

A JOURNEY FROM
DATA to INFORMATION
DECISIONS to ACTIONS
to


By Paul J. Kunder

I Know More!

Experience?

I've Been Doing This For Years!

Instinct?



Intuition?

I'm Right!

Gut Feeling?

I Haven't Lost Yet!

Old Russian Proverb....

Доверяй, но проверяй
Doveryai, no Proveryai

Trust But Verify!

BENEFITS OF DATA DRIVEN DECISIONS

- Presents A Accurate Picture Of The Current Situation
- Effective Decisions Are More Likely When Data Driven
- Increases Your Ability To Establish Fact (Data) From F
- Makes An Organization More Informative
- Increases Organization Agility
- Informs You What Does Work

GETTING STARTED



Create A Cross Functional Team



Set Expectations & Accountability



Build Team Knowledge, Create Supportive Environment



Select Processes & Activities In Line With Strategic

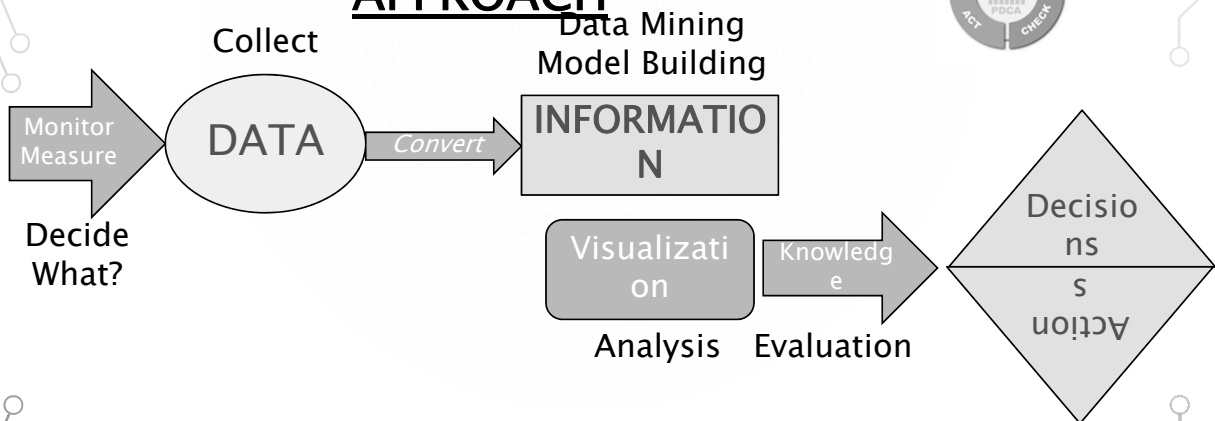


Determine What-When-How To Collect Data



Check, Test & Refine Data

PROCESS APPROACH



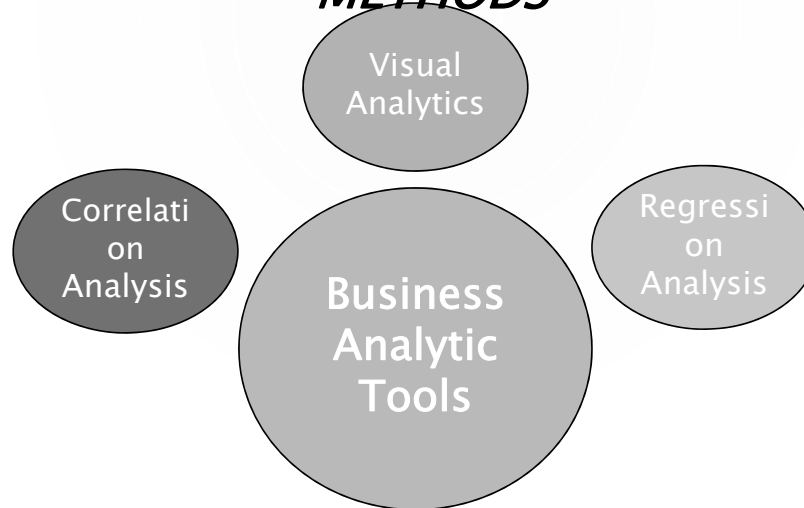
DISCOVERY KNOWLEDGE INSIGHTS OUTCOMES

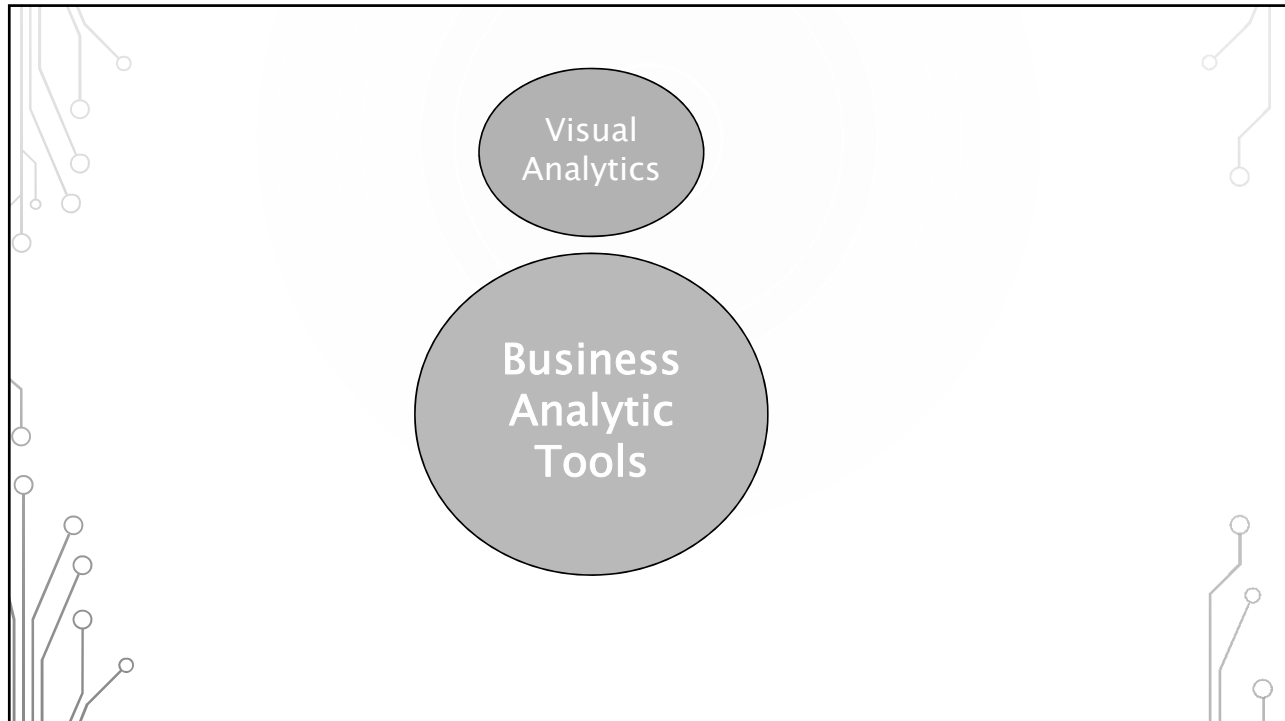
Business Analytic Tools

The goal of any tool is to analyze data and extract actionable and commercially relevant information that can be used to improve results or performance.

The Key - What To Use & When

LET'S EXAMINE A COUPLE OF SIMPLE METHODS





A diagram defining Visual Analytics. It features a grey oval in the top right corner labeled "Visual Analytics". To the left of the oval, the text is as follows:

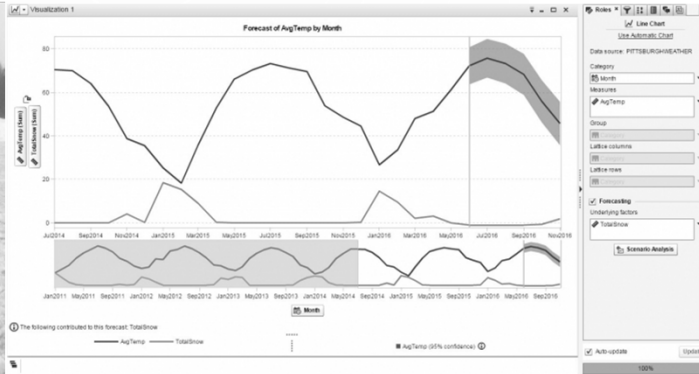
Visual Analytics
Create a visual or graph and then look at it to identify patterns. This integrated approach combining data analysis with data visualization and human interaction.

It combines the best of a person's capabilities (decision making, analysis, and reasoning) with the number crunching capabilities of a computer.

The diagram is set within a rectangular frame decorated with circuit-like patterns in the corners.

Weather Forecasting Predict Future Temperature & Dates Below Freezing

Visual
Analytics



The weather has to be consistently below freezing (32F) for a week or two in order for the ice to freeze so we can play hockey. Visual Analytics can be applied by users to predict how their data trends into the future.

Correlati
on
Analysis

Business
Analytic
Tools

Correlation Analysis

Correlation Analysis

Technique that allows you determine whether there is a relationship between two separate variables and how strong that relationship might be. It is most effective if you suspect that there is a relationship between two variables and want to confirm your assumption.

Correlation Analysis Age & Static Blood Pressure

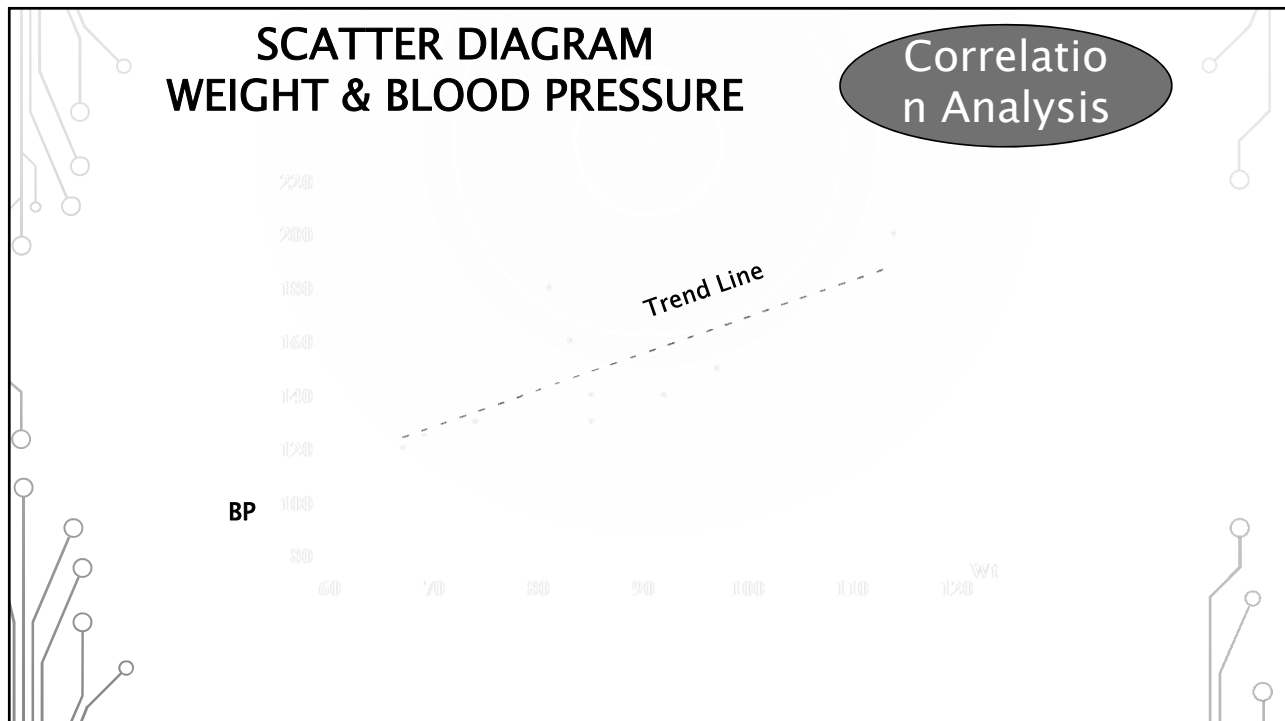
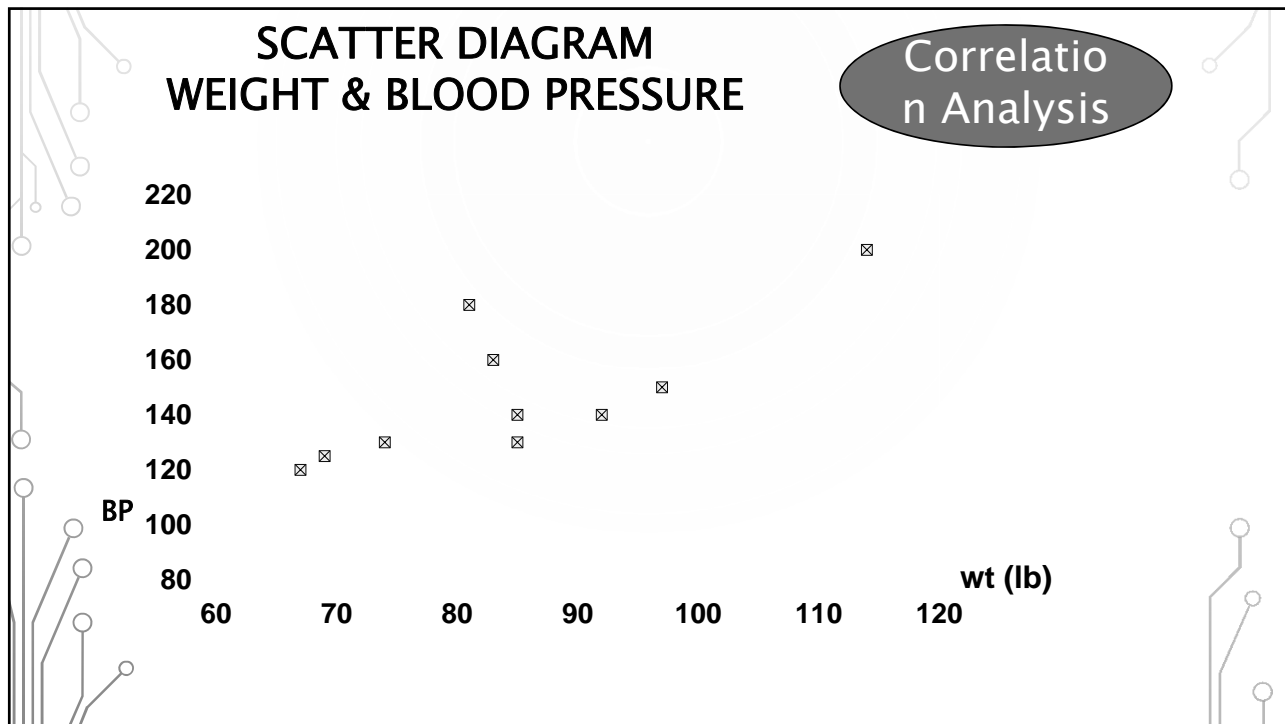
Correlation Analysis

10 Patients, Checked Daily

JUNE					
1	187	11	187	21	187
2	184	12	184	22	184
3	188	13	188	23	188
4	187	14	187	24	187
5	186	15	186	25	186
6	187	16	187	26	187
7	185	17	185	27	185
8	188	18	188	28	188
9	189	19	189	29	189
10	187	20	187	30	187
			31		
					Avg. 186.8

Patient Monthly Log

	Patient									
	1	2	3	4	5	6	7	8	9	10
Avg. Weight	145	152	187	182	163	214	214	202	251	187
Avg. SBP	120	125	140	160	130	180	150	140	200	130

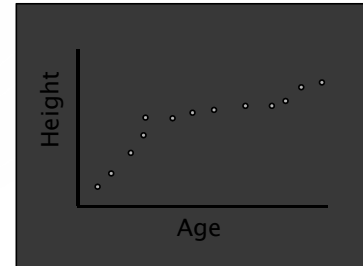
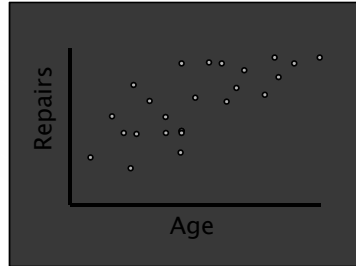
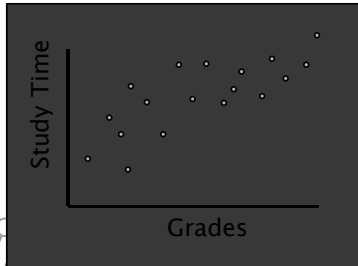


Correlation Analysis

OTHER EXAMPLES

Does Studying Improve Grades? When Should I Buy A New Car?

How Tall Will My Child Be?



Business
Analytic
Tools

Regressi
on
Analysis

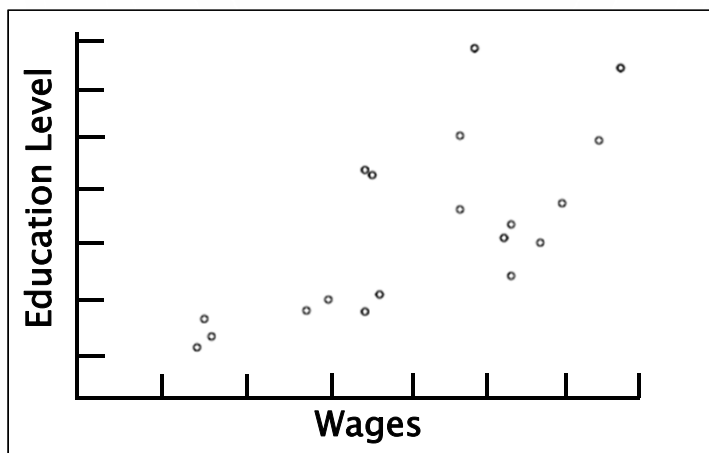
Regression Analysis

Regression Analysis

A statistical tool for investigating the relationship between two variables; for example if there is a casual relationship between two variables (e.g., when is a good time to purchase a car during the year). It is used to understand how one variable is affecting another to establish a known-known.

Regression Analysis

Thus **regression analysis** is used to predict the behavior of a dependent variable (education and wages) based on the behavior of a number of independent variables (men vs woman, region, school choice, ethnicity, parental success, etc.) status.



Random Survey of 100 Men & Woman

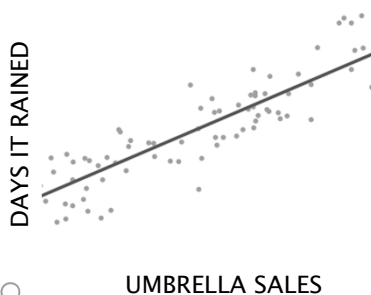
Regression
Analysis

Assisted With
Access To
Participants
Smart Watch Data
On Quality of
Sleep



CAUTION! Correlation Is Not Always Causation

Regression
Analysis



Regression analysis or any other analysis that tries to explain the impact of one factor on another, you need to remember that “Correlation Is Not Always Causation”.

This is critical and here’s why: It’s easy to say that there is a correlation between rain and monthly sales. The regression shows that they are indeed related. But it’s an entirely different thing to say that rain *caused* the sales. Unless you’re selling umbrellas, it might be difficult to prove that there is cause and effect. You can’t make assumptions, you have to confirm that this is indeed causing them to make the purchase.

LEARNING EXAMPLES

Raw Data Regarding Work Orders

WO	Shop	GSE Repair	Step	Group Count	Customer Number	Date Receipt	Date Shipped	Total TAT	Total OTD
5	100000716849	112	Operations	3	C000009106	8/11/2017 0:00		17	0
7	100000716843	101	Operations	3	C00000801	8/11/2017 0:00		17	0
3	100000716846	106	Shipped	0	C000002844	8/11/2017 0:00	8/25/2017 0:00	14	1
1	100000716947	102	Shipped	0	C000001351	8/11/2017 0:00		7	1
3	100000716815	102	Operations	3	C000000423	8/11/2017 0:00		17	1
3	100000716957	107	Customer Service	1	C000006631	8/11/2017 0:00		17	1
3	100000716919	103	Shipped	0	C000009106	8/11/2017 0:00	8/21/2017 0:00	10	1
1	100000716915	812	Shipped	0	C000009773	8/11/2017 0:00	8/18/2017 0:00	7	1
3	100000716839	103	Customer Service	1	C000002413	8/11/2017 0:00		17	1
1	100000716884	102	Operations	3	C000012383	8/11/2017 0:00		17	1
5	100000716848	102	Customer Service	1	C000000099	8/11/2017 0:00		17	1
7	100000716917	812	Shipped	0	C000009773	8/11/2017 0:00	8/22/2017 0:00	11	1
3	100000716856	102	Customer Service	1	C000000099	8/11/2017 0:00		17	1
3	100000716867	101	Operations	3	C000010367	8/11/2017 0:00		17	1
1	100000716930	102	Customer Service	1	C000000099	8/11/2017 0:00		17	1
1	100000716888	112	Operations	3	C000009106	8/11/2017 0:00		17	0
1	100000716912	612	Shipped	0	C000012383	8/11/2017 0:00	8/21/2017 0:00	10	1
1	100000716811	102	Shipped	0	C000000423	8/11/2017 0:00	8/25/2017 0:00	14	1
5	100000716988	106	Shipped	0	C000009649	8/11/2017 0:00	8/21/2017 0:00	10	1
3	100000716932	103	Customer Service	1	C000007464	8/11/2017 0:00		17	1
3	100000716921	603	Shipped	0	C000002413	8/11/2017 0:00	8/19/2017 0:00	8	1
1	100000716943	107	Shipped	0	C000006631	8/11/2017 0:00	8/22/2017 0:00	11	1
1	100000716945	103	Shipped	0	C000000423	8/11/2017 0:00	8/22/2017 0:00	11	1
2	100000716874	603	Customer Service & KitRoom	1	C000002413	8/11/2017 0:00		17	1
3	100000716796	102	Operations	3	C000000423	8/11/2017 0:00		17	1
1	100000716985	103	Shipped	0	C000009106	8/11/2017 0:00	8/21/2017 0:00	10	1
7	100000716854	112	Operations	3	C000009106	8/11/2017 0:00		17	0
3	100000716992	612	Shipped	0	C000009106	8/11/2017 0:00	8/18/2017 0:00	7	1
1	100000716894	103	Shipped	0	C000010367	8/11/2017 0:00	8/24/2017 0:00	13	1
1	100000716841	103	Shipped	0	C000002413	8/11/2017 0:00	8/16/2017 0:00	5	1
2	100000716963	106	Operations	3	C000007464	8/11/2017 0:00		17	1
3	100000716961	107	Customer Service	1	C000006631	8/11/2017 0:00		17	1
1	100000716826	103	Operations	3	C000001351	8/11/2017 0:00		17	1
1	100000716878	102	Shipped	0	C000012383	8/11/2017 0:00	8/18/2017 0:00	7	1
3	100000716898	603	Shipped	0	C000002413	8/11/2017 0:00	8/22/2017 0:00	11	0
3	100000716781	103	Operations	3	C000010262	8/11/2017 0:00		17	1
1	100000716858	102	Shipped	0	C000011934	8/11/2017 0:00	8/24/2017 0:00	13	1
1	100000716852	112	Operations	3	C000009106	8/11/2017 0:00		17	0
5	100000716862	101	Operations	3	C000010367	8/11/2017 0:00		17	1
7	100000716907	612	Shipped	0	C000012383	8/11/2017 0:00	8/18/2017 0:00	7	1
3	100000716907	612	Shipped	0	C000012383	8/11/2017 0:00	8/18/2017 0:00	7	1

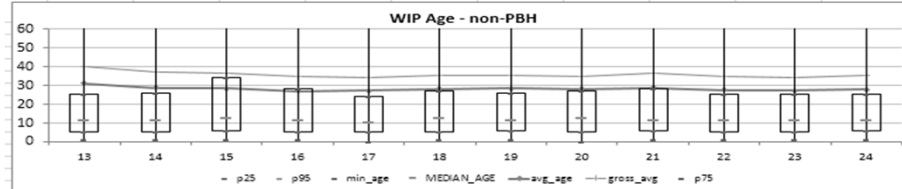
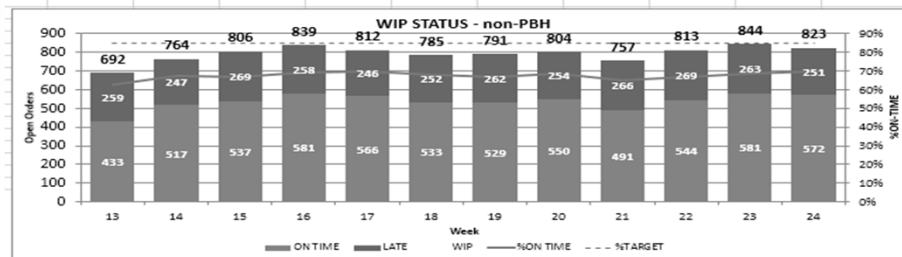
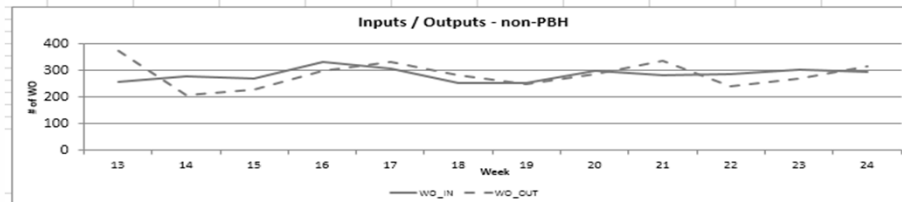
Compiling Same Work Order Data Differently

INPUTS / OUTPUTS CLOSED LOOP

MONTH	MONTH_STAR	WO_IN	WO_OUT
Jun-17	6/1/2017	1438	1381
Jul-17	7/1/2017	1160	1196
Aug-17	8/1/2017	1565	1354
Sep-17	9/1/2017	1076	724
Oct-17	10/1/2017	1309	1275
Nov-17	11/1/2017	1133	1402
Dec-17	12/1/2017	958	1067
Jan-18	1/1/2018	1232	1245
Feb-18	2/1/2018	1077	1209
Mar-18	3/1/2018	1214	1325
Apr-18	4/1/2018	1259	1166
May-18	5/1/2018	1233	1272

Converting The Data To Information

3 Ways



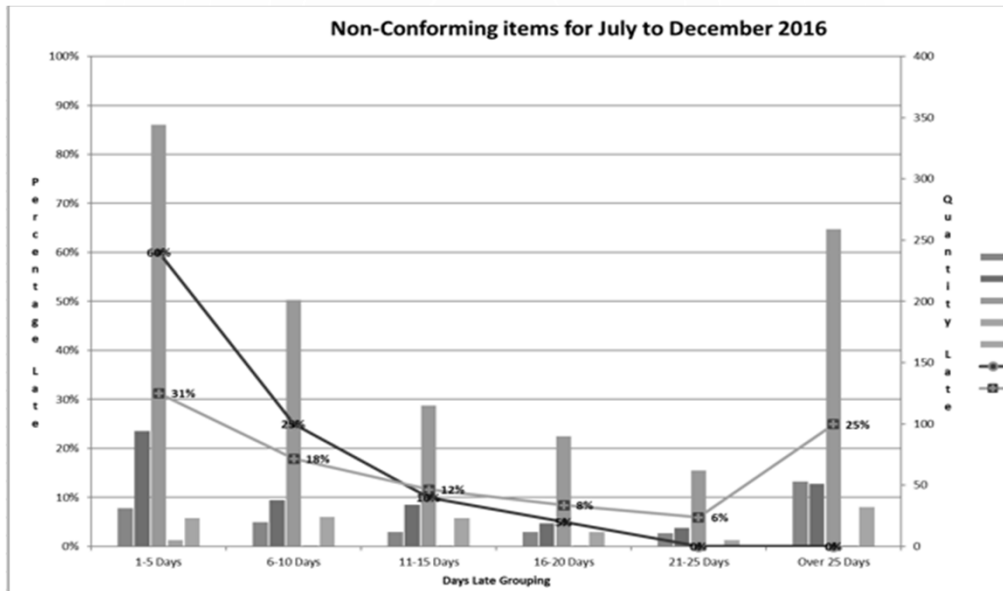
Raw Data Regarding Non-Conformities

1501	Shoj	Date Rece	Week Receiv	*Month In	*Year In	Rec Notificatio	Req-PO Date	Zf	Z1EE	Z2
100000679744	101	14-Mar-17	11		3	2017	300554181	14-Mar-17 Z4	100000679745	300554183
100000679742	101	14-Mar-17	11		3	2017	300554178	14-Mar-17 Z4	100000679743	300554180
100000679740	101	14-Mar-17	11		3	2017	300554175	14-Mar-17 Z4	100000679741	300554177
100000679733	103	14-Mar-17	11		3	2017	300554163	14-Mar-17 Z4	100000679734	300554166
100000679729	103	14-Mar-17	11		3	2017	300554159	14-Mar-17 Z4	100000679730	300554161
100000679724	103	14-Mar-17	11		3	2017	300554109	14-Mar-17 Z4	100000679725	300554156
100000679720	603	14-Mar-17	11		3	2017	300554151	14-Mar-17 Z4		
100000679711	107	14-Mar-17	11		3	2017	300554142	14-Mar-17 Z4	100000679712	300554144
100000679707	112	13-Mar-17	11		3	2017	300553713	14-Mar-17 Z4	100000679708	300554139
100000679699	812	14-Mar-17	11		3	2017	300554121	14-Mar-17 Z4	100000679701	300554130
100000679696	101	14-Mar-17	11		3	2017	300554122	14-Mar-17 Z4	100000679697	300554124
100000679694	102	14-Mar-17	11		3	2017	300554118	14-Mar-17 Z4	100000679695	300554120

Compiling Same Non-Conforming Data Differently

Group1	Group2	Group3	Group4	Group5	Group6	Grand Total
497	284	185	134	94	396	1590
1-5 Days	6-10 Days	11-15 Days	16-20 Days	21-25 Days	Over 25 Days	
23	24	23	12	5	32	119
19%	20%	19%	10%	4%	27%	
31	20	12	12	11	53	139
22%	14%	9%	9%	8%	38%	
94	38	34	19	15	51	251
37%	15%	14%	8%	6%	20%	
5	1	1	1	1	1	10
50%	10%	10%	10%	10%	10%	
344	201	115	90	62	259	1071
32%	19%	11%	8%	6%	24%	
60%	25%	10%	5%	0%	0%	
497	284	185	134	94	396	1590
31%	18%	12%	8%	6%	25%	
497	284	185	134	94	396	

Converting The Data Into Information



Material Inventory Data

Material	PN Desc.	Material	Pint	Sloc	Concatenate	Batch	Req Date Header	Order
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000414681	2/7/2014	100000442724
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000414681	6/3/2014	100000465449
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000414681	9/17/2014	100000483743
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000414681	9/30/2014	100000488005
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	10/8/2014	100000489949
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	10/2/2014	100000490199
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	10/23/2014	100000493091
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	11/26/2014	100000500156
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	11/26/2014	100000500157
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	11/26/2014	100000500424
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	12/8/2014	100000501466
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	12/8/2014	100000501470
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	12/15/2014	100000504242
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	12/15/2014	100000504244
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	1/6/2015	100000505012
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	4/6/2015	100000505607
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	12/26/2014	100000505654
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	2/18/2015	100000510990
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	2/18/2015	100000511874
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	4/6/2015	100000512188
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	1/30/2015	100000513019
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	2/6/2015	100000514280
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	2/6/2015	100000514282
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	3/16/2015	100000514397
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	4/6/2015	100000515257
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9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	3/16/2015	100000518665
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	3/24/2015	100000521620
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	4/21/2015	100000526747
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	4/24/2015	100000527029
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	4/27/2015	100000529922
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	4/27/2015	100000530084
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	5/1/2015	100000531130
9-6147-090-1	SUPPORT (PMA)	9-6147-090-1	MI01	MI03	9-6147-090-1MI01	6000419089	7/22/2015	100000549016
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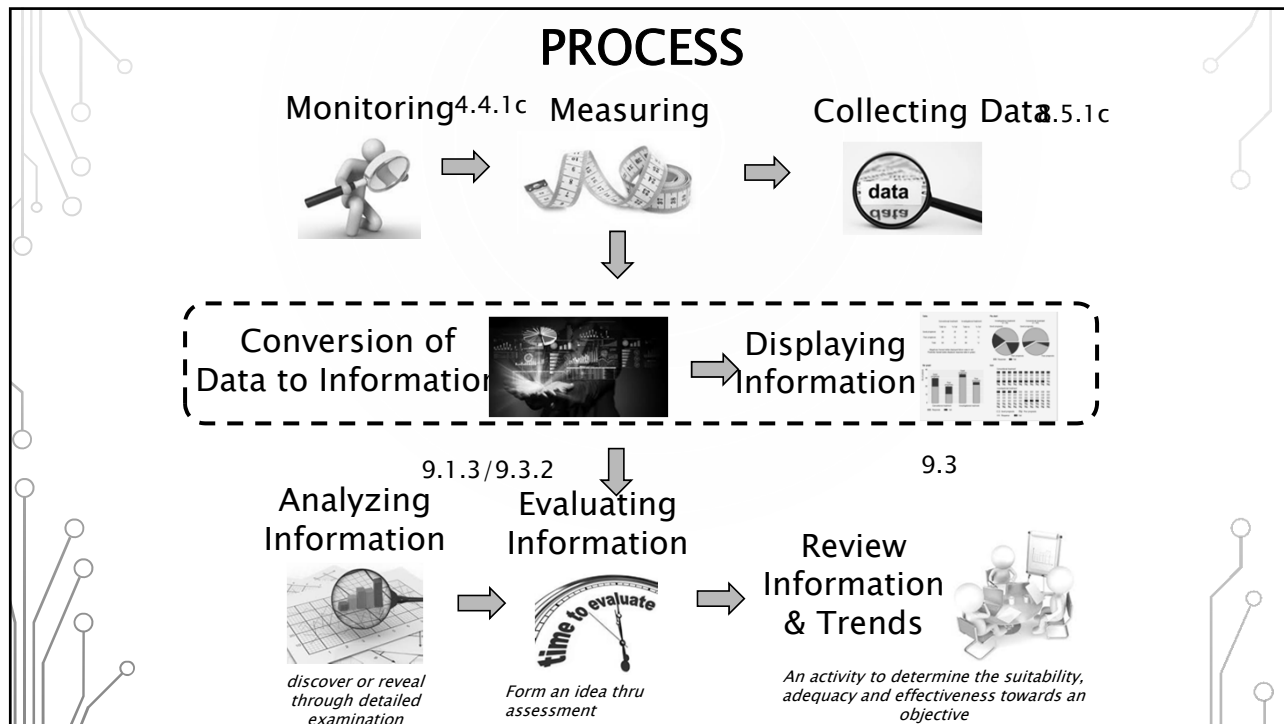
Forecast
Of
Future
Needs
Based
On
Historical
Demand

LRU (All)		Plnt		Total Jobs = 200		
Sum of Reqmts qty				MIA Jobs 133	PHX Jobs 67	
PN Desc.	Material	MI01	PX01	Grand Total	MIA K%	PHX K%
AXLE	6147-102	1	7	8	1%	10%
BALL	187780158	996	869	1865	749%	1297%
BALL 2.5	KB0250A1	1012		1012	761%	0%
BALLNUT	6147-123	16	7	23	12%	10%
BALLSCREW	6147-112	1	2	3	1%	3%
BOARD	6147-600-3	1	1	2	1%	1%
COVER	6147-003-2	1		1	1%	0%
FLANGE	6147-132	129	31	160	97%	46%
GEAR	6147-133	135	31	166	102%	46%
HOUSING	6147-210		3	3	0%	4%
LEVER	6147-093-1	105	7	112	79%	10%
LEVER (PMA)	9-6147-093-1	23	21	44	17%	31%
MALE MODULE	9DMCAB40P02		9	9	0%	13%
NUT	E2Q1CK060TPA	1	9	10	1%	13%
PIN	KAR300A098A		14	14	0%	21%
RACE	6147-056	36	1	37	27%	1%
	6147-104	35	3	38	26%	4%
SHAFT	6147-500	46	3	49	35%	4%
	6147-525	1	1	2	1%	1%
SHAFT (PMA)	9-6147-500	9	18	27	7%	27%
SHIM	A194-238-10		141	141	0%	210%
	A220-278-05	37	20	57	28%	30%
	A220-278-10	36	213	249	27%	318%
SPRING WASHER	062-180-080	610	215	825	92%	64%
SUPPORT	6147-090-1	88	3	91	66%	4%
SUPPORT (PMA)	9-6147-090-1	51	3	54	38%	4%
TERMINAL	52411	3		3	2%	0%
Grand Total		3373	1632	5005		

HEALTH
EXAMPLE

USING
CORRELATION
ANALYSIS





EXAMPLE PERSONAL HEALTH

4.4.1c)
Criteria? *NiH – Adult Treatment Panel (ATP) III guidelines*

Methods? *Blood Tests*

- Standard Orders – *Blood Testing*

9.1.1

a) What? *Lipid Profile, Metabolic Panel, A1C*

b) Methods? *Blood Work*

c) When Performed? *Quarterly*

d) When Will Results Be Analyzed/Evaluated? *Doctor*

9.1.5
Visit


c) Performance and acceptance? *Blood Work Compared Standards*

e) Effectiveness Of Actions (Risks, Opportunities)? *Are Medications & Exercise Working*

9.3.2
Life

d) Need for improvements? *What Needs To Be Worked On (Changes In Life)*

e) Monitoring and measurement results? *Consult Your Doctor About Test Results*



Doctor & Patient

AS9120 Clauses

DEPLOYMENT

COLLECT DATA

Tourniquet
Puncture site covered
Specimen retrieved

MONITOR

MEASURE

BLOOD TEST RESULTS

LIPID PROFILE DATA

Component	Your Value	Standard Range	Flag
Cholesterol	190 mg/dL	125 - 200 mg/dL	
HDL Cholesterol	35 mg/dL	> OR = 40 mg/dL	L
Triglyceride	164 mg/dL	<150 mg/dL	H
LDL Cholesterol	122 mg/dL (calc)	<130 mg/dL (calc)	
TC:HDL Ratio	5.4 (calc)	< OR = 5.0 (calc)	H
NON-HDL CHOLESTEROL	155 mg/dL (calc)	mg/dL (calc)	

BLOOD TEST RESULTS

COMPLETE METOBOLIC PANEL DATA



Component	Your Value	Standard Range	Flag
Glucose	141 mg/dL	65 - 99 mg/dL	H
BUN	13 mg/dL	7 - 25 mg/dL	
Creatinine	0.75 mg/dL	0.70 - 1.33 mg/dL	
Estimated GFR	105 mL/min/1.73m2	> OR = 60 mL/min/1.73m2	
If African American	122 mL/min/1.73m2	> OR = 60 mL/min/1.73m2	
BUN/Creat Ratio	NOT APPLICABLE (calc)	6 - 22 (calc)	
Sodium	139 mmol/L	135 - 146 mmol/L	
Potassium	4.0 mmol/L	3.5 - 5.3 mmol/L	
Chloride	105 mmol/L	98 - 110 mmol/L	
CO2	24 mmol/L	20 - 31 mmol/L	
Calcium	10.0 mg/dL	8.6 - 10.3 mg/dL	
Protein, Total	7.9 g/dL	6.1 - 8.1 g/dL	
Albumin	4.1 g/dL	3.6 - 5.1 g/dL	
Gamma Globulin	3.8 g/dL (calc)	1.9 - 3.7 g/dL (calc)	H
Alb/Glob Ratio	1.1 (calc)	1.0 - 2.5 (calc)	
Bilirubin, Total	1.2 mg/dL	0.2 - 1.2 mg/dL	
Alkaline Phosphatase	77 U/L	40 - 115 U/L	
AST	43 U/L	10 - 35 U/L	H
ALT	27 U/L	9 - 46 U/L	

HISTORICAL TEST RESULT DATA

Name	Standard Range	2/26/2013	10/23/2013	12/18/2013	6/30/2014	10/28/2014	12/29/2015	9/8/2016	2/11/2017	6/2/2017
Cholesterol	125 - 200 mg/dL	203 H	200	210 H	189	240 H	196	187	217 H	190
HDL Cholesterol	> OR = 40 mg/dL	42	36 L	46	42	54	47	43	43	35 L
LDL Cholesterol	<130 mg/dL (calc)	136 H	139 H	131 H	129	149 H	121	105	133 H	122
NON-HDL CHOLESTEROL	mg/dL (calc)	161 H	164 H	164 H	147	186 H	149	144	174 H	155
TC:HDL Ratio	< OR = 5.0 (calc)	4.8	5.6 H	4.6	4.5	4.4	4.2	4.3	5	5.4 H
Triglyceride	<150 mg/dL	126	123	167 H	90	184 H	139	195 H	204 H	164 H

		10/23/2013	12/18/2013	12/31/2013	1/1/2014	1/2/2014	6/30/2014	10/28/2014	12/29/2015	2/22/2016	7/5/2016	7/5/2016	2/11/2017	2/11/2017	2/11/2017	6/2/2017
Alb/Glob Ratio	1.0 - 2.5 (calc)	1.2	1.1				1.1	1.1	1	1	1		1.1		1.1	1.1
Albumin	3.6 - 5.1 g/dL		4	4.3			4.4	4.4	4.4	4.4	4.4		4.2		4.3	4.1
Alkaline Phosphatase	40 - 115 U/L		74	85			98	90	81	73	96		82		83	77
ALT	9 - 46 U/L		32	28			38	34	25	25	32		30		30	27
AST	10 - 35 U/L		40	35			43 H	50 H	35	34	40 H		43 H		43 H	43 H
Bilirubin, Total	0.2 - 1.2 mg/dL		1.3 H	0.8			0.9	1.2	1.5 H	1	1.2		0.9		0.9	1.2
BUN	7 - 25 mg/dL				17	15	11	13	21	21	18			11	11	13
BUN/CREATININERATIO	6 - 22 (calc)	n/a	n/a				n/a	n/a	n/a	n/a	n/a		n/a	n/a	17	n/a
Calcium	8.6 - 10.3 mg/dL					8.8	9.7	10.1	10.3	11.1 H	10.5 H	10.5 H		9.8	10	10
Chloride	98 - 110 mmol/L				97 L	96 L	98	96 L	101	101	102		103	101	101	105
CO2	20 - 31 mmol/L				26	29	27	30	21	26	29		24	26	24	24
Creatinine	0.70 - 1.33 mg/dL				0.7	0.7	0.7	0.71	0.94	0.77	0.79		0.7	0.65 L	0.75	0.75
Estimated GFR	> OR = 60 mL/min/1.73m2	102	112				110	109	99	105	103		109	112	105	105
Gamma Globulin	1.9 - 3.7 g/dL (calc)	3.7	3.7				4.0 H	4.0 H	4.4 H	4.4 H	4.5 H		4.0 H		4.0 H	3.8 H
Glucose	65 - 99 mg/dL				156 H	125 H	244 H	149 H	155 H	138 H	141 H			143 H	139 H	141 H
If African American	> OR = 60 mL/min/1.73m2	118	130				128	127	108	122	120			126	130	122
Potassium	3.5 - 5.3 mmol/L				4.5	4.3	4.9	4.6	4.6	4.8	4.3		4.5	4.4	4	4
Protein, Total	6.1 - 8.1 g/dL		7.7	8.2			8.4 H	8.4 H	8.8 H	8.8 H	8.9 H		8.2 H		8.3 H	7.9
Sodium	135 - 146 mmol/L				134 L	132 L	135	137	137	139	141		138	137	139	139

Standard Range		2/26/2013	10/23/2013	12/18/2013	6/30/2014	10/28/2014	12/29/2015	9/8/2016	2/11/2017	6/2/2017
Hemoglobin A1C	<5.7% of total Hgb	7.2 H	9.3 H	8.9 H	8.6 H	8.8 H	7.0 H	7.4 H	6.9 H	7.4 H

HISTORICAL DATA HIGHLIGHTED

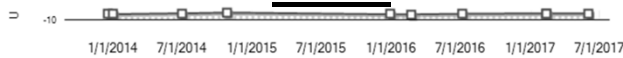
Name	Standard Range	2/26/2013	10/23/2013	12/18/2013	6/30/2014	10/28/2014	12/29/2015	9/8/2016	2/11/2017	6/2/2017
Cholesterol	125 - 200 mg/dL	203 H	200	210 H	189	240 H	196	187	217 H	190
MDL Cholesterol	> OR = 40 mg/dL	42	36 L	46	42	54	47	43	43	35 L
LDL Cholesterol	<130 mg/dL (calc)	136 H	139 H	131 H	129	149 H	121	105	133 H	122
NON-HDL CHOLESTEROL	mg/dL (calc)	161 H	164 H	164 H	147	186 H	149	144	174 H	155
TC:HDL Ratio	< OR = 5.0 (calc)	4.8	5.6 H	4.6	4.5	4.4	4.2	4.3	5	5.4 H
Triglyceride	<150 mg/dL	126	123	167 H	90	184 H	139	195 H	204 H	164 H

		10/23/2013	12/18/2013	12/31/2013	1/1/2014	1/2/2014	6/30/2014	10/28/2014	12/29/2015	1/23/2016	7/5/2016	7/5/2016	1/11/2017	2/11/2017	2/11/2017	6/2/2017
Ab/Glob Ratio	1.0 - 2.5 (calc)	1.2	1.1				1.1	1.1	1	1	1		1.1		1.1	1.1
Albumin	3.6 - 5.1 g/dL		4	4.3			4.4	4.4	4.4	4.4	4.4		4.2		4.3	4.1
Alkaline Phosphatase	40 - 115 U/L		74	85			98	90	81	73	96		82		83	77
ALT	9 - 46 U/L		32	28			38	34	25	25	32		30		30	27
AST	10 - 35 U/L		40	35			43 H	50 H	35	34	40 H		43 H		43 H	43 H
Bilirubin, Total	0.2 - 1.2 mg/dL		1.3 H	0.8			0.9	1.2	1.5 H	1	1.2		0.9		0.9	1.2
BUN	7 - 25 mg/dL				17	15	11	13	21	21	18		11	11	11	13
BUN/CREATININE RATIO	6 - 22 (calc)	n/a	n/a				n/a	n/a	n/a	n/a	n/a		n/a	n/a	17	n/a
Calcium	8.6 - 10.3 mg/dL					8.8	9.7	10.1	10.3	11.1 H	10.5 H	10.5 H		9.8	10	10
Chloride	98 - 110 mmol/L				97 L	96 L	98	96 L	101	101	102		103	101	101	105
CO2	20 - 31 mmol/L				26	29	27	30	21	26	29		24	26	24	24
Creatinine	0.70 - 1.33 mg/dL				0.7	0.7	0.7	0.71	0.94	0.77	0.79		0.7	0.65 L	0.75	0.75
Estimated GFR	>OR = 60 mL/min/1.73m2	102	112				110	109	93	105	103		109	112	105	105
Gamma Globulin	1.9 - 3.7 g/dL (calc)	3.7	3.7				4.0 H	4.0 H	4.4 H	4.4 H	4.5 H		4.0 H		4.0 H	3.8 H
Glucose	65 - 99 mg/dL				156 H	125 H	244 H	149 H	155 H	138 H	141 H		143 H	139 H	141 H	141 H
(African American)	>OR = 60 mL/min/1.73m2	118	130				128	127	108	122	120		126	130	122	122
Potassium	3.5 - 5.3 mmol/L				4.5	4.3	4.9	4.6	4.6	4.8	4.3		4.5	4.4	4	4
Protein, Total	6.1 - 8.1 g/dL		7.7	8.2			8.4 H	8.4 H	8.8 H	8.8 H	8.9 H		8.2 H		8.3 H	7.9
Sodium	135 - 146 mmol/L				134 L	132 L	135	137	137	139	141		138	137	139	139

Standard Range		2/26/2013	10/23/2013	12/18/2013	6/30/2014	10/28/2014	12/29/2015	9/8/2016	2/11/2017	6/2/2017
Hemoglobin A1C	<5.7 % of total Hgb	7.2 H	9.3 H	8.9 H	8.6 H	6.8 H	7.0 H	7.4 H	6.9 H	7.4 H

CONVERT & DISPLAY DATA

AST



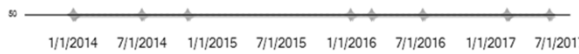
□ AST ---- Normal low — Normal high

Gamma Globulin



■ Gamma Globulin ---- Normal low — Normal high

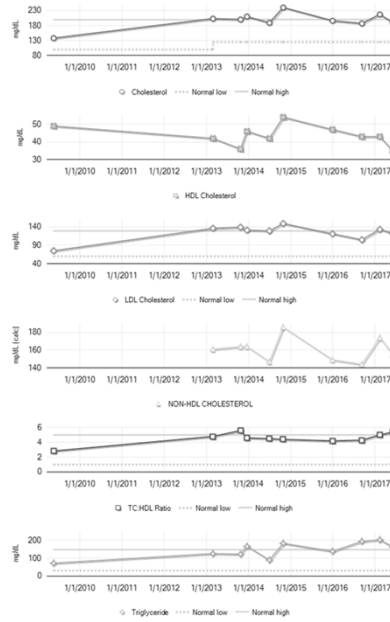
Glucose



◆ Glucose ---- Normal low — Normal high

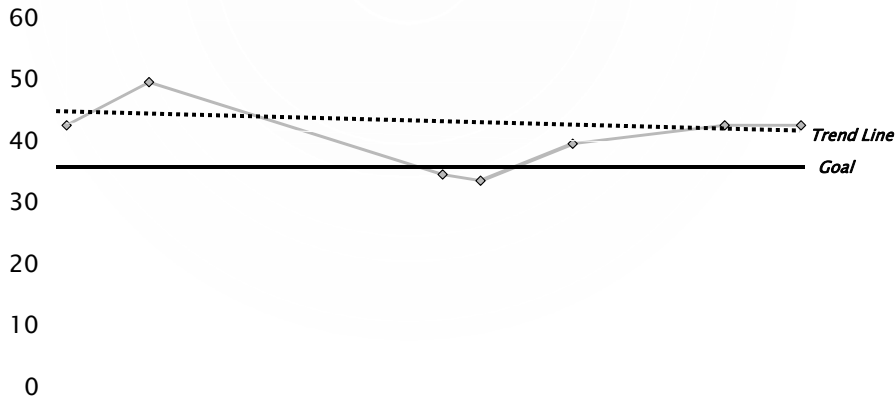
LIPID PROFILE INFORMATION

EFFECTIVE DISPLAY OF DATA



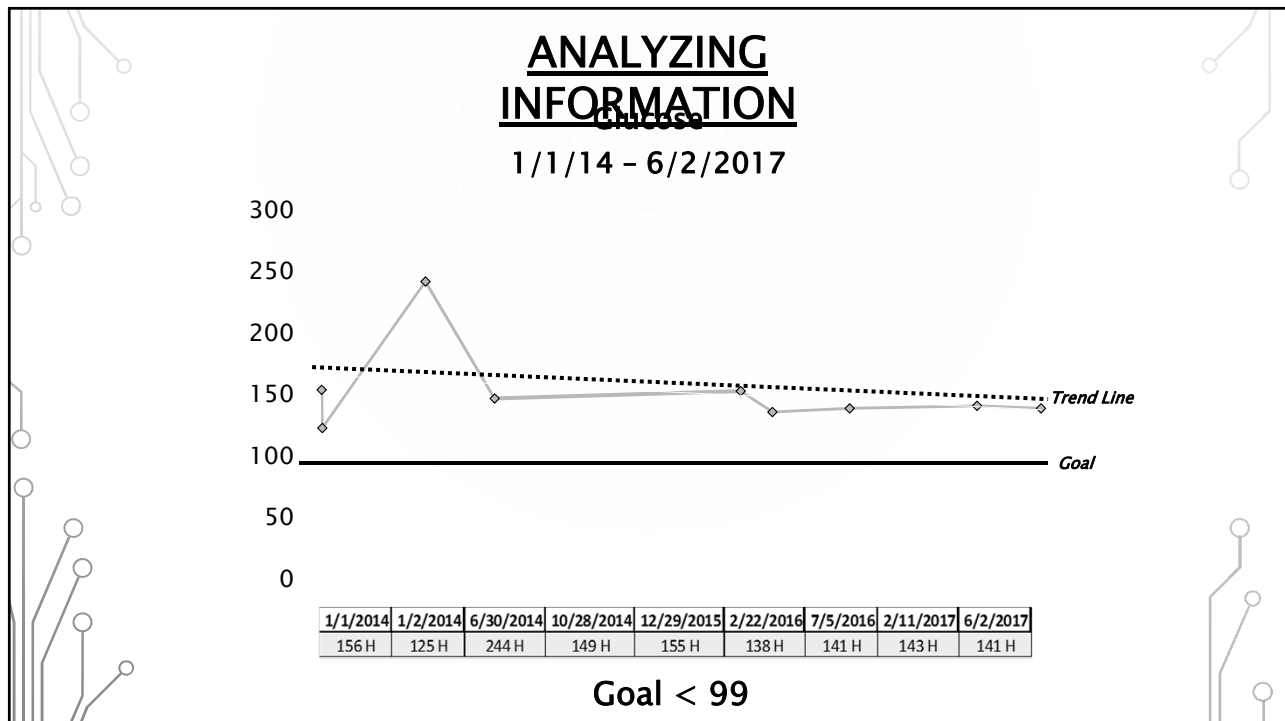
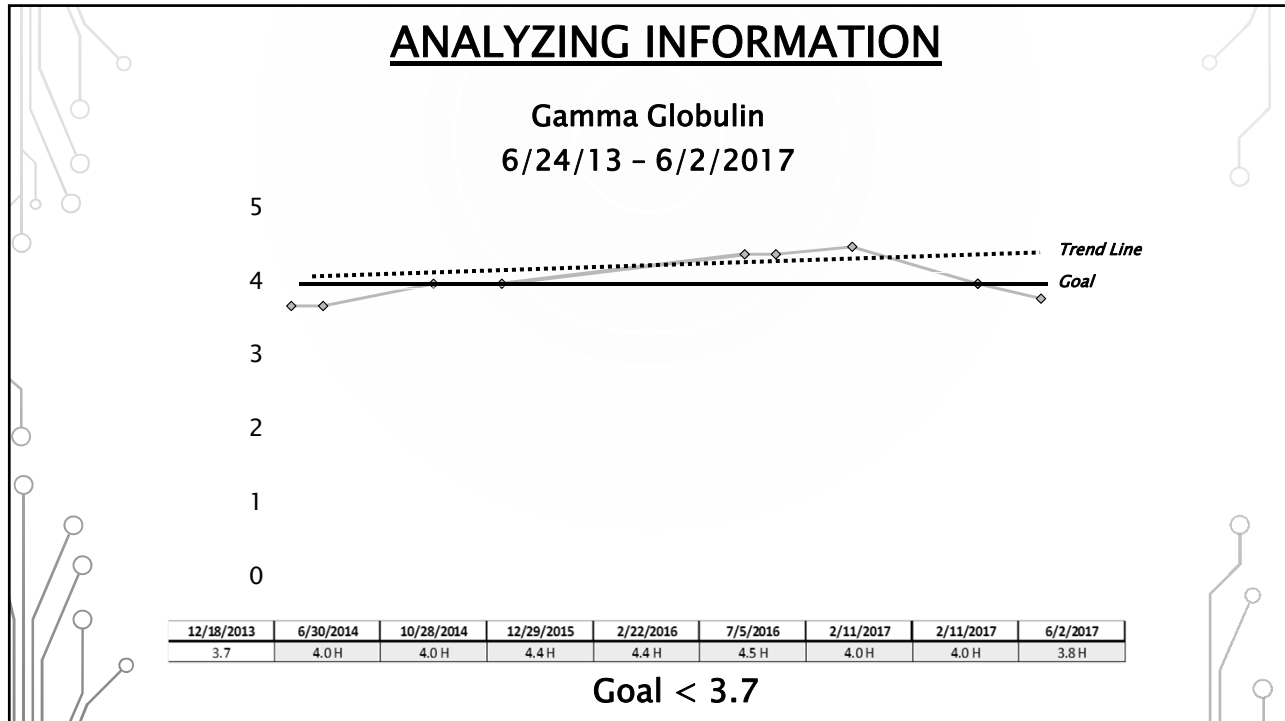
ANALYZING INFORMATION

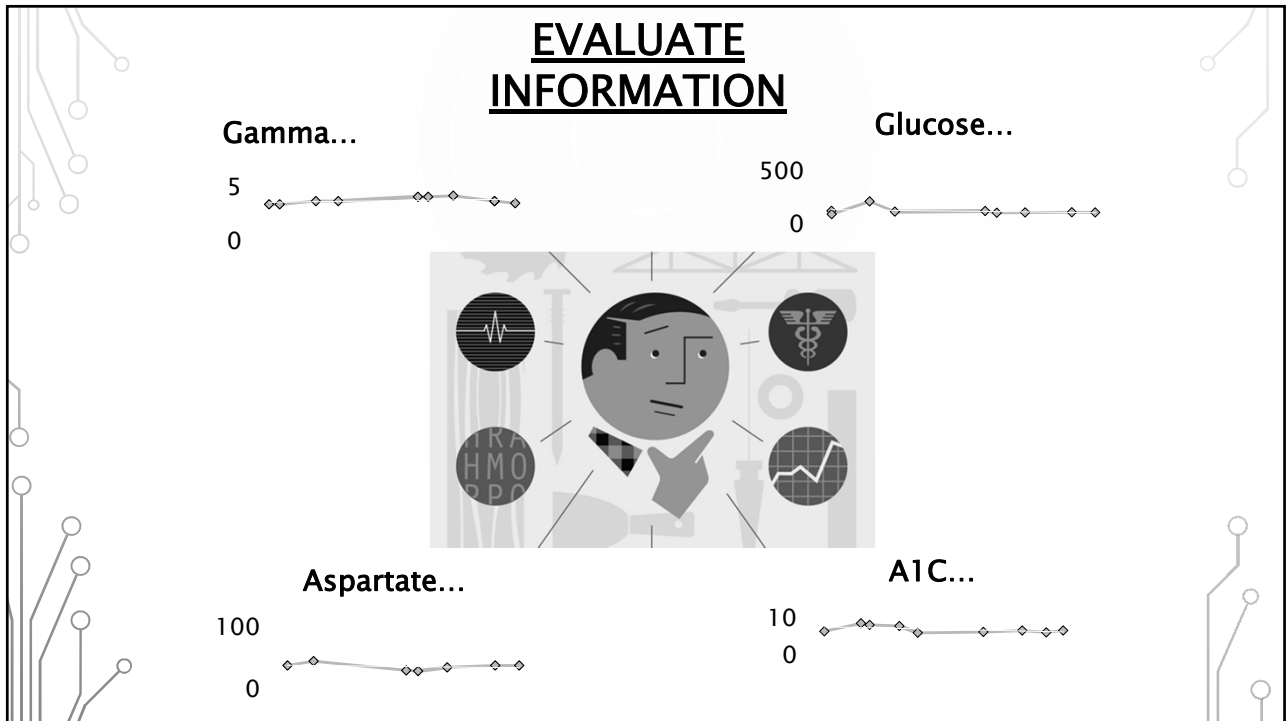
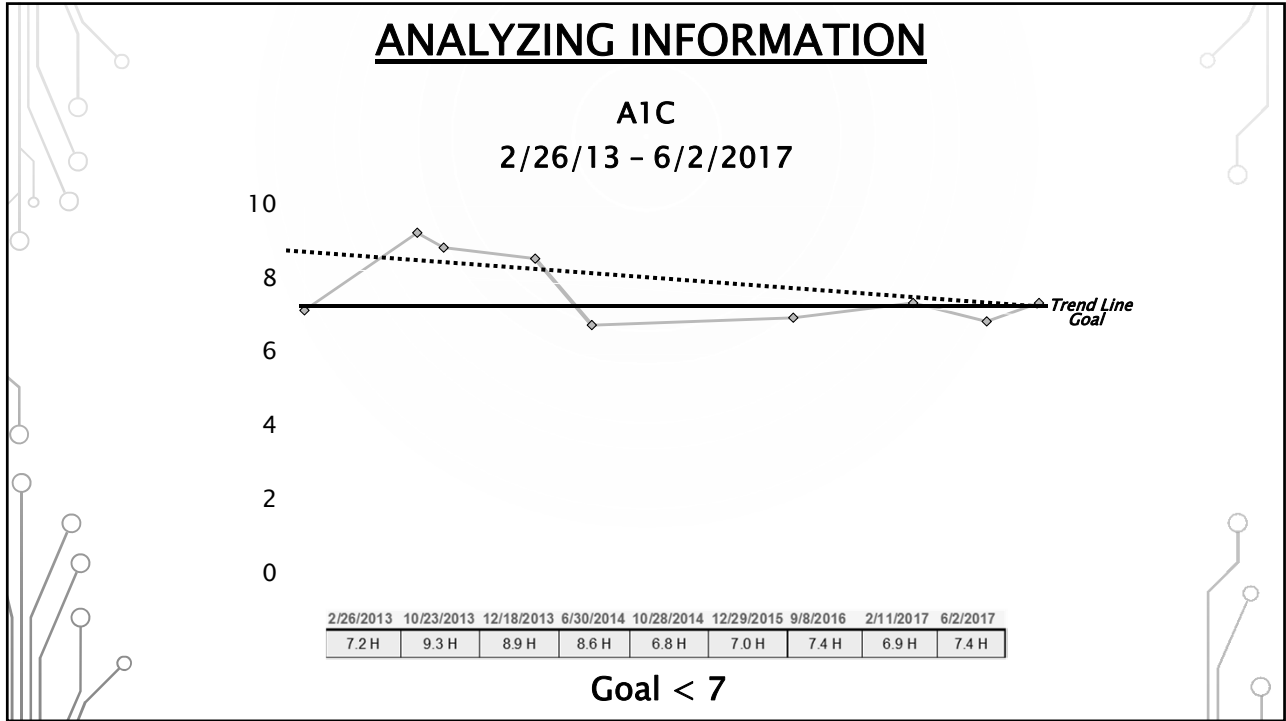
Aspartate Aminotransferase (AST)
6/30/14 - 6/2/17



6/30/2014	10/28/2014	12/29/2015	2/22/2016	7/5/2016	2/11/2017	6/2/2017
43	50	35	34	40	43	43

Goal < 35





REVIEW

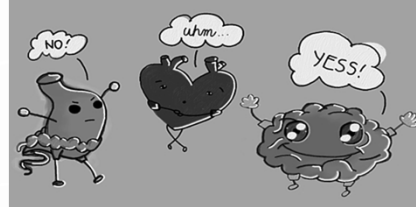
SUITABILITY?

ADEQUACY?

EFFECTIVENESS?

RISKS?

IMPROVEMENTS?



DECISIONS & ACTIONS

KK

I Know
What I
Know
You Don't
Know
What You
Don't
Know

DD

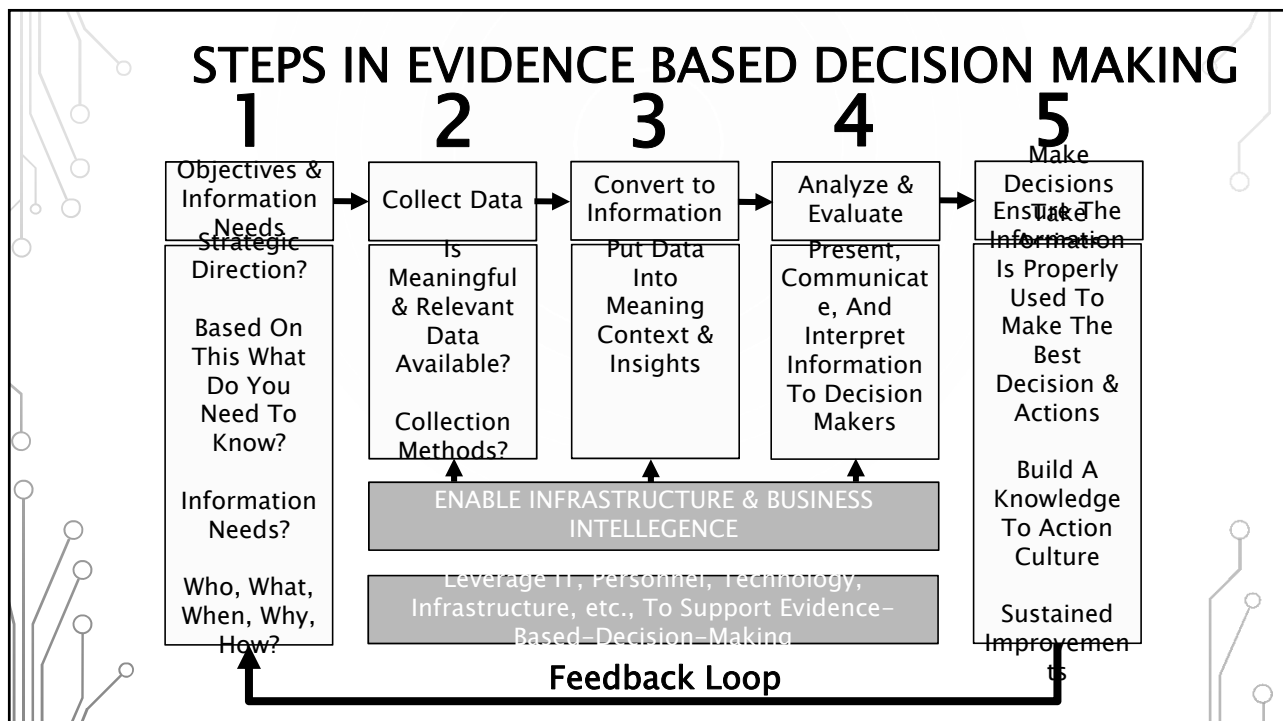
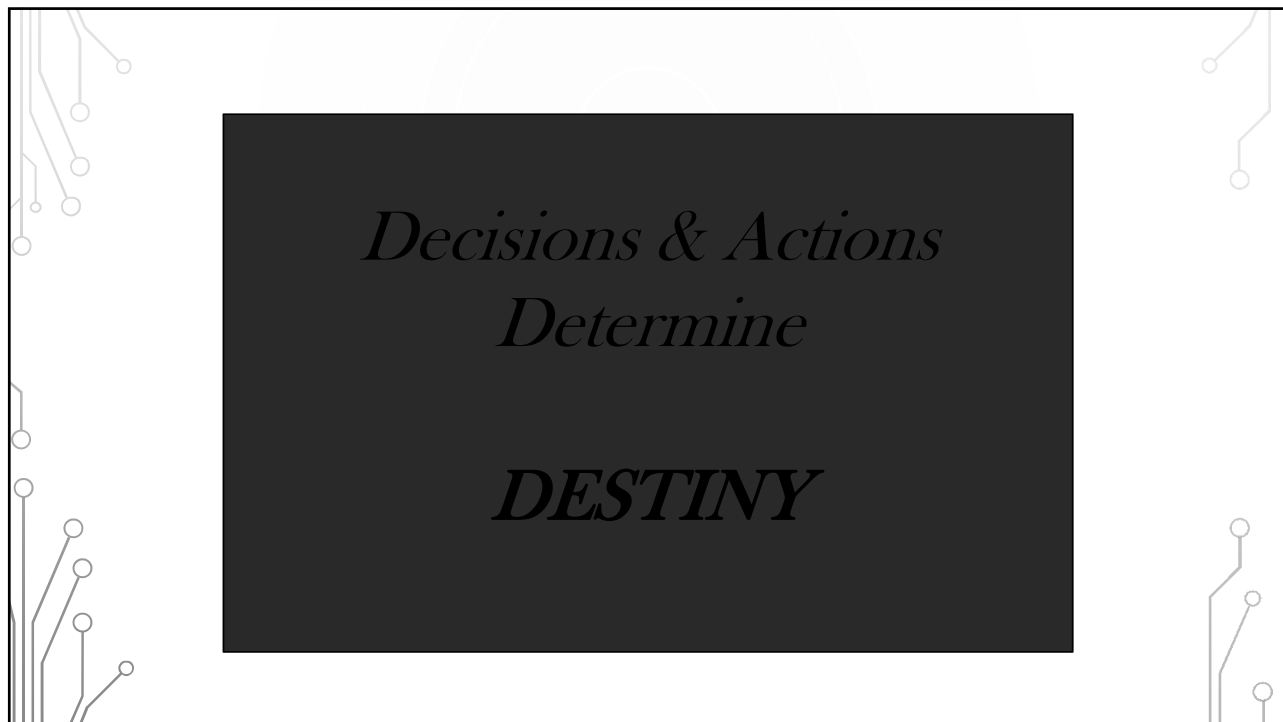
KD

I Know
What I
Don't
Know
You Didn't
Know You
Knew It

DK

Four Blocks Of Knowledge





Keys To Making a Good Decision

- ✓ Identify the decision to be made as well as the objectives or outcome you want to achieve.
- ✓ Do your homework. Gather as many facts and as much information you can to assess your options.
- ✓ Brainstorm and come up with several possible choices. Determine if the options are compatible with your strategic direction, values, interests and abilities.
- ✓ Weigh the probabilities or possible outcomes. In other words, what's the worst that can

THIS WAY? →

← OR THAT WAY?

Keys To Making a Good Decision

- ✓ Make a list of the pros and cons. Prioritize which considerations are very important to you, and which are less so. Sometimes when you match the pros against the cons you may find them dramatically lopsided.
- ✓ Solicit opinions and obtain feedback from those you trust or have had a similar situation to contend with. There may be some aspects you haven't thought about.
- ✓ Make the decision and monitor your results. Confirm you obtained the desired outcome.

THIS WAY? →

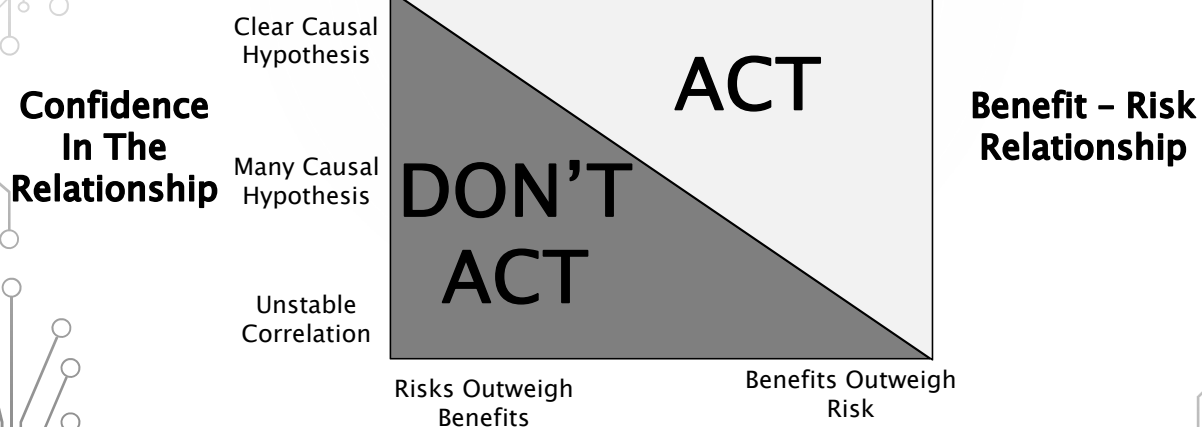
← OR THAT WAY?

POINTS TO CONSIDER WHEN MAKING DECISIONS

- There are no guarantees
- Be prepared to take risks
- Look for the opportunities
- Hindsight is 20/20
- It's OK to change your decision
- Don't be afraid to make mistakes
- Don't let fear stop you
- Once you make a decision try not to second-guess yourself
- Going forward it is important to remember



ACTIONS *When To Act?*



JUSTIFY

Triple Crown Winner

POTENTIAL FACTORS

Genetics (Mother, Father, Grandparents)

Strategy (Lead, Follow, Get Out Of The Way)

Owner/Trainer (Techniques, Treatment, Support)

Track Conditions (Wet, Dry, Muddy)

Historical Performance (track type, distance)

Workout Routine (time, days, duration)

Demeanor (Feisty, Mature, Uncontrollable)

Race Style (Fast Early, Measured, Strong Finisher)

Jockey History (Win/Loss Record, Horse Preference)

Jockey Style (Light Handler, Whipper, Dominate)

Jockey Size (Height, Reach, Weight)



[Watch Video](#)



