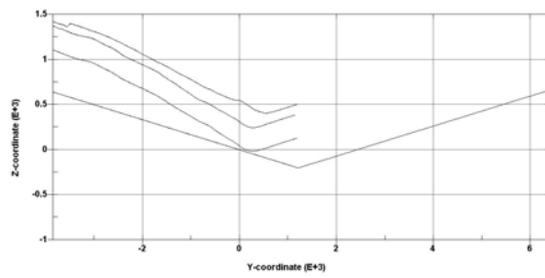
a.



b.

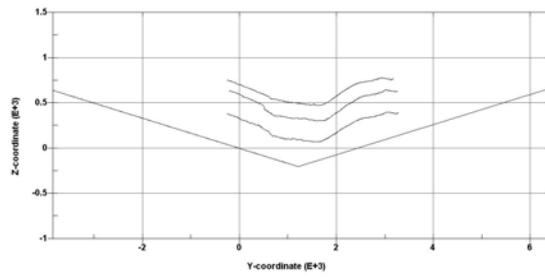


c.

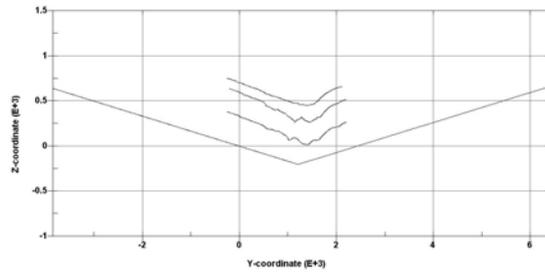


d.

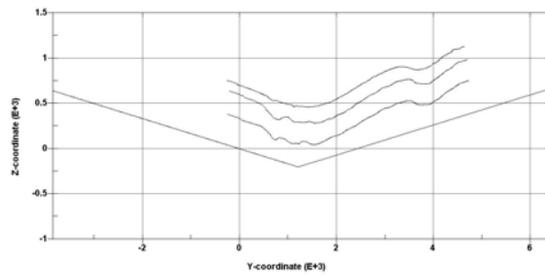
Fig. C.6: Bumper heights in back-side impacts by Dodge Neon at 40° for the current design.  
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



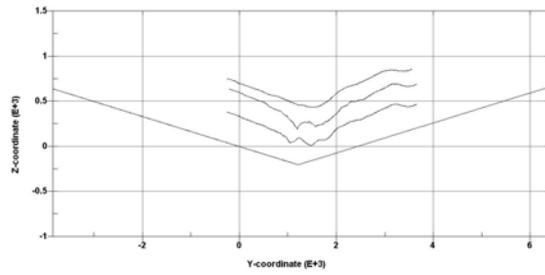
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b.

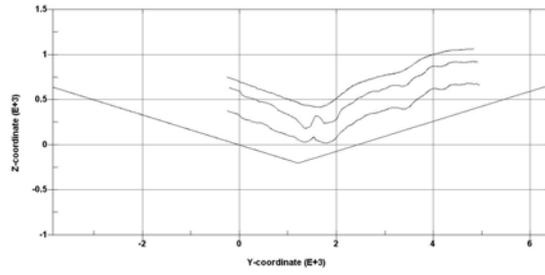


c.

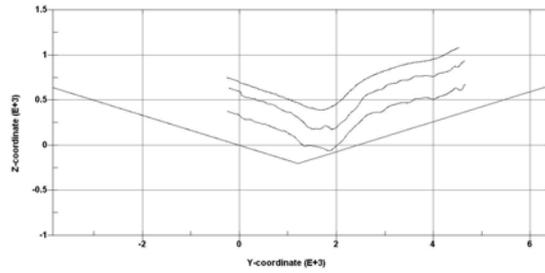


d.

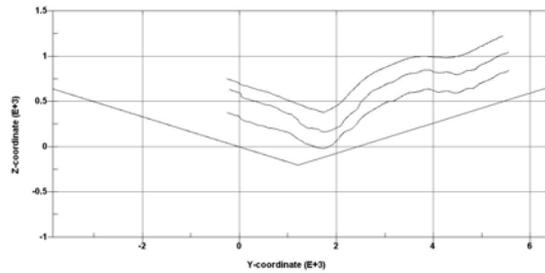
Fig. C.7: Bumper heights in front-side impacts by Dodge Neon at 20° for the 1<sup>st</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



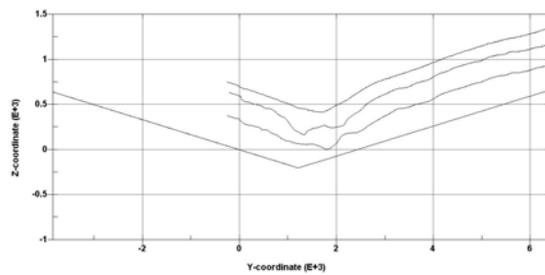
a.



b.



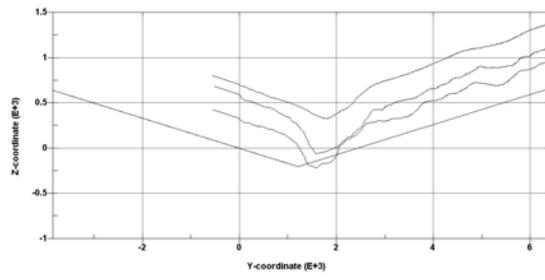
c.



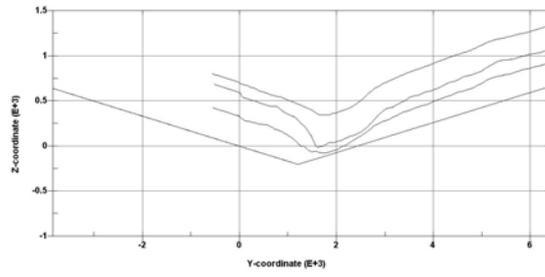
d.

Fig. C.8: Bumper heights in front-side impacts by Dodge Neon at 30° for the 1<sup>st</sup> design of Retrofit Option 1.

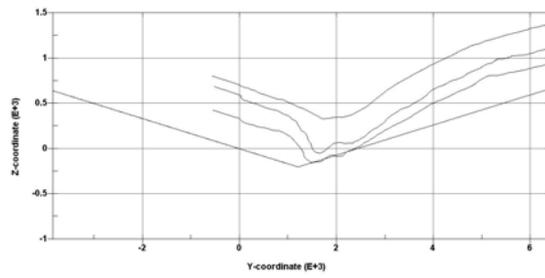
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



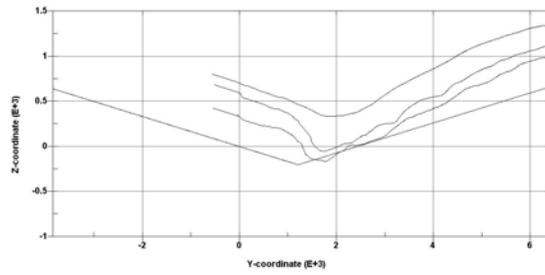
a.



b.

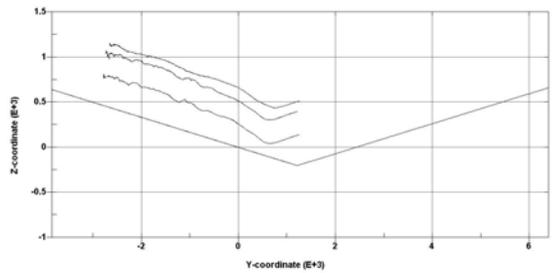
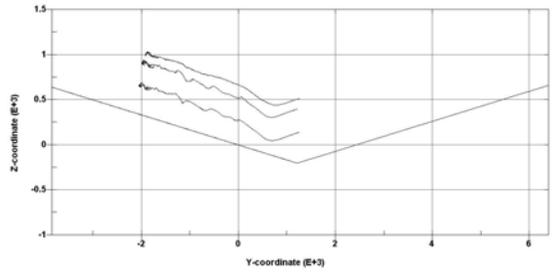


c.



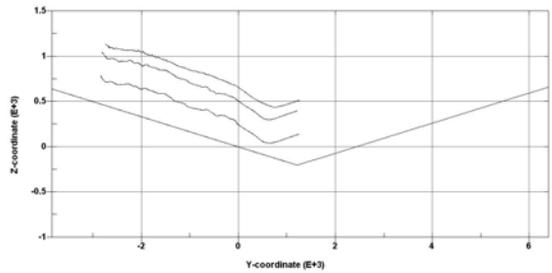
d.

Fig. C.9: Bumper heights in front-side impacts by Dodge Neon at 40° for the 1<sup>st</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



a.

b.



c.

d.

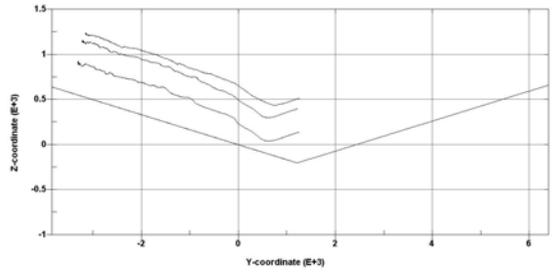
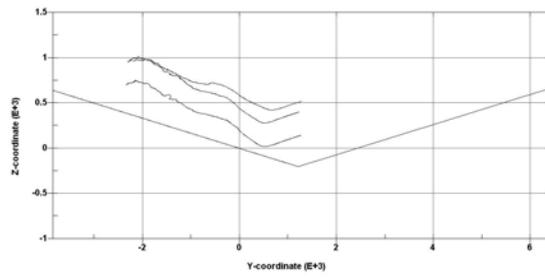
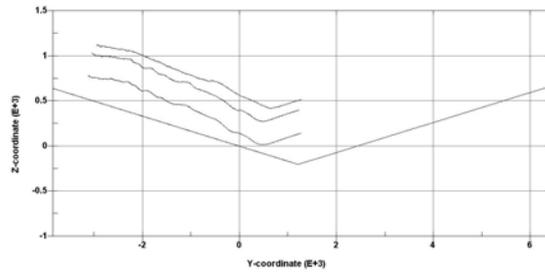


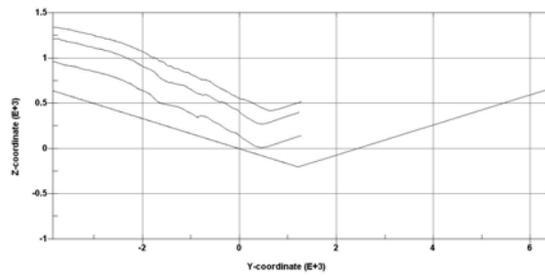
Fig. C.10: Bumper heights in back-side impacts by Dodge Neon at 20° for the 1<sup>st</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



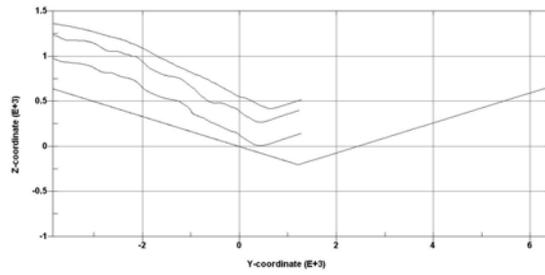
a.



b.

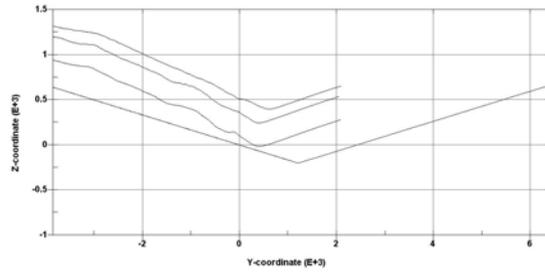


c.

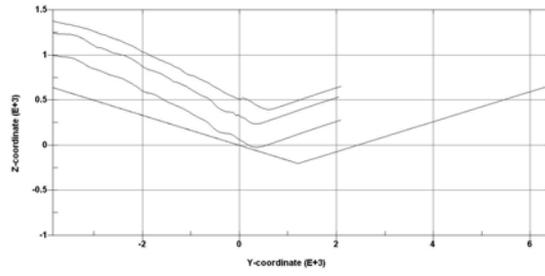


d.

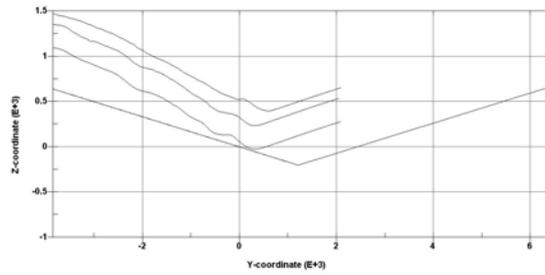
Fig. C.11: Bumper heights in back-side impacts by Dodge Neon at 30° for the 1<sup>st</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



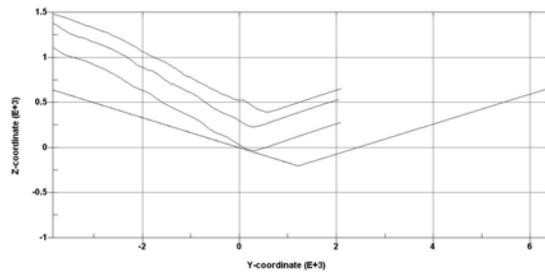
a.



b.

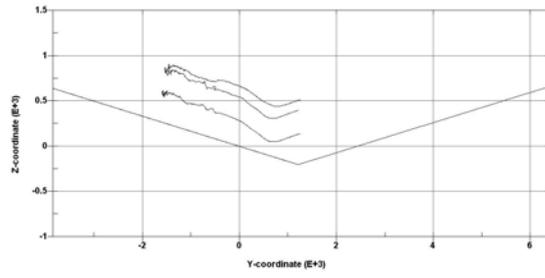


c.

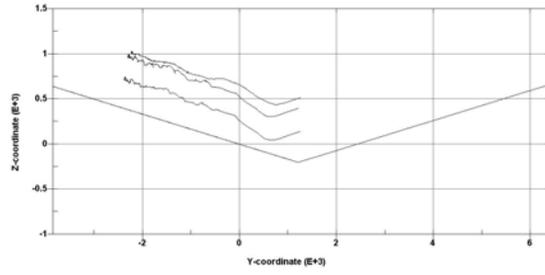


d.

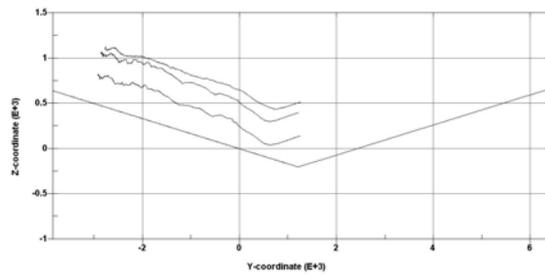
Fig. C.12: Bumper heights in back-side impacts by Dodge Neon at 40° for the 1<sup>st</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



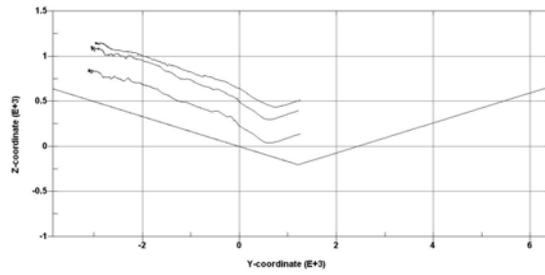
a.



b.

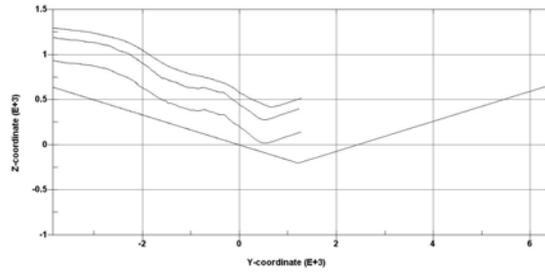


c.

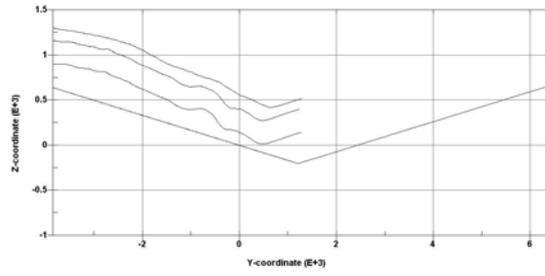


d.

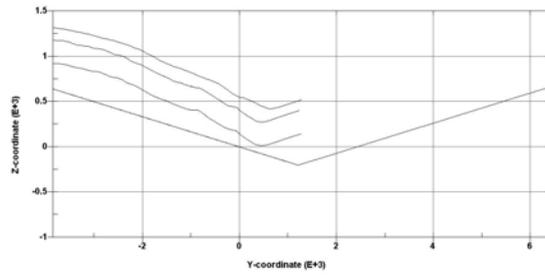
Fig. C.13: Bumper heights in back-side impacts by Dodge Neon at 20° for the 2<sup>nd</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



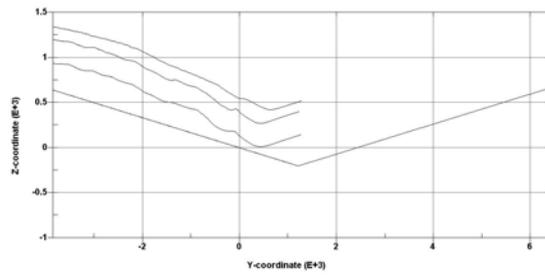
a.



b.

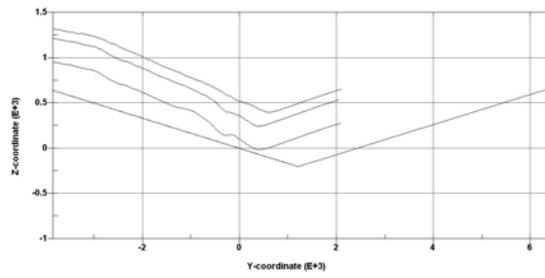


c.

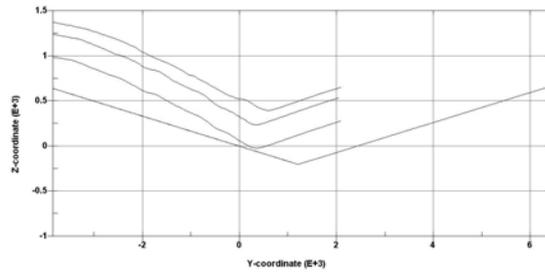


d.

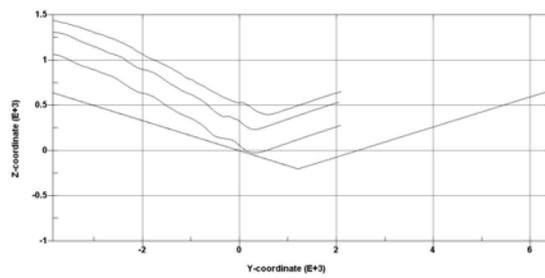
Fig. C.14: Bumper heights in back-side impacts by Dodge Neon at 30° for the 2<sup>nd</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



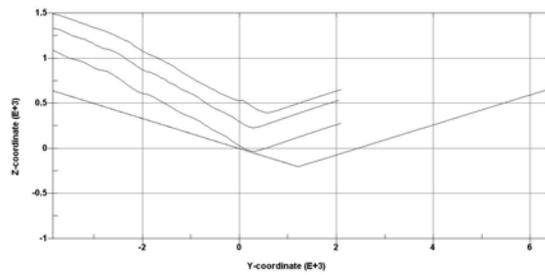
a.



b.

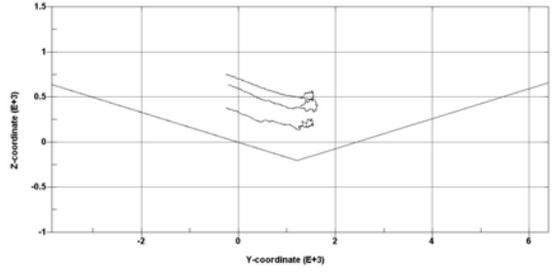
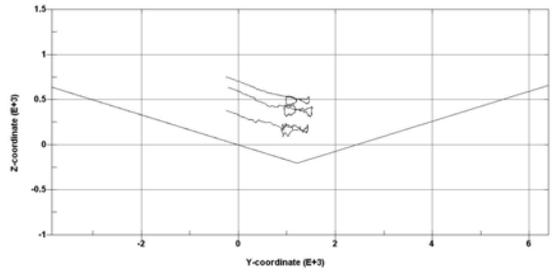


c.



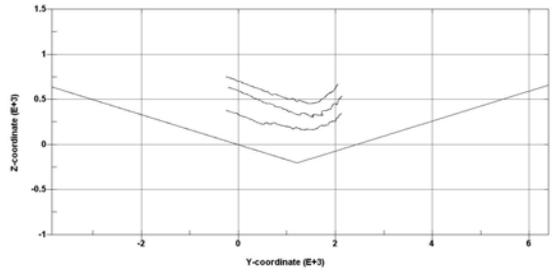
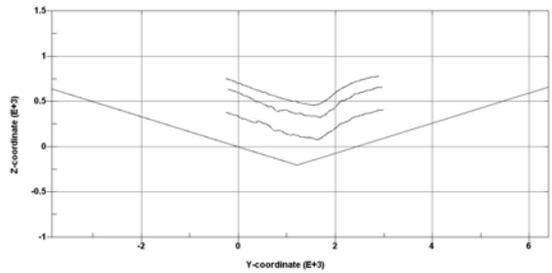
d.

Fig. C.15: Bumper heights in back-side impacts by Dodge Neon at 40° for the 2<sup>nd</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



a.

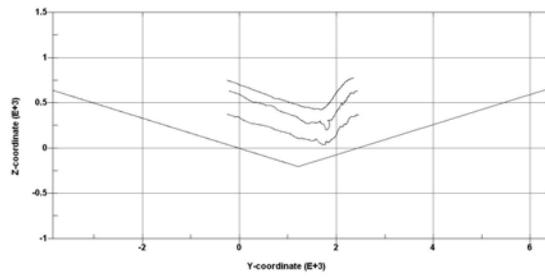
b.



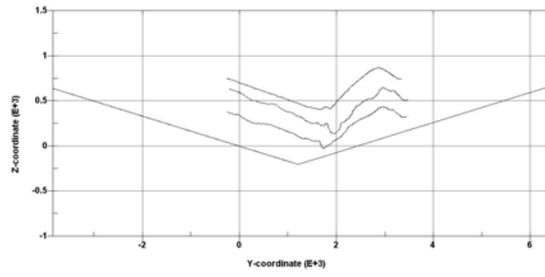
c.

d.

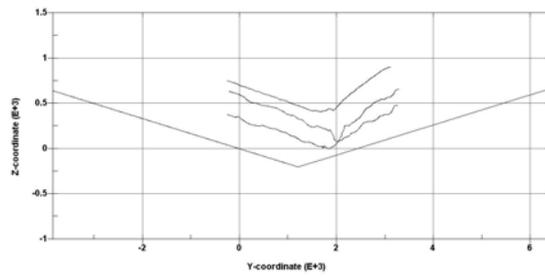
Fig. C.16: Bumper heights in front-side impacts by Dodge Neon at 20° for the 3<sup>rd</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



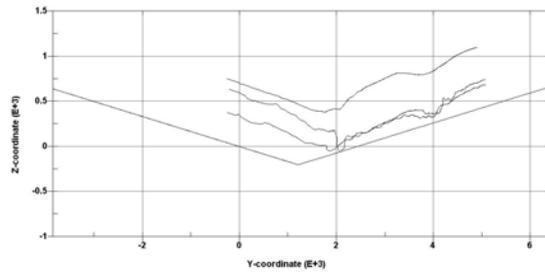
a.



b.

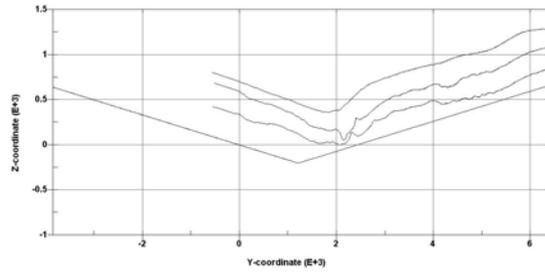


c.

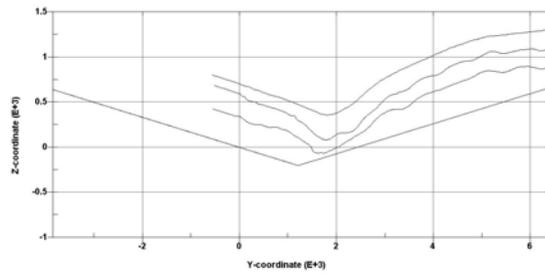


d.

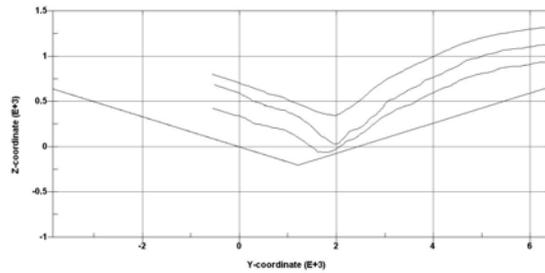
Fig. C.17: Bumper heights in front-side impacts by Dodge Neon at 30° for the 3<sup>rd</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



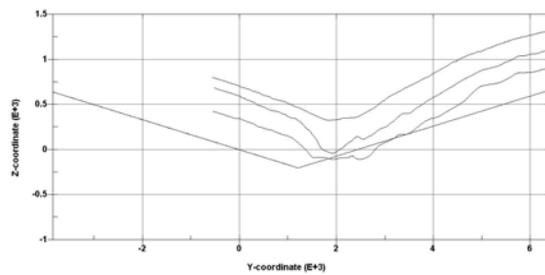
a.



b.

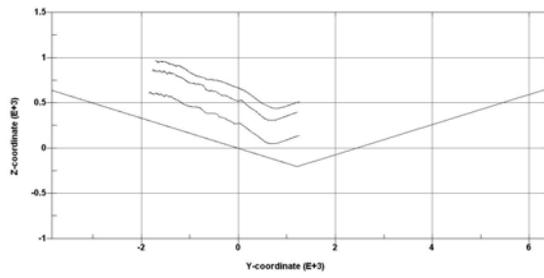


c.

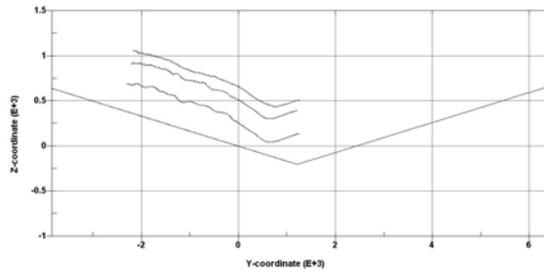


d.

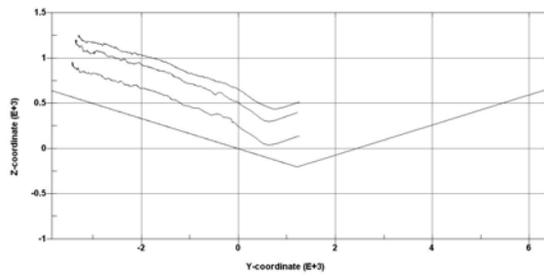
Fig. C.18: Bumper heights in front-side impacts by Dodge Neon at 40° for the 3<sup>rd</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



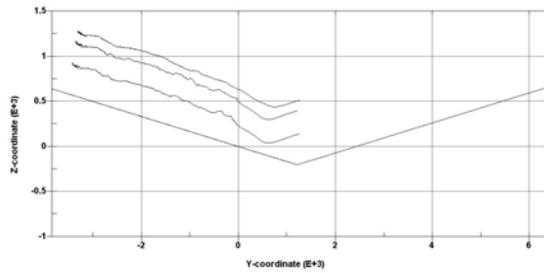
a.



b.

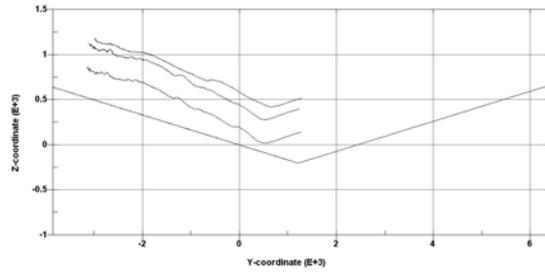


c.

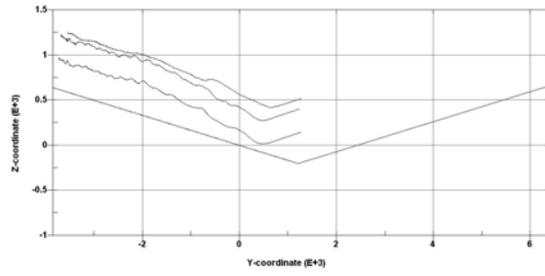


d.

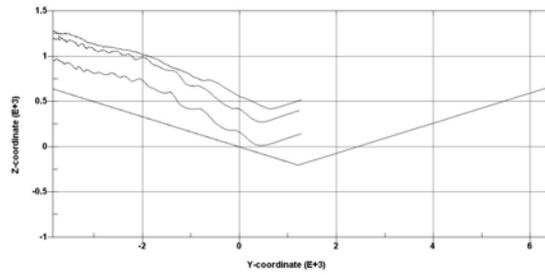
Fig. C.19: Bumper heights in back-side impacts by Dodge Neon at 20° for the 3<sup>rd</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



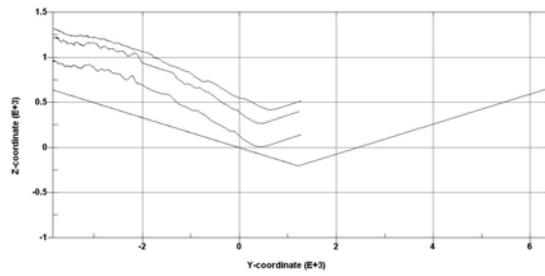
a.



b.



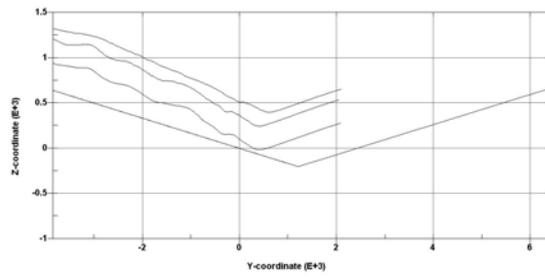
c.



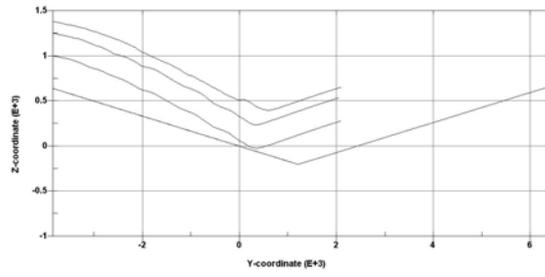
d.

Fig. C.20: Bumper heights in back-side impacts by Dodge Neon at 30° for the 3<sup>rd</sup> design of Retrofit Option 1.

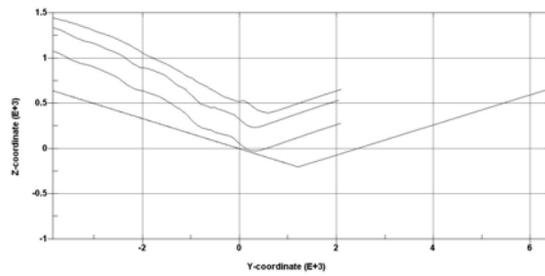
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



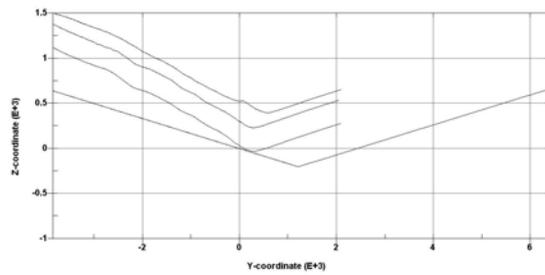
a.



b.

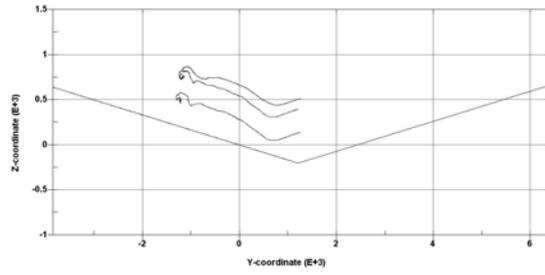


c.

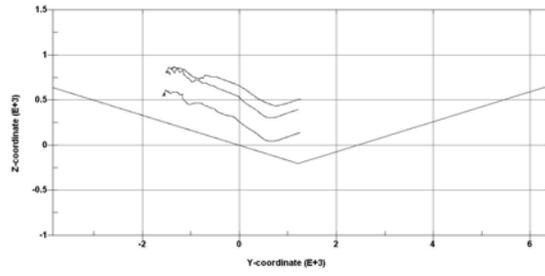


d.

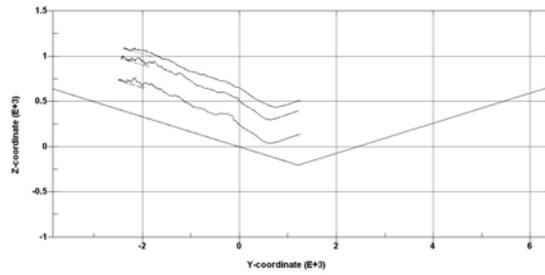
Fig. C.21: Bumper heights in back-side impacts by Dodge Neon at 40° for the 3<sup>rd</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



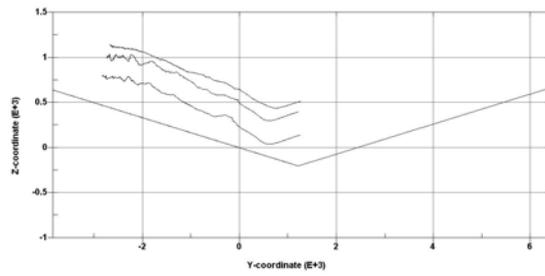
a.



b.



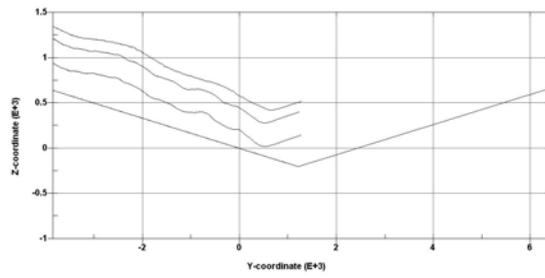
c.



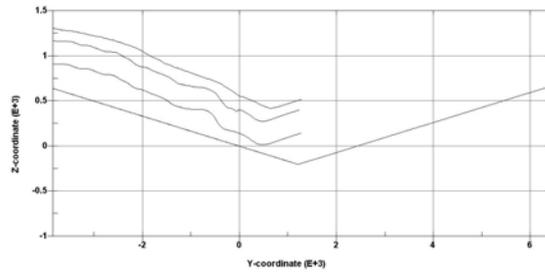
d.

Fig. C.22: Bumper heights in back-side impacts by Dodge Neon at 20° for the 4<sup>th</sup> design of Retrofit Option 1.

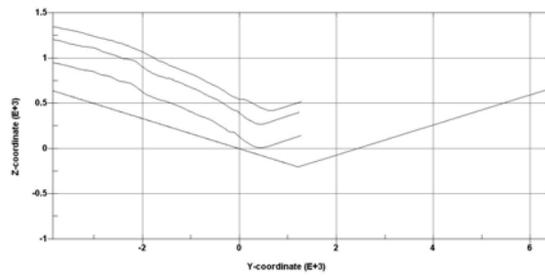
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



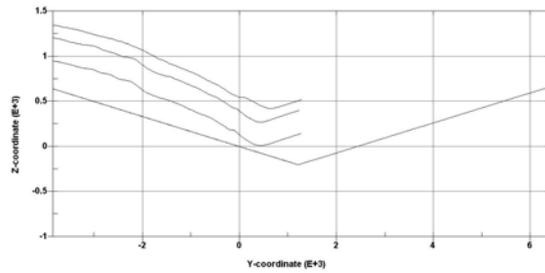
a.



b.

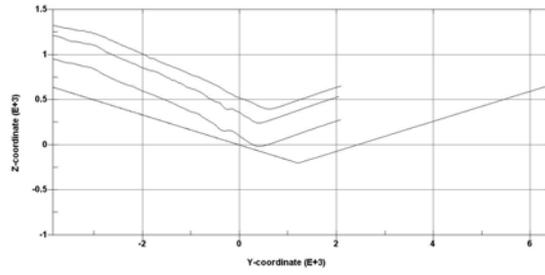


c.

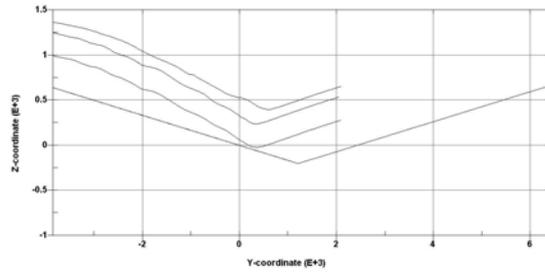


d.

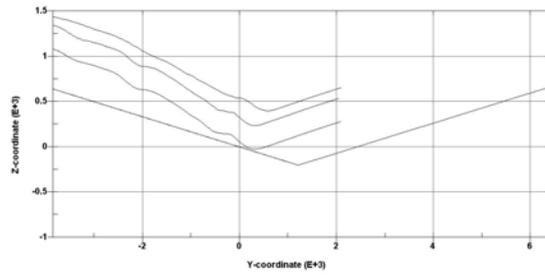
Fig. C.23: Bumper heights in back-side impacts by Dodge Neon at 30° for the 4<sup>th</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



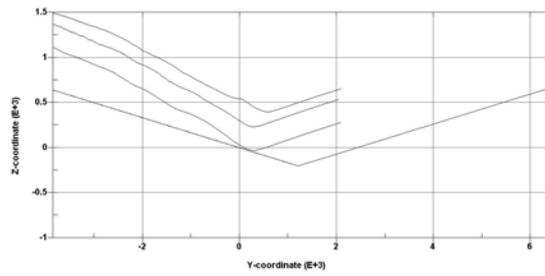
a.



b.



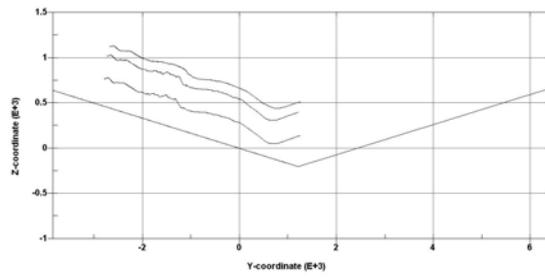
c.



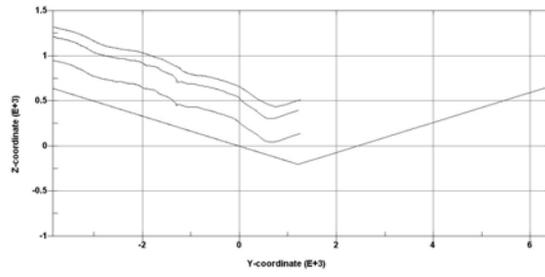
d.

Fig. C.24: Bumper heights in back-side impacts by Dodge Neon at 40° for the 4<sup>th</sup> design of Retrofit Option 1.

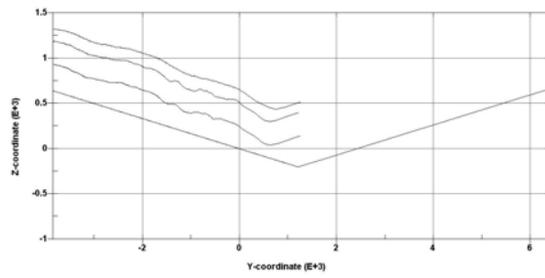
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



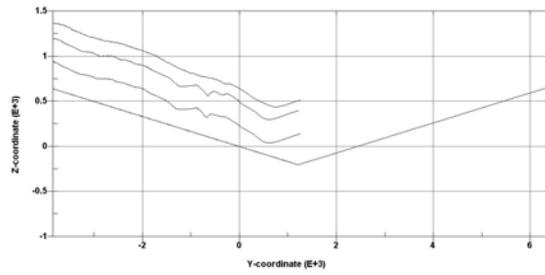
a.



b.

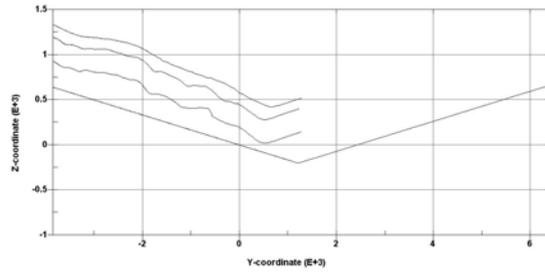


c.

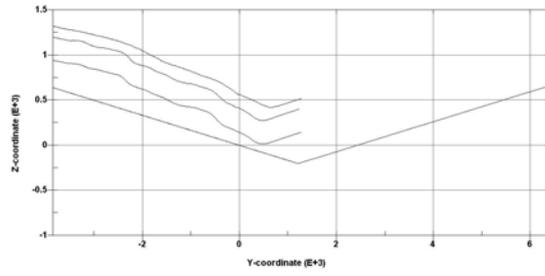


d.

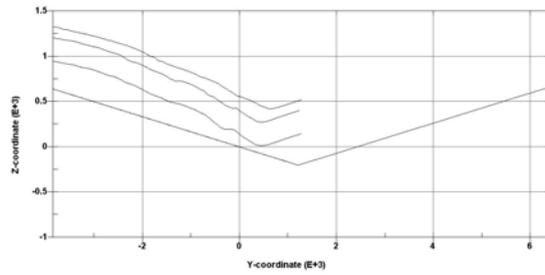
Fig. C.25: Bumper heights in back-side impacts by Dodge Neon at 20° for the 5<sup>th</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



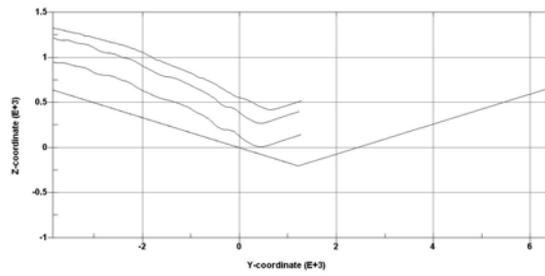
a.



b.



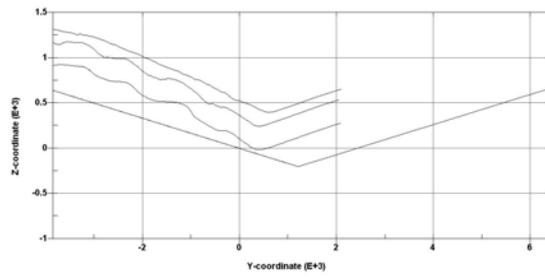
c.



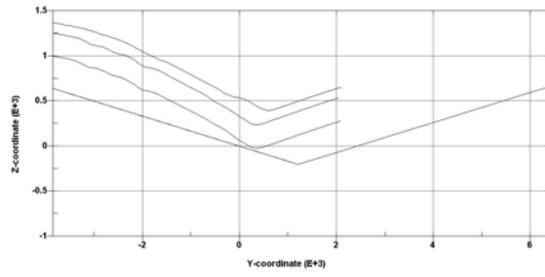
d.

Fig. C.26: Bumper heights in back-side impacts by Dodge Neon at 30° for the 5<sup>th</sup> design of Retrofit Option 1.

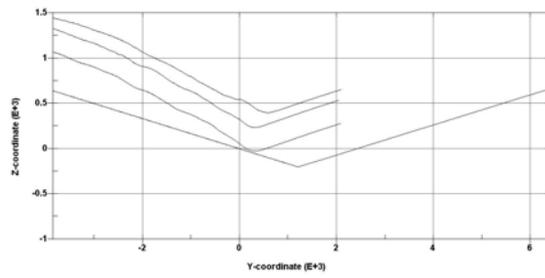
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



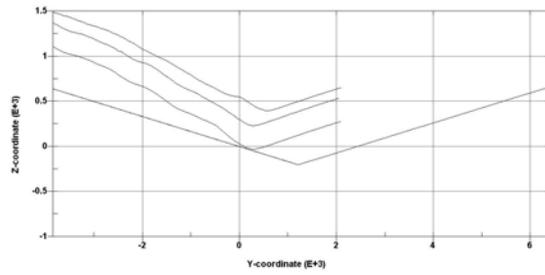
a.



b.

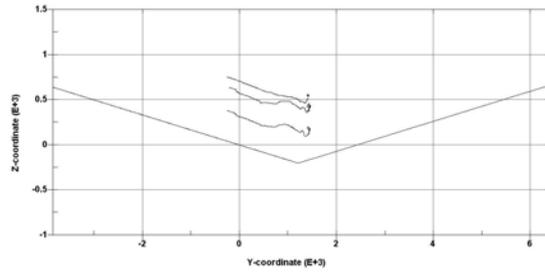


c.

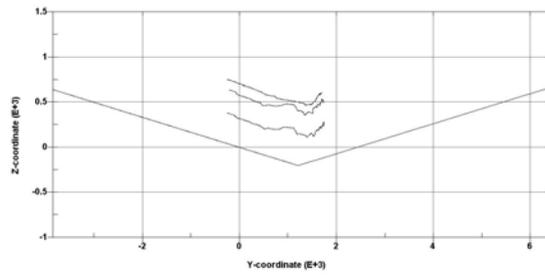


d.

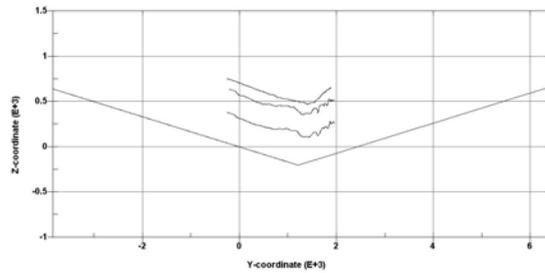
Fig. C.27: Bumper heights in back-side impacts by Dodge Neon at 40° for the 5<sup>th</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



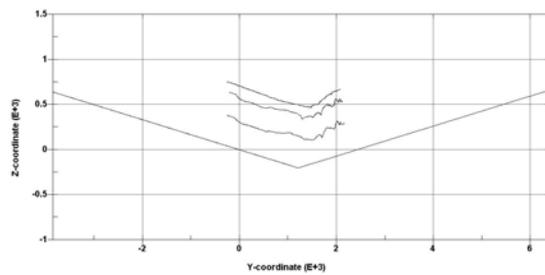
a.



b.



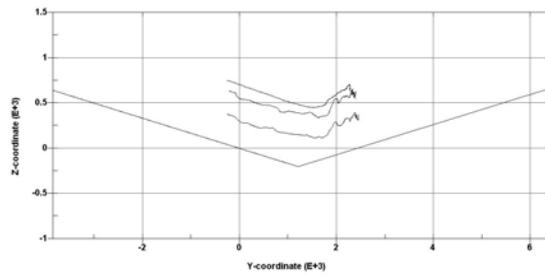
c.



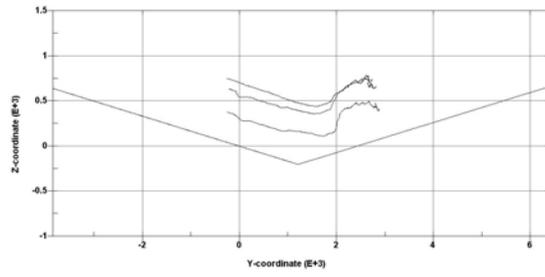
d.

Fig. C.28: Bumper heights in front-side impacts by Dodge Neon at 20° for the 6<sup>th</sup> design of Retrofit Option 1.

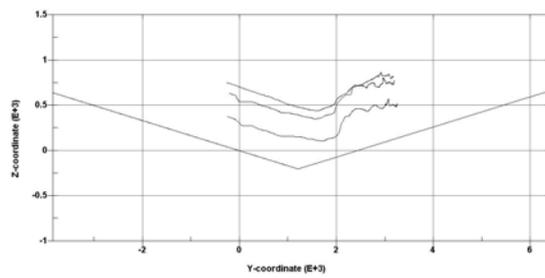
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



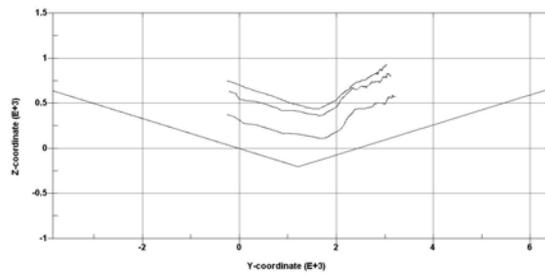
a.



b.

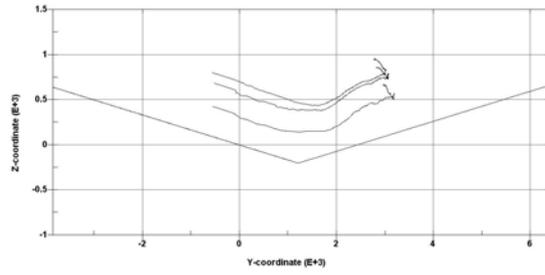


c.

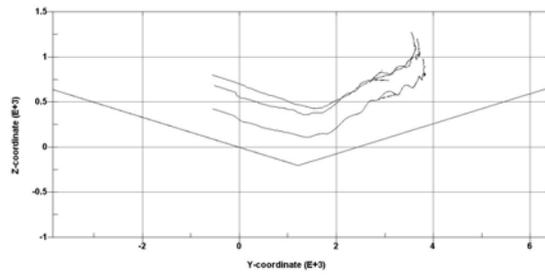


d.

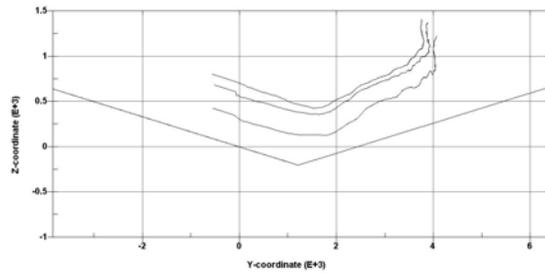
Fig. C.29: Bumper heights in front-side impacts by Dodge Neon at 30° for the 6<sup>th</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



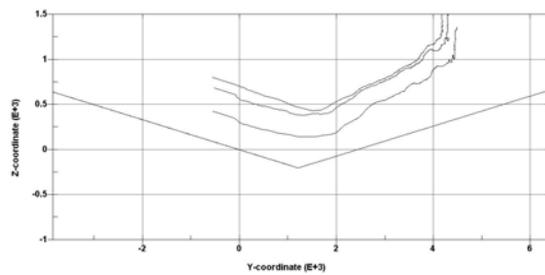
a.



b.



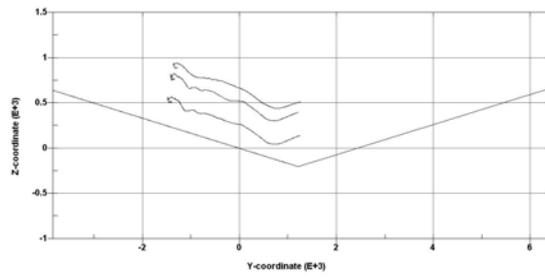
c.



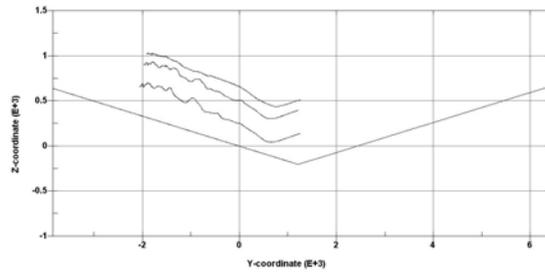
d.

Fig. C.30: Bumper heights in front-side impacts by Dodge Neon at 40° for the 6<sup>th</sup> design of Retrofit Option 1.

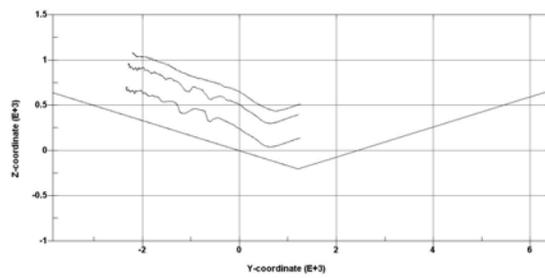
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



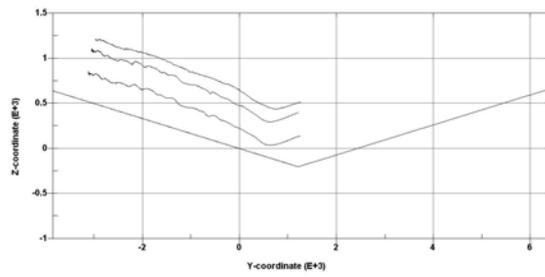
a.



b.

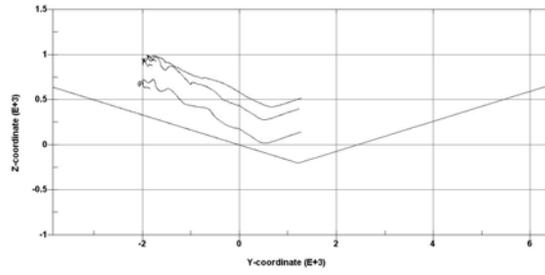


c.

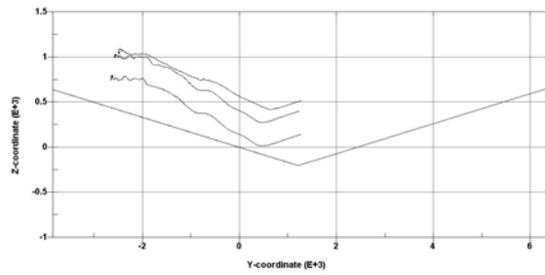


d.

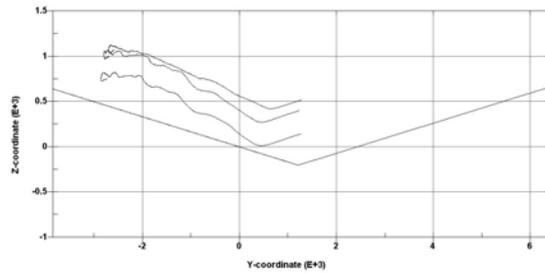
Fig. C.31: Bumper heights in back-side impacts by Dodge Neon at 20° for the 6<sup>th</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



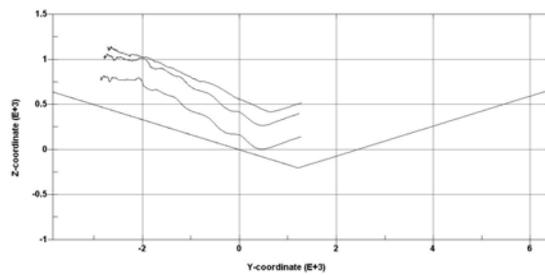
a.



b.



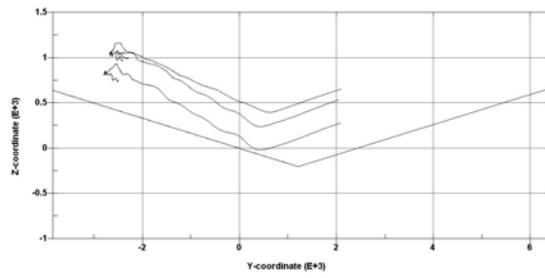
c.



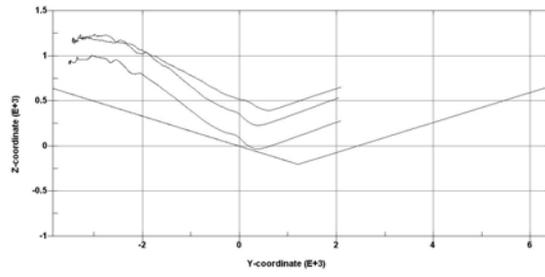
d.

Fig. C.32: Bumper heights in back-side impacts by Dodge Neon at 30° for the 6<sup>th</sup> design of Retrofit Option 1.

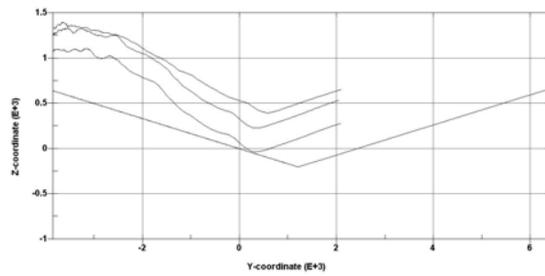
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



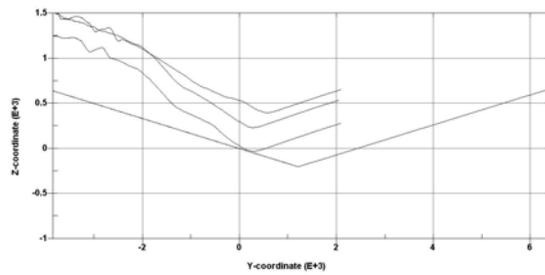
a.



b.

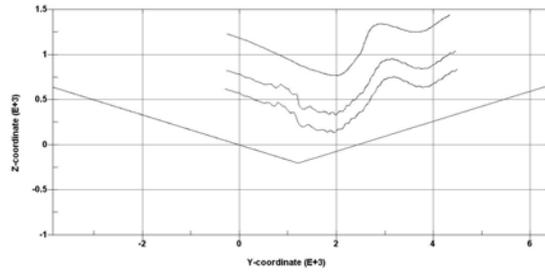


c.

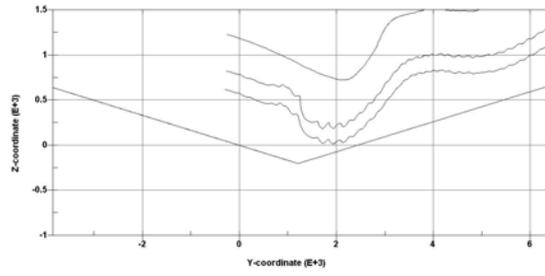


d.

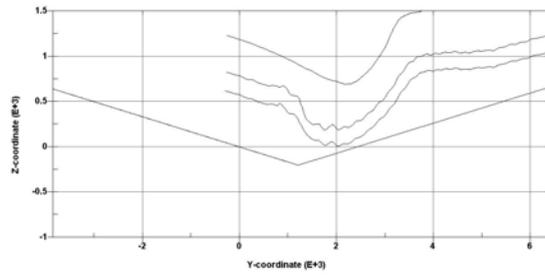
Fig. C.33: Bumper heights in back-side impacts by Dodge Neon at 40° for the 6<sup>th</sup> design of Retrofit Option 1.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



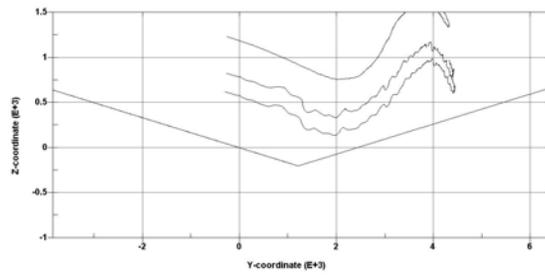
a.



b.

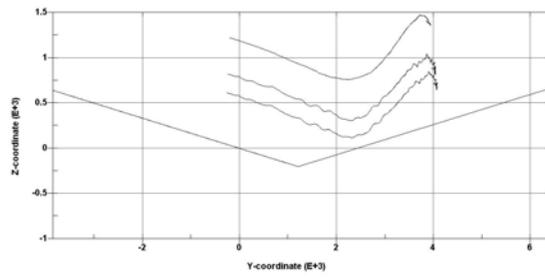


c.

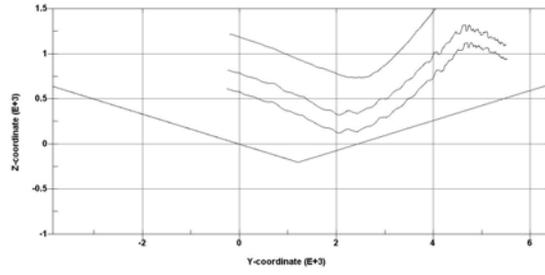


d.

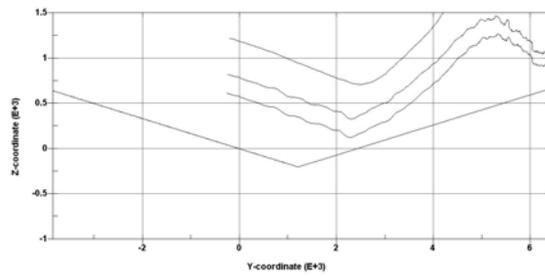
Fig. C.34: Bumper heights in front-side impacts by Ford F250 at 20° for the 6<sup>th</sup> design of Retrofit Option 1. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



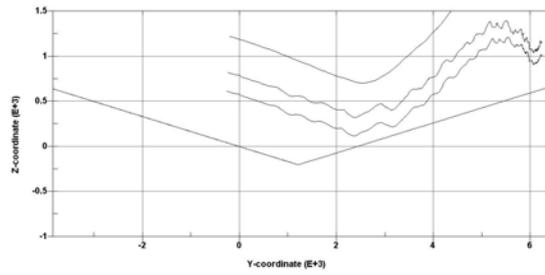
a.



b.

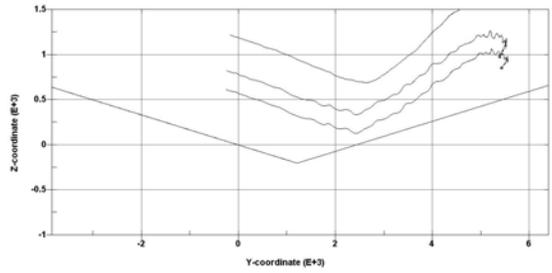


c.

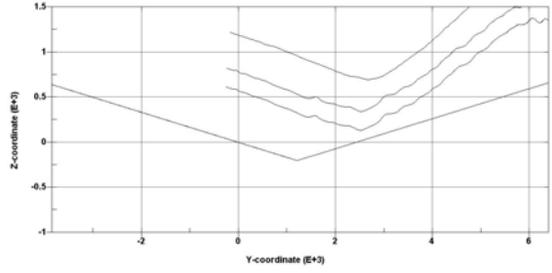


d.

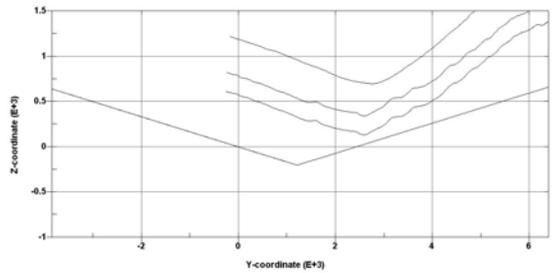
Fig. C.35: Bumper heights in front-side impacts by Ford F250 at 30° for the 6<sup>th</sup> design of Retrofit Option 1. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



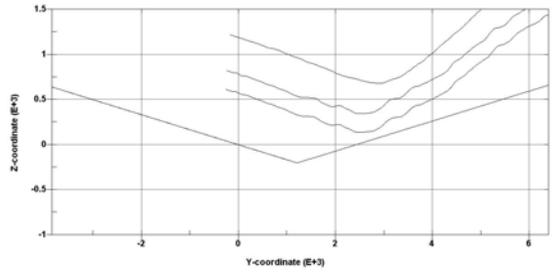
a.



b.

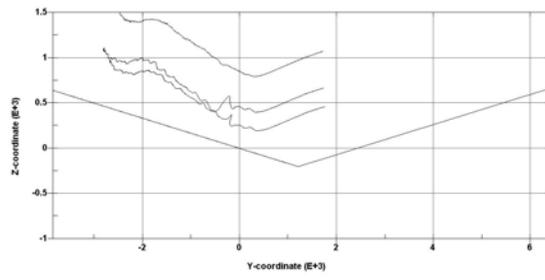


c.

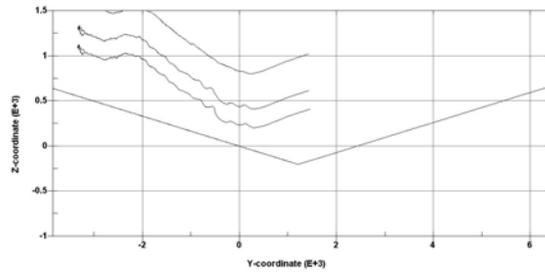


d.

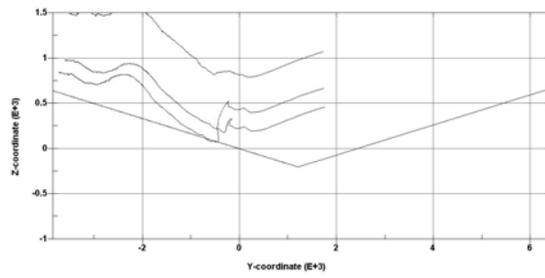
Fig. C.36: Bumper heights in front-side impacts by Ford F250 at 40° for the 6<sup>th</sup> design of Retrofit Option 1. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



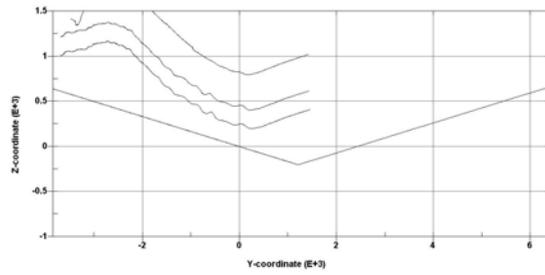
a.



b.

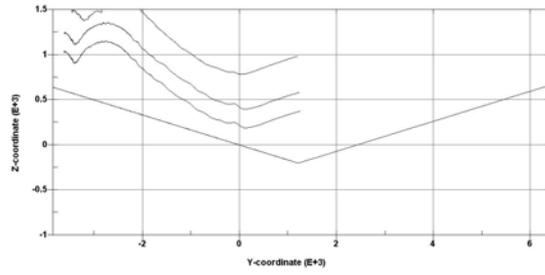


c.

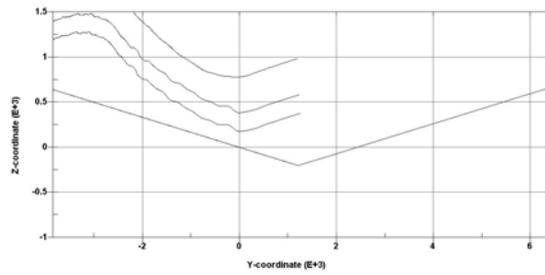


d.

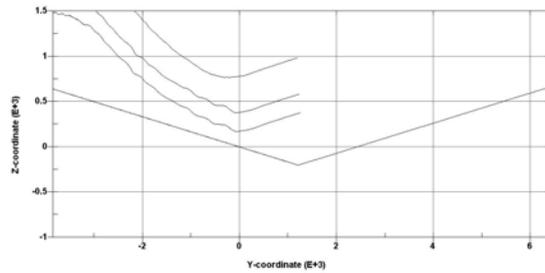
Fig. C.37: Bumper heights in back-side impacts by Ford F250 at 20° for the 6<sup>th</sup> design of Retrofit Option 1. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



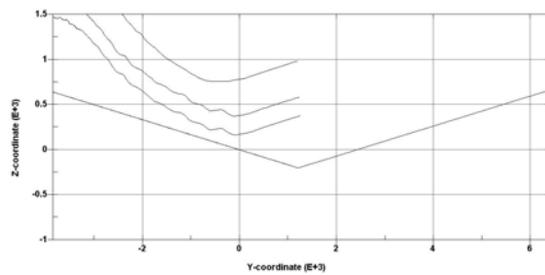
a.



b.

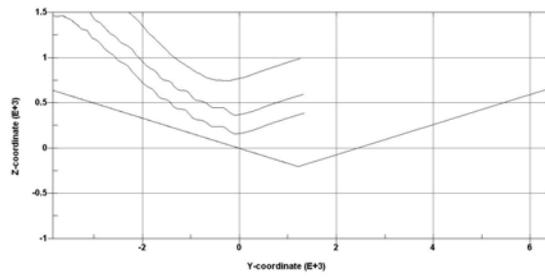


c.

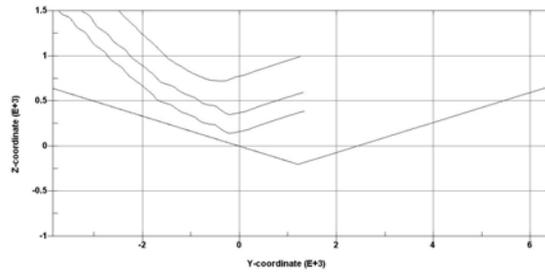


d.

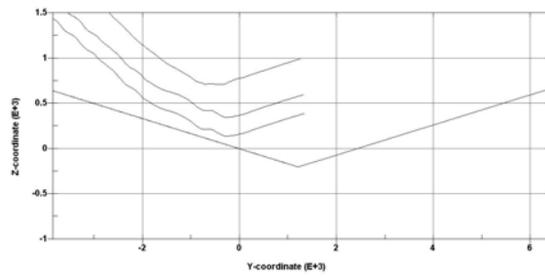
Fig. C.38: Bumper heights in back-side impacts by Ford F250 at 30° for the 6<sup>th</sup> design of Retrofit Option 1. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



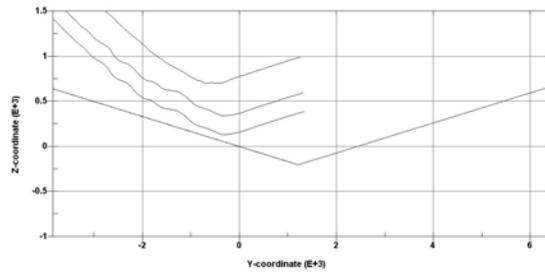
a.



b.

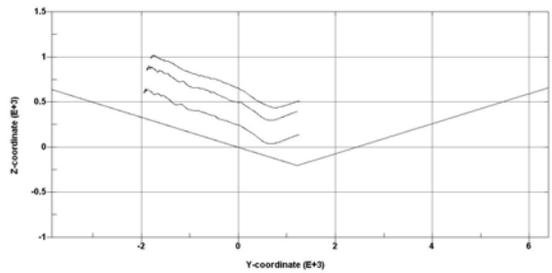
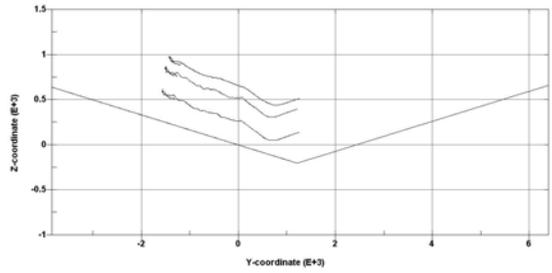


c.



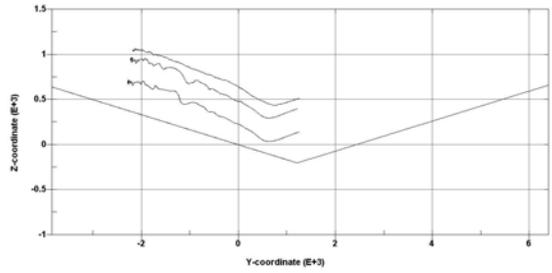
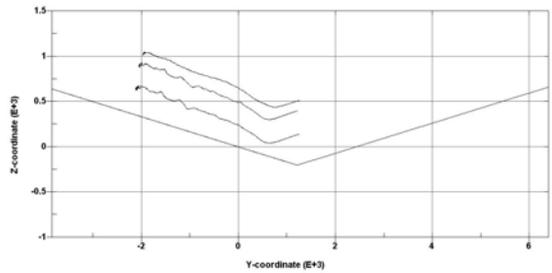
d.

Fig. C.39: Bumper heights in back-side impacts by Ford F250 at 40° for the 6<sup>th</sup> design of Retrofit Option 1. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



a.

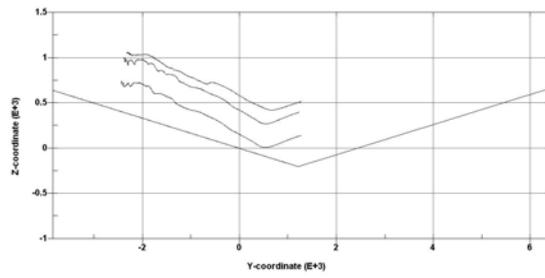
b.



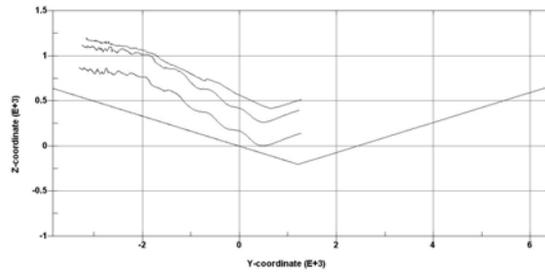
c.

d.

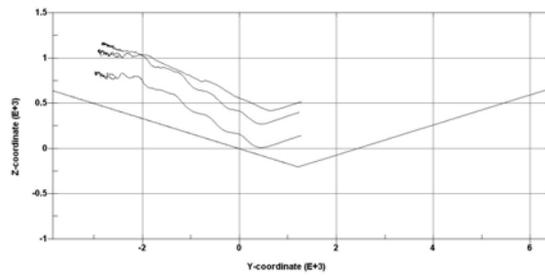
Fig. C.40: Bumper heights in back-side impacts by Dodge Neon at 20° for the 1<sup>st</sup> design of Retrofit Option 2.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



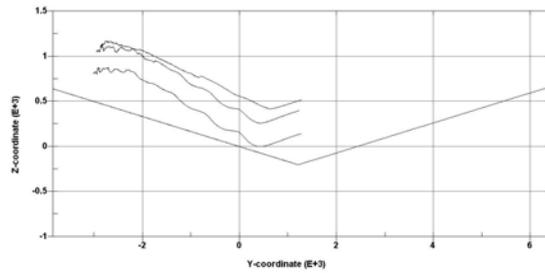
a.



b.

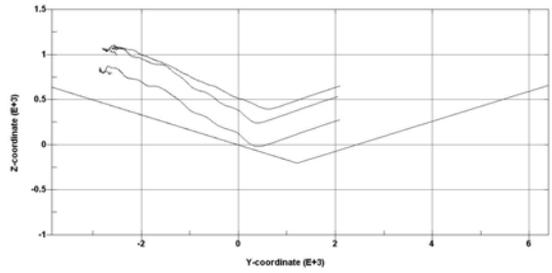


c.

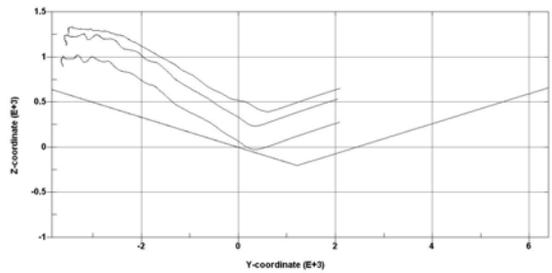


d.

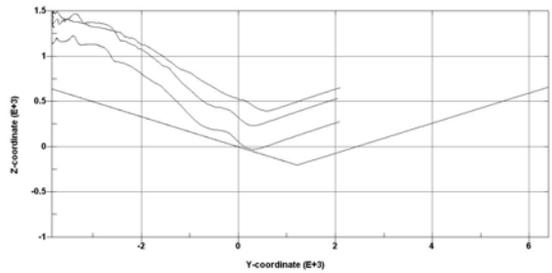
Fig. C.41: Bumper heights in back-side impacts by Dodge Neon at 30° for the 1<sup>st</sup> design of Retrofit Option 2.  
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



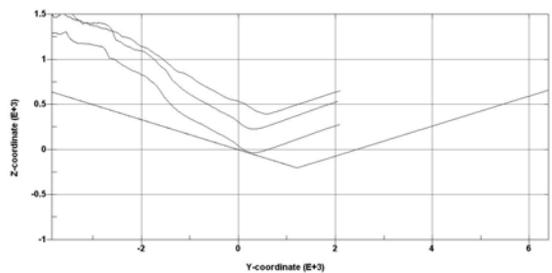
a.



b.

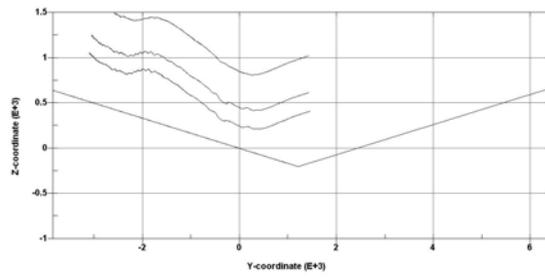


c.

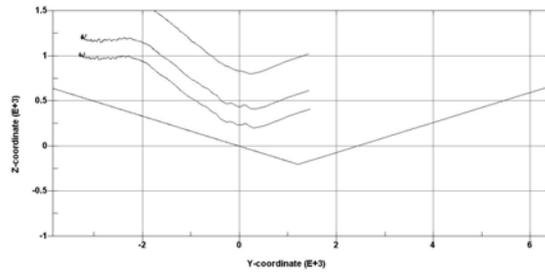


d.

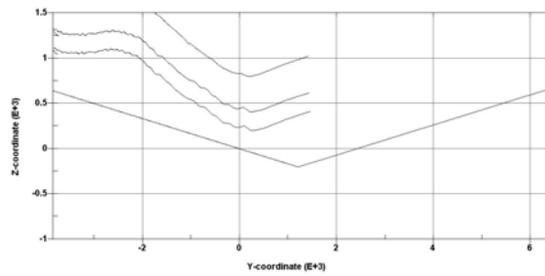
Fig. C.42: Bumper heights in back-side impacts by Dodge Neon at 40° for the 1<sup>st</sup> design of Retrofit Option 2.  
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



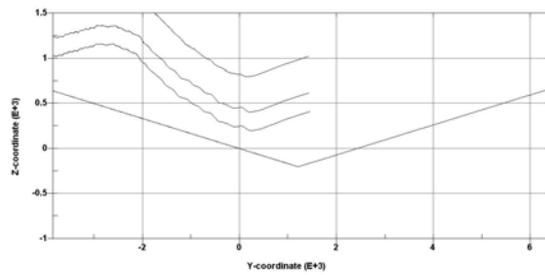
a.



b.

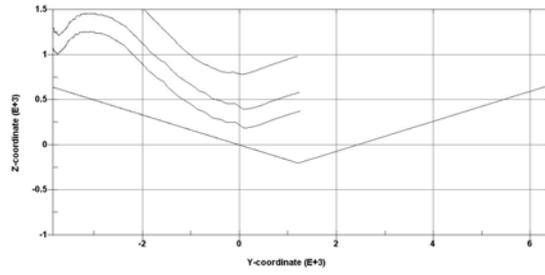


c.

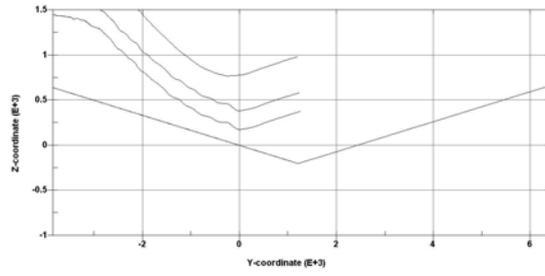


d.

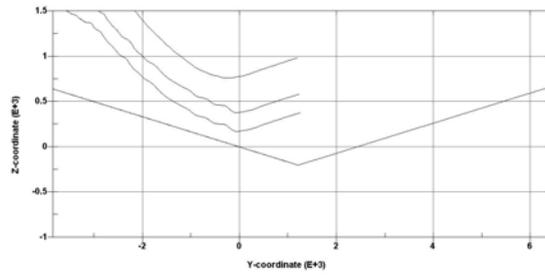
Fig. C.43: Bumper heights in back-side impacts by Ford F250 at 20° for the 1<sup>st</sup> design of Retrofit Option 2. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



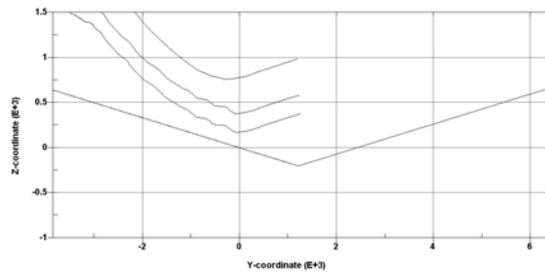
a.



b.

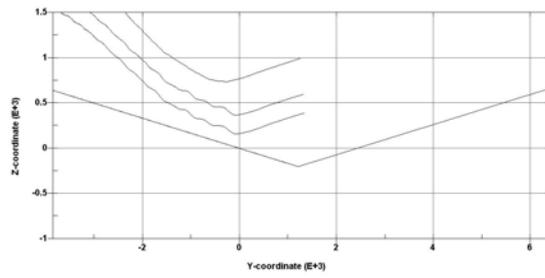


c.

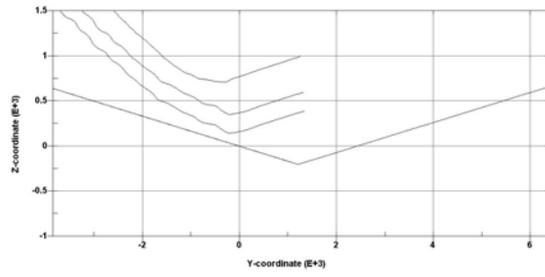


d.

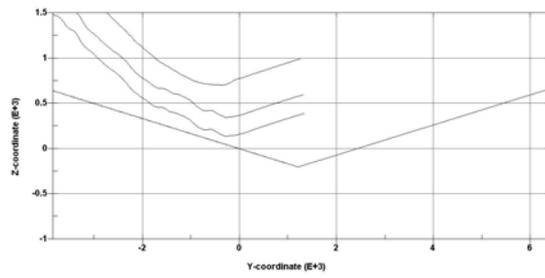
Fig. C.44: Bumper heights in back-side impacts by Ford F250 at 30° for the 1<sup>st</sup> design of Retrofit Option 2. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



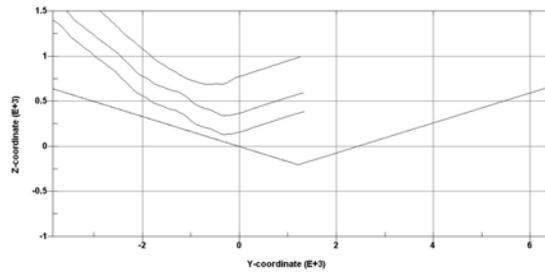
a.



b.

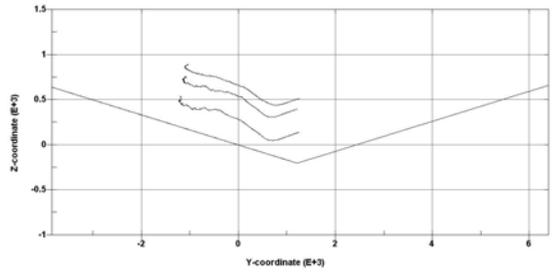


c.

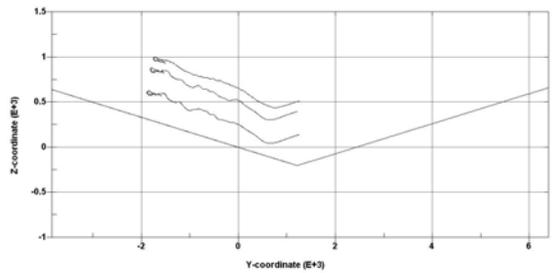


d.

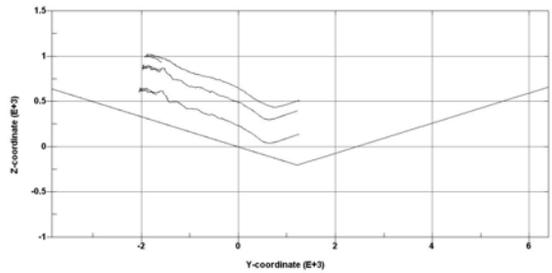
Fig. C.45: Bumper heights in back-side impacts by Ford F250 at 40° for the 1<sup>st</sup> design of Retrofit Option 2. a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



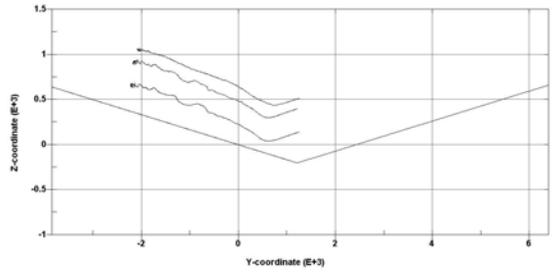
a.



b.

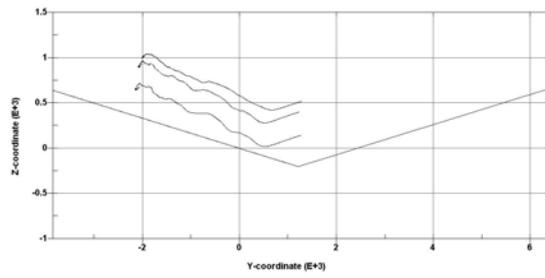


c.

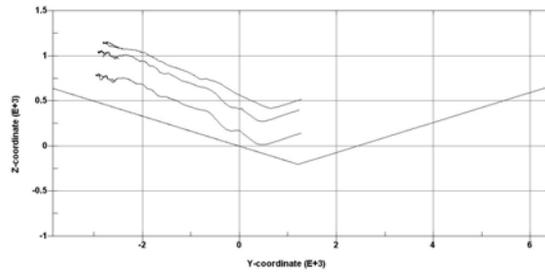


d.

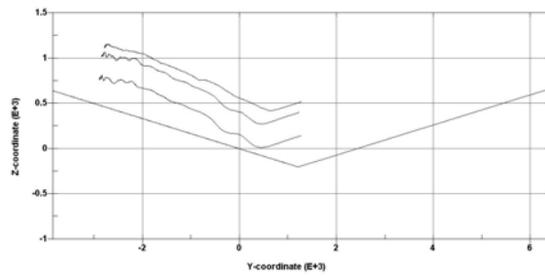
Fig. C.46: Bumper heights in back-side impacts by Dodge Neon at 20° for the 2<sup>nd</sup> design of Retrofit Option 2.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



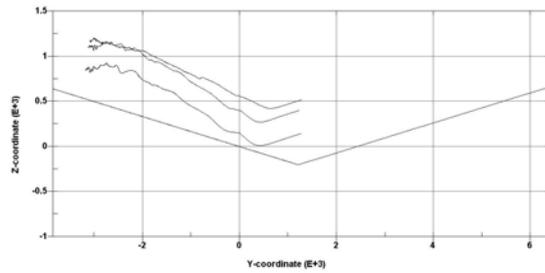
a.



b.

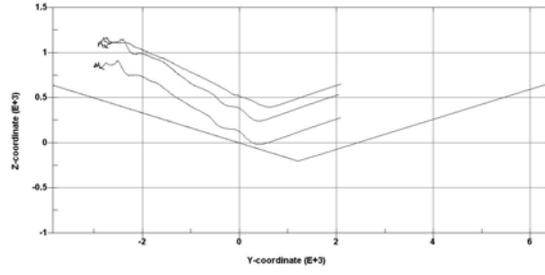


c.

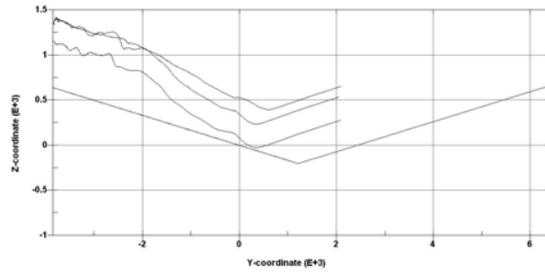


d.

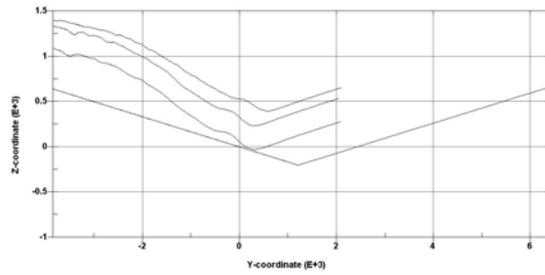
Fig. C.47: Bumper heights in back-side impacts by Dodge Neon at 30° for the 2<sup>nd</sup> design of Retrofit Option 2.  
 a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph



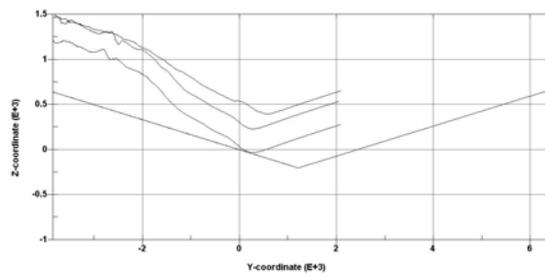
a.



b.



c.



d.

Fig. C.48: Bumper heights in back-side impacts by Dodge Neon at 40° for the 2<sup>nd</sup> design of Retrofit Option 2.  
a. 55 mph; b. 65 mph; c. 70 mph; and d. 75 mph