

DERIVE

Systems

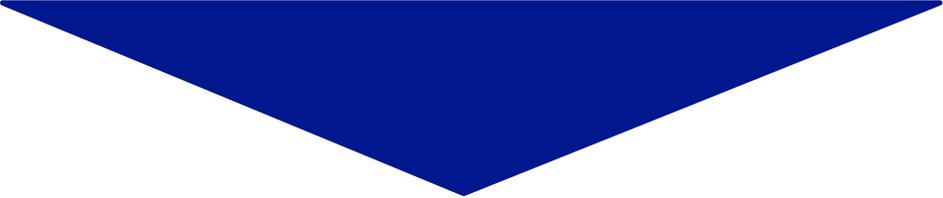
OPTIMIZATION WITH 6% FUEL SAVINGS- GUARANTEE

Greatest challenges of adopting new technology

- Does it address a problem that everyone agrees on?
- Does it “work”?
- Can everyone agree that it works?
- Does it “work” fast enough and cheap enough to make financial sense for your organization?

What constitutes a good pilot size for your organization?

- 2-10 units
- 11-50 units
- 51-100 units
- 100+ units



Technology must be put through your paces

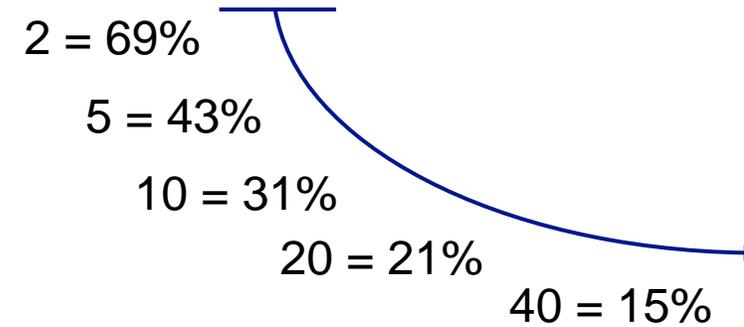
Margin of Error

Increase the pilot size to reduce margin of error

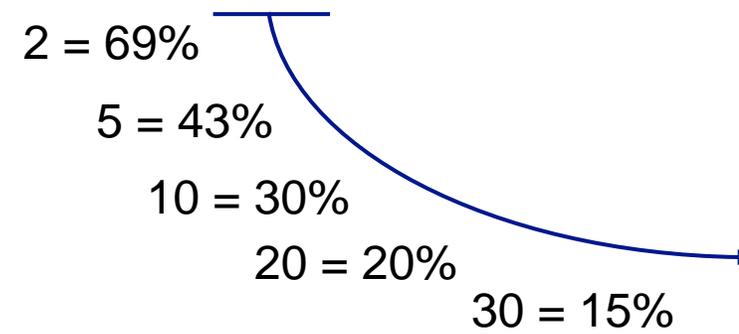
Statistically relevant data for decision makers



Fleet size of 500



Fleet size of 100



VALIDATION

Vehicle Population	Confidence Level	Interval	Sample Size
250	95%	10	37
500	95%	10	39
1000	95%	10	41
2000	95%	10	92
4000	95%	10	94
8000	95%	10	95
16000	95%	10	95

The **confidence level** tells you how sure you can be. It is expressed as a percentage and represents how often the true percentage of the population who would pick an answer lies within the confidence interval. The 95% confidence level means you can be 95% certain; the 99% confidence level means you can be 99% certain. Most researchers use the 95% confidence level.

The **confidence interval** (also called margin of error) is the plus-or-minus figure usually reported in newspaper or television opinion poll results. For example, if you use a confidence interval of 4 and 47% percent of your sample picks an answer you can be "sure" that if you had asked the question of the entire relevant population between 43% (47-4) and 51% (47+4) would have picked that answer

Known variables indexed against technology claims

	Advertised Savings	2 Unit Pilot	5 Unit Pilot	10 Unit Pilot	100 Unit Pilot
 Electric Hybrid	10 → 12 mpg (15-25%)	3.7 to 20.3 mpg	6.8 to 17.1 mpg	8.3 to 15.8 mpg	10.9 to 13.1 mpg
 Auto shutoff					
 Optimized calibration	10 → 11 mpg (8-12%)	3.4 to 18.6 mpg	6.3 to 15.7 mpg	7.6 to 14.4 mpg	10.1 to 11.9 mpg

A true story...

Real-world data from a Top 10 County in the US

Vehicle	2015	2016	% Change
A	14.45	9.33	-35.4%
B	9.91	8.12	-18.1%
C	8.74	7.14	-18.3%
D	0.00	7.07	N/A
E	9.29	11.4	23.1%
F	16.04	12.33	-23.1%
G	7.68	8.52	10.9%
H	9.56	0.00	N/A
I	11.7	15.7	34.0%
J	14.9	13.8	7.63%

- Avoid the tendency to measure a vehicle's performance year-over-year when validating new technology
 - Exactness in measurement period
 - Changes in drivers
 - Changes in mission(s)
 - Changes in traffic environment(s)
 - Changes in weather



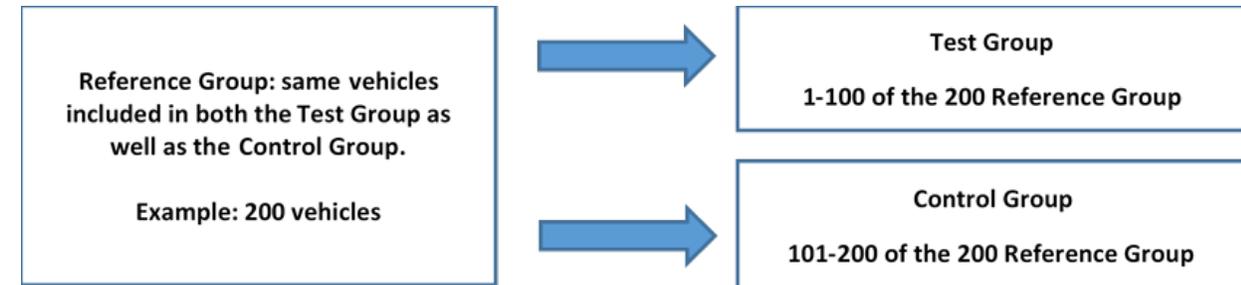
Place the same rigor on having a statistically significant control group

Adopt a new testing methodology that is both pragmatic and scientifically sound

- Step 1: Proof of concept – Small-scale tech demo (1-2 units) to understand ease of implementation, savings concept, and company’s ability to deliver on timeline, etc.
- Step 2: Qualitative assessment – Small to mid size deployment (~10) to solely track drivability through maintenance records, scorecards, and driver feedback. DO NOT use this figure for ROI tracking. This data will not be statistically significant.
- Step 3: Statistically significant RCT using equal or greater control group. The evaluation period should be commensurate with accuracy of measurement technology and the overall utilization of the vehicles (i.e.: low vs. high mileage fleets)

A few simple tips to assist:

- Calculate statistical significance:
<http://www.surveysystem.com/sscalc.htm>
- Brief financial decisionmakers prior to Step 2
- Ask tech company about financial guarantees if testing quantities are achieved.
- Brief measurement tech provider and ask for their assistance to understand possible pitfalls in their technology.



WHAT IS DERIVE EFFICIENCY?

Key causes of poor fuel efficiency:

- **Speeding**
- **Idling**
- **Adverse Acceleration**

Derive Efficiency calibrations provide-mission focused answers to these challenges.

CLIENT-SPECIFIC CHALLENGES

Speed Limiting



DHL, Pepsi, and NCDOT all observed instances of excessive **speeding** that caused major concerns.

Idle Reduction



Orlando, Rio Tinto, and Comcast all observed higher than necessary **idle** times but had major hurdles that stop/start technology alone couldn't solve.

Torque Mgmt



Dish Network, Port St. Lucie and Sears all have occasions where **torque available** versus **torque requirement** translates into wasted fuel and increased tire wear and tear

How we find savings



Top-speed governor



Reduce idle RPM



Optimize shift points



Manage available torque

DERIVE

Systems

6% guarantee in writing

50 State C.A.R.B Certified with Executive Order

No affect on new vehicle warranty

No equipment installed in vehicle

HOW DERIVE EFFICIENCY WORKS

Building upon a strong base: our tailored calibrations seek to bring additional savings to the base calibration by not changing but instead *focusing*

- **Top-speed governing from 25-85mph (1 mph increment) allowing companies to set region-by-region policies**
- **Idle RPM reduction designed to maintain needed electrification, proper lubricant flow and environmentalals with no waste**
- **Right size off-the-line power and moderate heavy-footed drivers to provided needed torque but avoid excess fuel use**

Optimizing the vehicle prevents challenges of optimizing the driver.

MISSION FOCUSED SAVINGS



- **Nation's largest landscaping company**
- **Fleet of 8,000+ trucks**
- **Derive's very recent pilot delivered a 10.3% fuel savings**



Relationship: 5 years
Size: 400+
KPIs: 15K-25K miles/year

Client Need: Heavy idling for PD while harsh acceleration and minor speeding from others

Validation: Citywide implementation showing 8%-9% improvement

Savings: Over \$175,000 annually

	Average Police Cruiser	Reduced Idle Level Cruiser
Idle time	4.85 hours/day	4.85 hours/day
Fuel Burn	0.45 gal/hour	0.35 gal/hour
CO2 Emissions	43 lbs/day	33 lbs/day
Cost in idle/day	\$5.45/day	\$4.25/day
Cost in idle/year	\$1990	\$1550

With our 6% Guarantee, savings is automatic....or else!



Relationship: 2 years
Size: 105 vehicles

Client Need:

Speed concerns that affect image of port for constituents and tourists

Validation:

Citywide implementation showing noticeable reduction speeding from telematics



Pragmatic savings that has immediate verifiable effects

Step 1 of a successful pilot begins with you knowing

Thanks for sharing your time to learn more about deliverables and how power in numbers brings complete visibility to validation in findings. We are your resource for demonstrating a pragmatic approach to economy, sustainability and safety and look forward to next steps together.

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