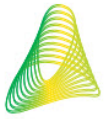
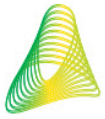


Calculating Technician Need



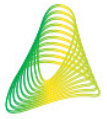
How Many Technicians Do I Need?

- How many labor hours do I expect my fleet to incur for the coming year?
- How many labor hours do I expect my technicians to work during the coming year?



How Many Technicians Do I Need?

$$\frac{\textit{Labor Hour Demand}}{\textit{Billed Hours Per Technician}} = \textit{Technician Need}$$



- **Labor Hour Demand** is the number of “wrench turning” hours needed to maintain an asset for a year.
- Two Methods of Calculation:
 - MRU/VE Method
 - Modeling Method

- Maintenance Repair Unit (MRU) is the average labor hours needed to support a vehicle of a certain class for one year.
- Vehicle Equivalence VE is Utilimarc's own MRU.
- Calculation: Labor Hour Demand is the sum of the MRU/VE values for each unit in fleet.

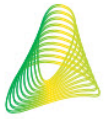
Labor Hour Demand – MRU/VE Method

| Class Code | Number of Units | MRU/VE Value | Labor Hour Demand |
|-------------------|------------------------|---------------------|--------------------------|
| L. Pickup | 136 | 13.89 | 1,889 |

Labor Hour Demand – MRU/VE Method

| Description | MRH/VE |
|--------------------------|---------------|
| Compact Sedan | 7.74 |
| Midsize Sedan | 9.76 |
| Fullsize Sedan | 10.65 |
| PPV Marked Squads Sedan | 29.68 |
| PPV Marked Squads SUV | 22.43 |
| Police Unmarked Sedans | 14.67 |
| Police Unmarked SUV | 14.97 |
| Light Duty Pickup | 13.89 |
| Medium Duty Pickup | 15.85 |
| Heavy Duty Pickup | 23.00 |
| Compact SUV | 10.75 |
| Midsize SUV | 13.87 |
| Fullsize SUV | 18.71 |
| Dump - Single axle truck | 69.71 |
| Dump - Tandem axle truck | 93.06 |
| Light Duty Service Truck | 28.28 |
| Fire Aerial Ladders | 209.92 |
| Fire Aerial Platforms | 275.13 |
| Fire Pumpers | 171.97 |
| Fire Quints | 146.26 |
| Refuse - Front Loader | 268.80 |
| Refuse - Side Loader | 260.19 |
| Refuse - Rear Loader | 151.76 |
| Ambulance | 112.51 |

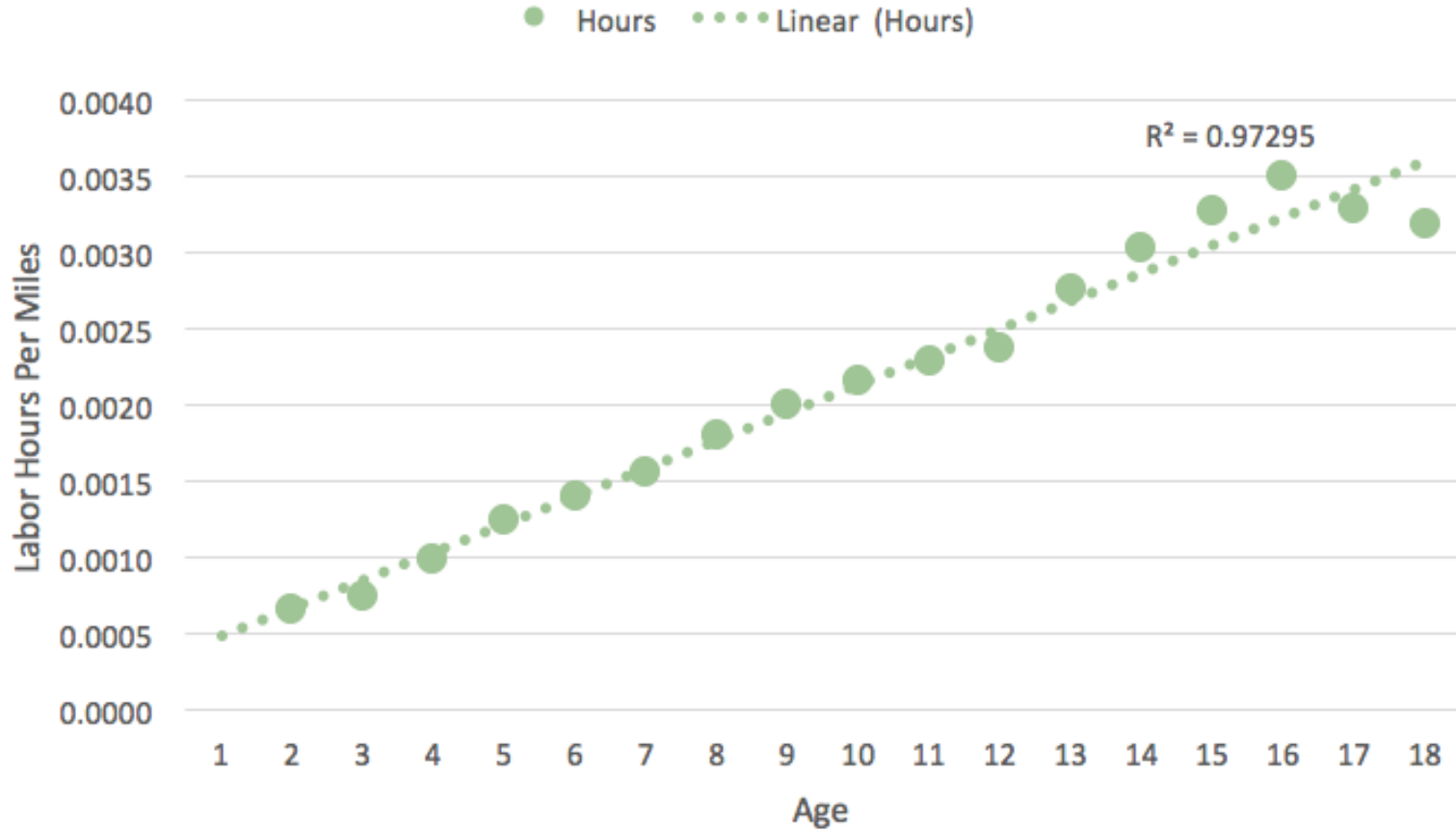
- Pros:
 - Low Data Requirements
 - Quick to Calculate
 - Easy to Explain and Present
- Cons:
 - Does Not Account for Utilization
 - Does Not Account for Fleet Age
 - Lower Accuracy than Other Methods.

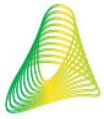


- A mathematical model is created using 3-5 years of historic maintenance information.
- The model describes the labor hours needed to support a typical unit based on the the unit's class, age and average annual mileage.
- This model allows you to forecast labor based on vehicle replacement decisions

Labor Hour Demand – Model Method

Labor Hour Model for a Light Duty Pickup

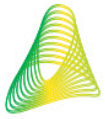




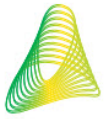
- This model is then applied to your fleets unique mix make up.
- This example again looks at the light duty pickup, using same assumptions for ease of calculation.

Labor Hour Demand – Modeling Method

| Age | Number of Units | Est. Ann. Mileage | Model (Hrs./Mile) | Labor Hour Demand |
|--------------|-----------------|-------------------|-------------------|-------------------|
| 2 | 0 | 10,000 | 0.00073736 | - |
| 3 | 0 | 10,000 | 0.00082861 | - |
| 4 | 32 | 10,000 | 0.00109938 | 316.62 |
| 5 | 19 | 10,000 | 0.00138392 | 236.65 |
| 6 | 10 | 10,000 | 0.00155466 | 139.92 |
| 7 | 12 | 10,000 | 0.00173631 | 187.52 |
| 8 | 15 | 10,000 | 0.00200119 | 270.16 |
| 9 | 0 | 10,000 | 0.00223574 | - |
| 10 | 1 | 10,000 | 0.00240504 | 21.65 |
| 11 | 0 | 10,000 | 0.00254938 | - |
| 12 | 10 | 10,000 | 0.00264131 | 237.72 |
| 13 | 25 | 10,000 | 0.00307452 | 691.77 |
| 14 | 12 | 10,000 | 0.00337499 | 364.50 |
| 15 | 0 | 10,000 | 0.00363445 | - |
| 16 | 0 | 10,000 | 0.00389454 | - |
| 17 | 0 | 10,000 | 0.00365097 | - |
| 18 | 0 | 10,000 | 0.00354236 | - |
| Total | 136 | | | 2,740.56 |

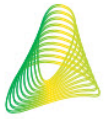


- Under both methods, some adjustment for outsourcing must be made.
- However, how you adjust for outsourcing depends on how you calculated your averages to begin with.
- This step can get complicated. For this presentation, we're assuming all labor is handled internally.



How Many Technicians Do I Need?

$$\frac{\textit{Labor Hour Demand}}{\textit{Billed Hours Per Technician}} = \textit{Technician Need}$$



- How many “wrench turning” hours do your Technicians work during the year?
- Distinguish between Direct and Indirect time.
- Industry wide, we expect a fulltime (2,080 hours) technician to spend **1,375** hours working on equipment.

Equation

$$\frac{\textit{Labor Hour Demand}}{\textit{Billed Hours Per Technician}} = \textit{Technician Need}$$

MRU/VE Method:

$$\frac{1,889}{1,375} = 1.37 \textit{ Technicians}$$

Modeling Method:

$$\frac{2,740}{1,375} = 1.99 \textit{ Technicians}$$

Repeat for Entire Fleet

Technician Staffing – District 1

This table provides an estimate of the number of labor hours and technicians needed to support fleet as of 2014.

| Utilimarc Class Code | Count | Average Age | Contract % | Labor Hour Need |
|---|------------|--------------|------------|-----------------|
| Dump - Tandem axle truck | 55 | 9.49 | 1% | 6,724 |
| Dump - Single axle truck | 59 | 10.22 | 2% | 5,152 |
| Misc. Power Operated Equipment | 285 | 14.82 | 3% | 2,599 |
| Ft End Loader & Backhoe | 38 | 14.82 | 12% | 1,549 |
| Trailers | 143 | 15.95 | 0% | 1,015 |
| Light Duty Pickup | 58 | 9.52 | 29% | 746 |
| Medium Duty Pickup | 33 | 8.88 | 3% | 697 |
| Other (vehicles, trailers & power operated equipment) | 316 | - | - | 5,262 |
| Total | 987 | 13.71 | 4% | 23,743 |

| Summary | Value |
|------------------------|--------------------------|
| Labor Hour Need | 23,743 Hours |
| Full Time Hours | 2,080 |
| Productivity | 52% |
| Productive Hours | 1,082 |
| Technician Need | 21.95 Technicians |