

# Vehicle Cost Calculator

## Objective

The purpose of this decision aid is to facilitate the cost calculation of a vehicle. The decision aid calculates the per mile and annual costs of a vehicle and the cost of making a trip. The decision and can assist evaluating purchasing alternatives and changing fuel cost.

## Input Data

There are a number of variables in blue used to describe the vehicle. These can be observed in the attached decision aid example. Current market value can be the purchased value on a new or the market value for a used vehicle. Total miles used should equal remaining miles of use expected for a new vehicle. Remaining miles of use would reflect miles left for use for used vehicles. See the definition section for a description of other input items. A term loan payment schedule is provided to calculate cash requirement in sheet 2.

## Output

There are three sections of output for the decision aid: per mile and annual costs, trip costs and allocated costs. The trip cost or allocated cost section can be ignored if they are not desired.

## Definition of Terms used in this Analysis

**Variable Cost** - Variable costs are those costs that vary directly with the amount the vehicle is used. If the vehicle is not used, these costs are eliminated. Variable costs include fuel, tires, and maintenance costs.

**Fixed Costs** - Fixed costs are those costs that continue whether the vehicle is used or not. Fixed costs include depreciation, insurance, and interest costs.

**Interest Costs** - Interest costs include actual financial charges on the loan required to purchase the vehicle or the interest that could be earned on the money in an income producing investment. See calculated loan payment schedule in sheet 2.

This is often referred to as the “opportunity cost of capital.” The input data requests annual loan payments to determine cash costs, but uses the interest rate specified to determine the interest opportunity cost of capital investment. This is a non-cash cost.

If the vehicle is being financed then the annual payment should be entered and this is used as cash cost which would be reflected in cash costs.

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**Depreciation** - Depreciation is a measure of the actual loss of value in the vehicle occurring in a year. Thus, it may be different from depreciation used for tax purposes. The formula takes the fraction of remaining life used in the current year and multiplies it by the current market value of the auto or truck less salvage value. Depreciation is a non-cash cost of a depreciable asset with a life of more than one year.

### **Equations and Formulas**

The key formulas used in the analysis are as follows:

**Interest Cost Per Mile**  $((\text{Market Value} - \text{Depreciation})/2) * (\text{Interest Rate} \times .01)/\text{Annual Miles Used}$   
**Based on Average Investment**

**Depreciation Cost per Mile -**

$$\frac{((\text{Annual Use (Mi)}) * (\text{Current Market Value} - \text{Salvage Value}))}{(\text{Remaining Life (Mi)}) / (\text{Annual Miles of Use})}$$

**Remaining Life** = (Useful life - Current Mileage)

**Vehicle Total Cost per Trip** = (Miles for Trip \* Total Costs per Mile)