Table A.1

Recommended standard values for use in cost-effectiveness & benefit-cost analysis in SFY 2026

Minnesota Department of Transportation, Office of Transportation System Management, August 2025

Variables		*Values* Low	Most Likely	High
Real social discount rate[1]		see Most Likely →	3.1%	← see Most Likely
20-year discounted average damage cost of CO_2 (2024$ per metric ton)[2]		see Most Likely →	$245	← see Most Likely
Annual traffic growth rate modifier[3]		83%	100% (no modification)	150%
Value of travel time savings per person-hour[4]	Auto	$18.90	$25.40	$30.70
	Truck driver	$32.10	$40.00	$48.00
	Transit passenger	$17.20	$23.90	$28.60
	Transit driver	$27.60	$34.40	$41.30
Auto per-mile operating and emissions costs				
Auto variable vehicle operating costs[5]		see Most Likely →	$0.31	← see Most Likely
Auto climate- and health-related emissions costs[6]			$0.12	
Auto total operating and emissions costs (dollars per mile)			$0.43	
Truck per-mile operating and emissions costs				
Truck variable vehicle operating costs[5]		see Most Likely →	$0.76	← see Most Likely
Truck climate- and health-related emissions costs[6]			$0.52	
Truck total operating and emissions costs (dollars per mile)			$1.28	
Per-crash comprehensive costs[7]				
Fatal		$10,000,000	$16,500,000	$22,800,000
Suspected Serious Injury		$1,100,000	$1,700,000	$2,400,000
Suspected Minor Injury		$240,000	$380,000	$520,000
Possible Injury		$120,000	$180,000	$240,000
No Injury (Property Damage Only)		$18,000	$18,000	$18,000

Notes

[1]Determined as the 30-year average for real (with inflation removed) rates of return on 10-year Treasurys, plus a default risk premium to account for uncertainty in benefits received by the general public under a range of possible future conditions. *LINK*

[2]Unweighted average of the annual social cost of carbon dioxide for emission years in the analysis period 2027-2046 (near-term Ramsey discount rate = 2.0%), escalated from 2020$ to 2024$ using the gross domestic product implicit price deflator. Provided as a default monetization factor for cumulative emissions reduction results obtained from the Minnesota Carbon Emissions Tool. *LINK*

[3]Calculated from 20-year compound annual growth rate projections for national vehicle miles traveled in low ("pessimistic") and high ("optimistic") economic growth outlooks relative to most likely, described in "FHWA Forecasts of Vehicle Miles Traveled (VMT): Spring 2024" (latest edition) for all vehicle classes. For example, when the most likely traffic growth is modeled as 1.2%, the corresponding low and high sensitivity annual growth rates are 1.0% (1.2% x 80%) and 1.4% (1.2% x 120%), respectively. Due to compounding, differences under the sensitivity outlooks will be magnified in later years of the analysis period. *LINK*

[4]All values adapted from USDOT's "Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis" published September 27, 2016, with Minnesota household income and wages. *LINK*

[5]Updates cost levels in the University of Minnesota's *The Per-Mile Costs of Operating Automobiles and Trucks* published in June 2003. Variable costs are fuel (assessed at real tax-neutralized price in analysis period midpoint), maintenance, tires, repair, and depreciation. *LINK*

[6]Applies dollars-per-ton monetization factors to average on-road vehicle emission rates for Minnesota derived from EPA's 2020 National Emissions Inventory to account for the social cost of carbon (in analysis period midpoint) and health damage from the criteria pollutants of nitrogen oxides, particulate matter ($PM_{2.5}$), and sulfur dioxide. Incorporates EPA projections of per-mile emission improvements (brought by regulation/vehicle technology innovation) through 2030. *LINK (Carbon)* *LINK (All Other Emissions)*

[7]The most likely values reflect Minnesota's recent (three-year) crash history and procedures contained in FHWA's *Crash Costs for Highway Safety Analysis* published January 2018, with comprehensive crash cost valuation consisting of both economic/monetary impacts (e.g. medical services, insurance claims processing, legal fees) and estimates of the intangible effects from diminished quality of life following injury crashes. Low/high crash cost dispersion is taken from the range of uncertainty for the value of a statistical life found in USDOT's "Departmental Guidance: Treatment of the Value of Preventing Fatalities and Injuries in Preparing Economic Analyses" published March 2021. *LINK (Most Likely)* *LINK (Low/High)*