Deep Dive into ROI for Safe Patient Handling

Edward Hall

Simon Mawer

The Association of Safe Patient Handling Professionals

The ASPHP is a non-profit organization established to improve the safety of caregivers and their patients by advancing the science and practice of safe patient handling and mobility.

Anyone interested in the practice and profession of safe patient handling and mobility, regardless of level of education, profession or position, may join.

- **Become a member.**
  Network. Gain additional knowledge and educational credits. Enjoy extra benefits.
- **Find your fit.**
  Help shape the future of SPHM – serve on a committee.
- **Become Certified.**
  Attain recognition. Acquire the education and skills needed to make SPHM programs successful.
  Certification Options: Associate, Clinician, Professional
- **Lead us.**
  Serve on our Board. Become an officer.

Learning Objectives

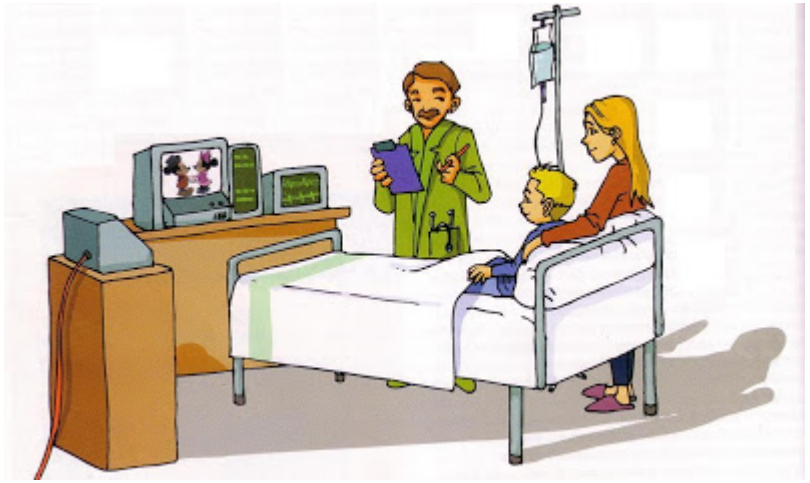
- Understand Value Drivers of Safe Patient Handling and Movement Programs
- Learn how to use Excel ROI tool can be used to Calculate ROI and Net Present Value of Programs
- Learn how to read Tornado, Waterfall diagrams and what they tell you about program value.

Questions for our audience

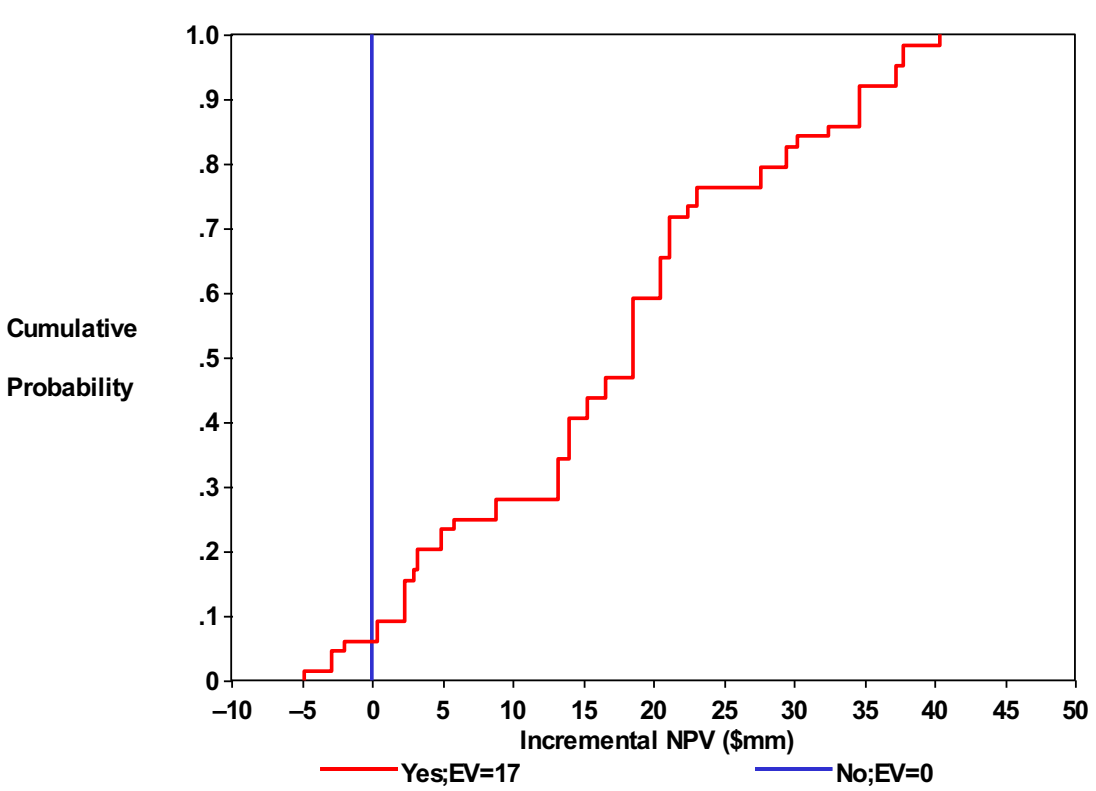
- Do you have access to data at your organization about claims cost?
- Are you planning are asking for funds in the next year for safe patient handing equipment?
- Do you have a dedicated SPH Coordinator?

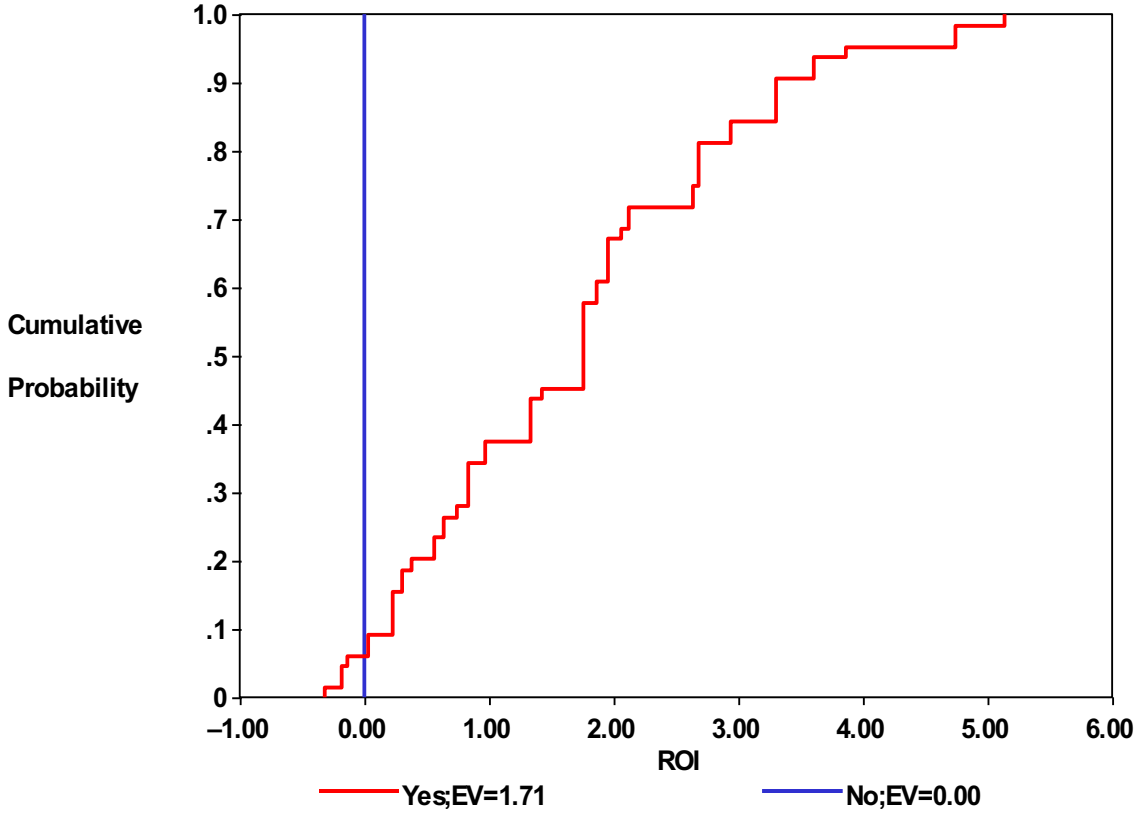
What are the threats to patient safety?

What are the threats to worker safety?

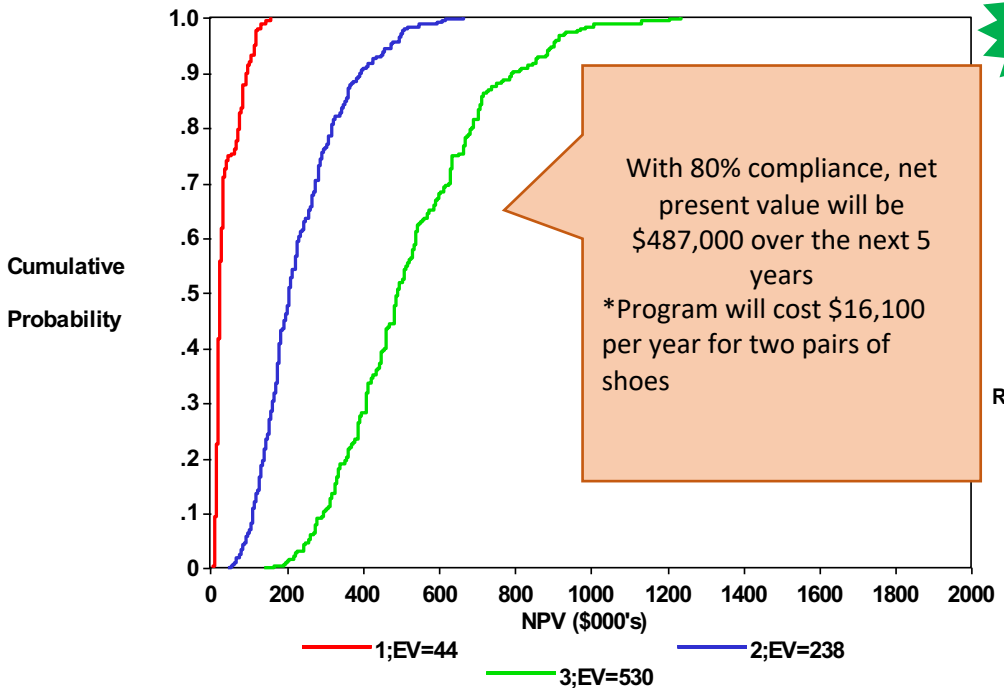


There is a 95% chance a Culture of Safety initiative will positively impact SHC cash flow, with a mean contribution of $17m NPV over 5 years with 171 IRR.



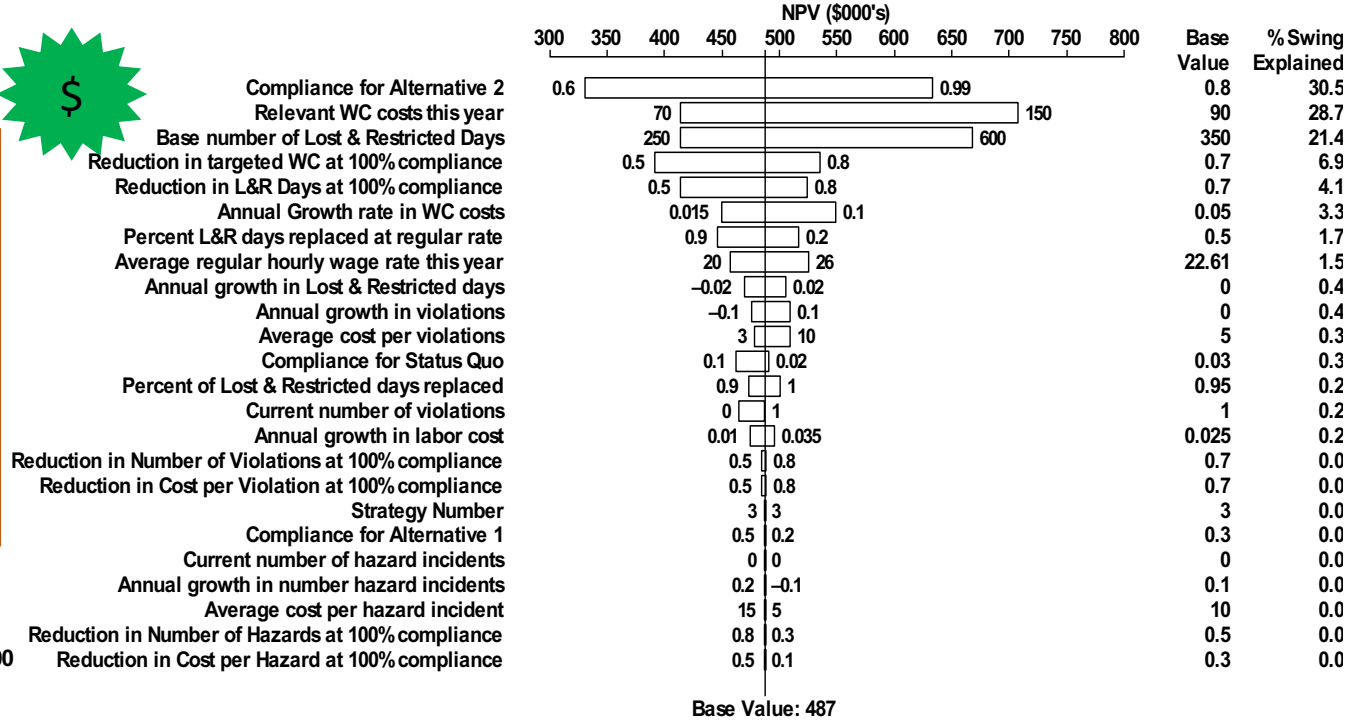


Return on Investment for Housekeeping Shoes for Crews Campaign



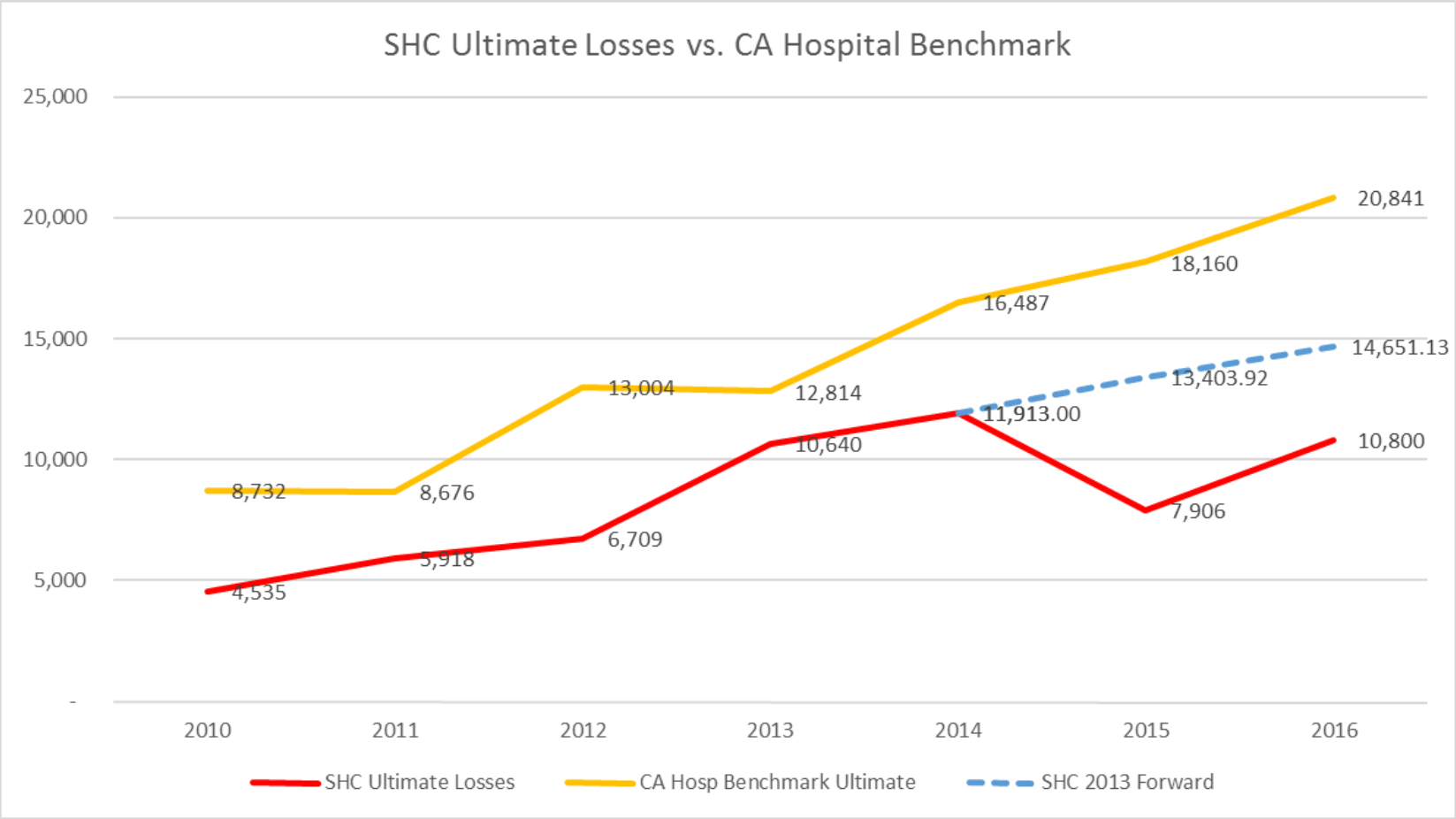
With 80% compliance, net present value will be $487,000 over the next 5 years

*Program will cost $16,100 per year for two pairs of shoes



- Scenario 1: current program (none) net present value (NPV) is $44,000
- Scenario 2: Voluntary program where housekeepers buy own shoes NPV is $180,000
- Scenario 3: Hospital purchases shoes and monitors thru **OBSERVATIONS** program NPV is $487,000
  - Current Impact on staff injuries in 2.5 years has been over $200,000 in savings

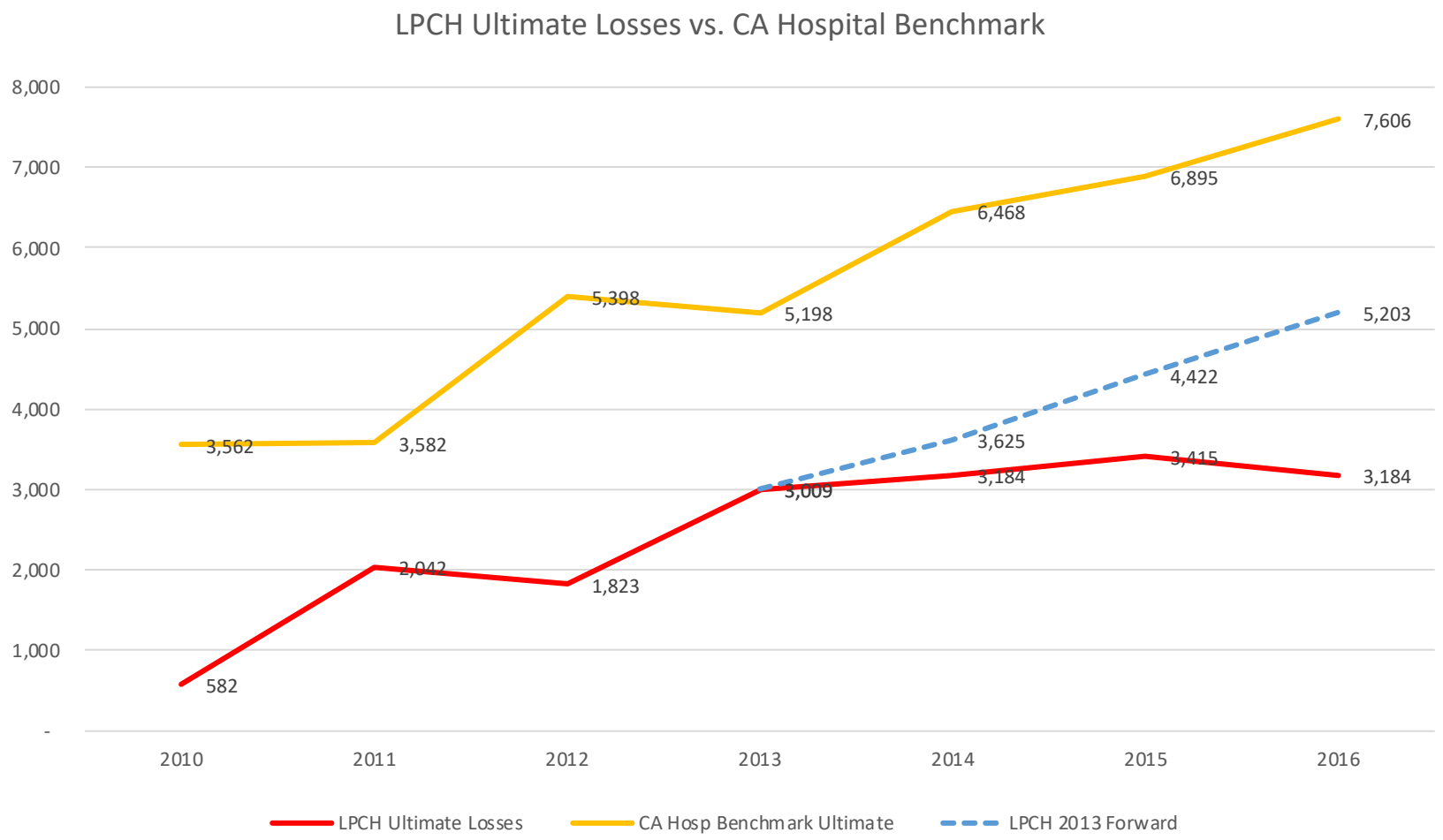
Hospital A: Workers Compensation Benchmark Analysis



The difference in 2013 trend forward (dashed blue line) to actual is a savings of **$9.3M**

Data Source: Milliman

LPCH Workers' Compensation Benchmark Analysis



The difference in 2013 trend forward (dashed blue line) to actual is a savings of **$3.5M**

Data Source: Milliman

The Net Present Value (NPV) is the
net amount of money that your investment will make today
compared to an alternative investment, e.g. stock market.

Using Net Present Value evaluate different scenarios.

A neighbor is very appreciative you house-sat for them over the holidays. They offer you two options as a gift:

- Option 1: $340 now
- Option 2: $360 in one year

Which one is the better financial deal?

Present Value of Option 1

= $340

Present Value of Option 2

= $360 – [Discount factor]

= $360 - ($360 * 5%)

= $360 - $18

= $342 Present Value

Using NPV to make a decision.

Let's consider a hospital safety program.

You have identified an opportunity to save millions for your hospital by investing in a safety program.

In the most likely scenario, you think you will save $6M over four years.

The program will cost $2M for equipment and staff training in year 1, with ongoing costs of $500k each year.

Would you make this investment?

How do we calculate the NPV and ROI?

1. Determine the initial investment cost (**C**)
2. Determine the time period (**t**)
3. Determine discount rate (**i**)
4. Determine the estimated costs and revenues for each year
5. Calculate the discounted cashflows for costs and revenue = P/(1+**i**)^t)
6. Calculate the total discounted cashflow
7. Calculate the NPV by summing the cashflows
8. Calculate the ROI = (Revenue + Costs) / (-)Costs / t

Initial Cost (C)	-2
Time period	4 years
Discount Rate	4%

Year	**1**	**2**	**3**	**4**
Costs	-2	-0.5	-0.5	-0.5
Revenues (E.g. EV - assume we've calculated this)	0	1.5	2	2.5
Discounted Cashflows Costs	*-2*	*-0.48*	*-0.46*	*-0.44*
Discounted Cashflows Revenue	*0*	*1.44*	*1.85*	*2.22*
Total Discounted Cashflow	*-2*	*0.96*	*1.39*	*1.78*

NPV Costs	-3.39
NPV Revenue	5.51
Net Present Value	**2.13**
ROI	**16%**

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Safe Patient Handling - Return on Investment Model

[For Demonstration Purposes Only]

Version	17-Apr-19
Prepared by	Simon Mawer
Sponsor	Ed Hall

Model Summary for 'Optimal Program'

Expected change and total value over 5yrs

1 Reduces Workers Compensation by 50%, resulting in $2,547,002 savings
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Total discounted program benefits	$10.9M
Total discounted program costs	$-7.6M
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Model inputs

3	Scenario	<--model is running numbers for this Scenario
$ 3,262,967	Expected Value	

		NPVs for Comparison	
1 **Pilot Program**	*Some equipment + minimal training + limited scope*	$ 1,052,357	<--fill in manually
2 **Basic Program**	*Equipment + Single Annual Training + House-wide*	$ 1,417,696	<--fill in manually
3 **Optimal Program**	*Equipment + Lift Coaching + In-Situ Staff Training + House-wide*	$ 3,262,967	<--fill in manually

Big priorities: investigation capabilities + space for training.
is there a correllation bet. Injuries + census?

FINANCIAL PARAMETERS

Discount Rate	15%
Number of hours in a work day	8
Reference Year	2019
Change year	2020
Standard Growth Rate	3%

SCENARIOS	Pilot Program	Basic Program	Optimal Program
Setup Costs			
One-time Equipment costs	$ 100,000.00	$ 1,200,000.00	$ 1,500,000.00
Program Implementation Costs	$ 10,000.00	$ 50,000.00	$ 50,000.00
% Existing Staff to be Trained	10%	100%	100%
Hours of Traning	1.00	2.00	0.25
Ongoing Annual Costs			
Program Coordinator FTEs	0	1	1
Lift Coaches	$ -	$ -	$ 1,000,000
% Clinical Staff Trained Annually	10%	100%	100%
Hours of Training	0.25	2.00	0.50
Laundry	$ 5,000.00	$ 130,000.00	$ 130,000.00
Equipment & Maintenance	$ 10,000.00	$ 160,000.00	$ 160,000.00
Cost of Training Venue		$ 100,000.00	$ 100,000.00
Benefits			
MedMal Reduction Rate	4%	15%	25%
WC Reduction Rate	5%	20%	50%
L&R Reduction Rate	8%	30%	50%
Reduction on PH-related turnover	8%	30%	50%
Patient Falls Reduction Rate	3%	10%	15%
Stage 1-2 Reduction Rate	1%	5%	20%
Stage 3-4 Reduction Rate	3%	10%	30%

$1M for Lift Coaches

In Basic, requires 2hr training course. Optimal is in-situ via Lift Coaches
Basic + Optimal is same
Basic + Optimal is same

Stanford achieved 50% reduction since 2009.

Pilot Program - assume achieve 25% of 'basic program' impact because h

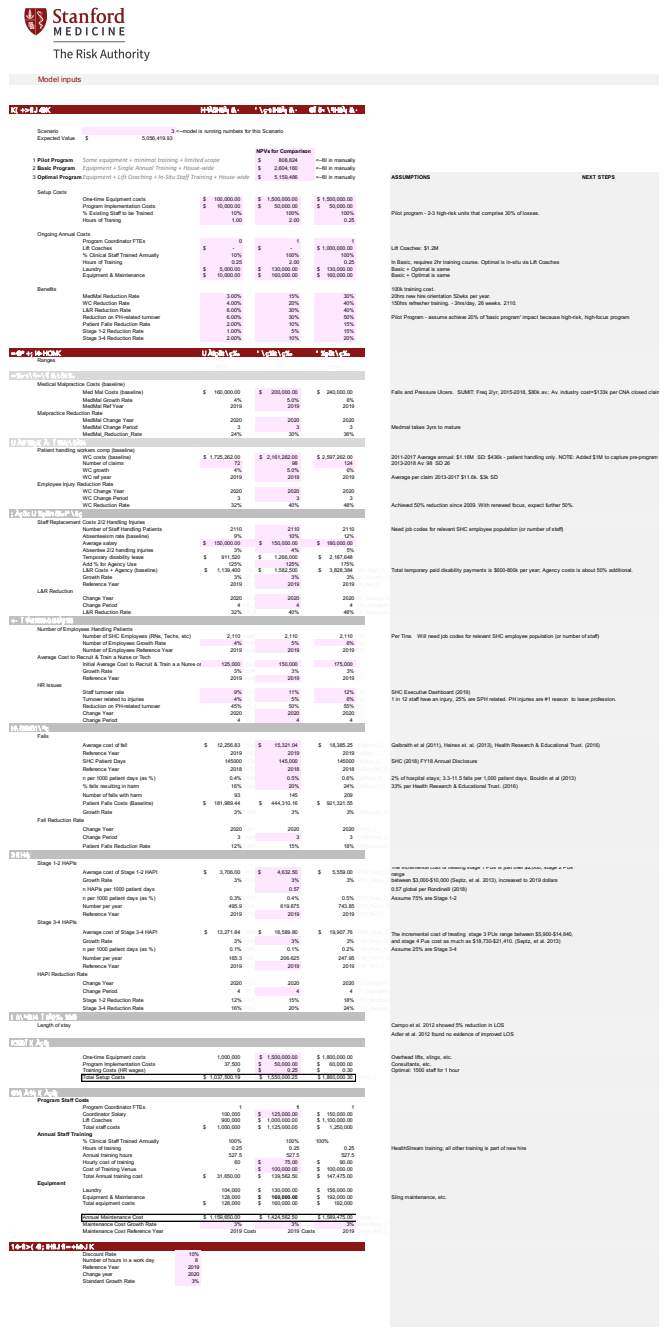
ASSUMPTIONS

Overhead lifts
Slings, etc.
Pilot program - 2-3 high-risk units that comprise 30% of losses.

MODEL INPUTS (APPLY TO ALL SCENARIOS)	Worst case	Base case	Best case
Ranges	A	B	C
	80%	100%	120%
Medical Malpractice			
Medical Malpractice Costs (baseline)			
Med Mal Costs (baseline)	$ 319,200.00	$ 399,000.00	$ 478,800.00
MedMal Growth Rate	4%	5.0%	6%
MedMal Ref Year	2018	2018	2018
Malpractice Reduction Rate			
MedMal Change Year	2020	2020	2020
MedMal Change Period	4	4	4
MedMal_Reduction_Rate	20%	25%	30%

Falls and Pressure Ulcers claims. Av. industry cost=$133k per CNA clos
Based on historical data + projection

Medmal takes 4yrs to mature



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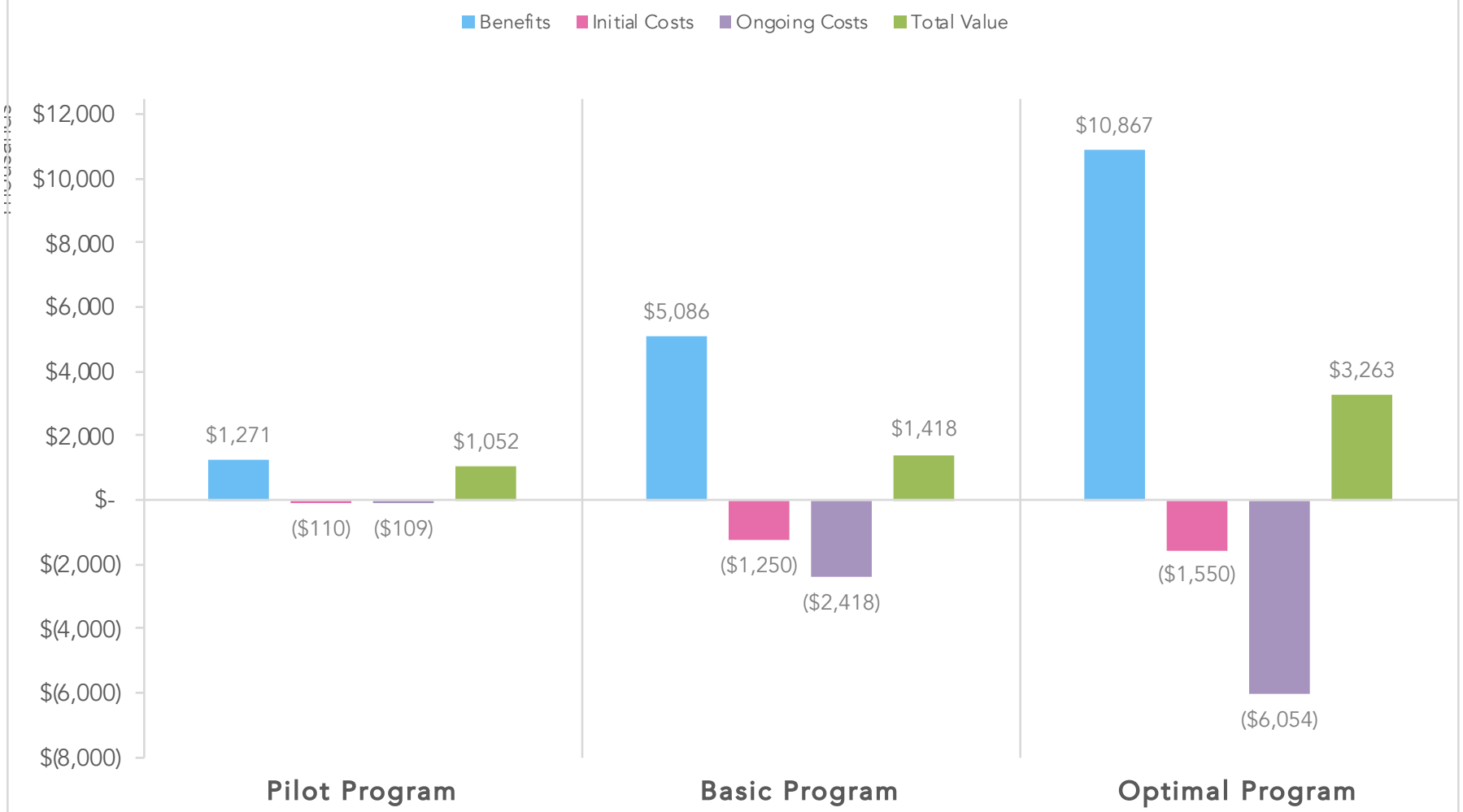
Auto-populated calculations for variable ranges

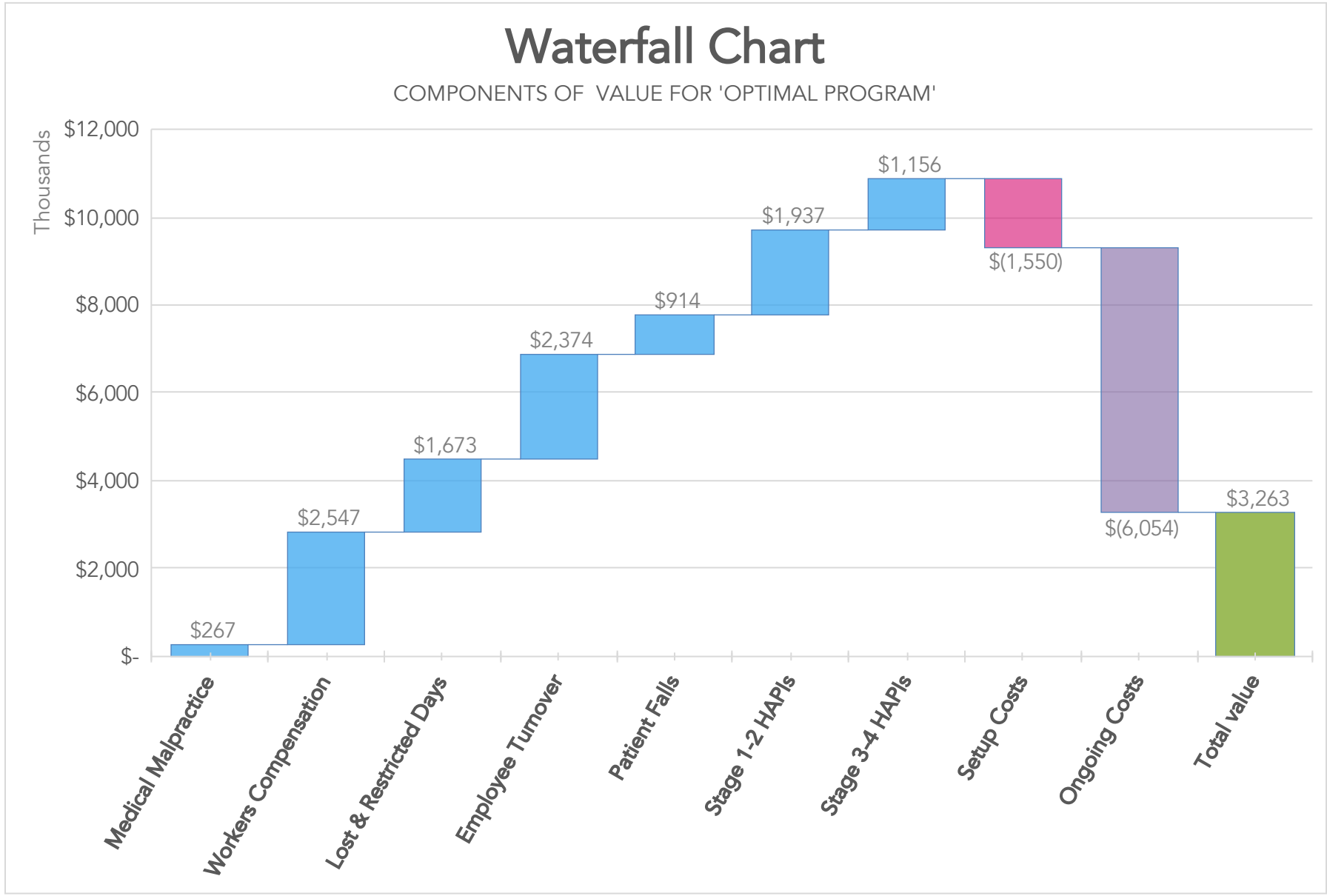
Base Case

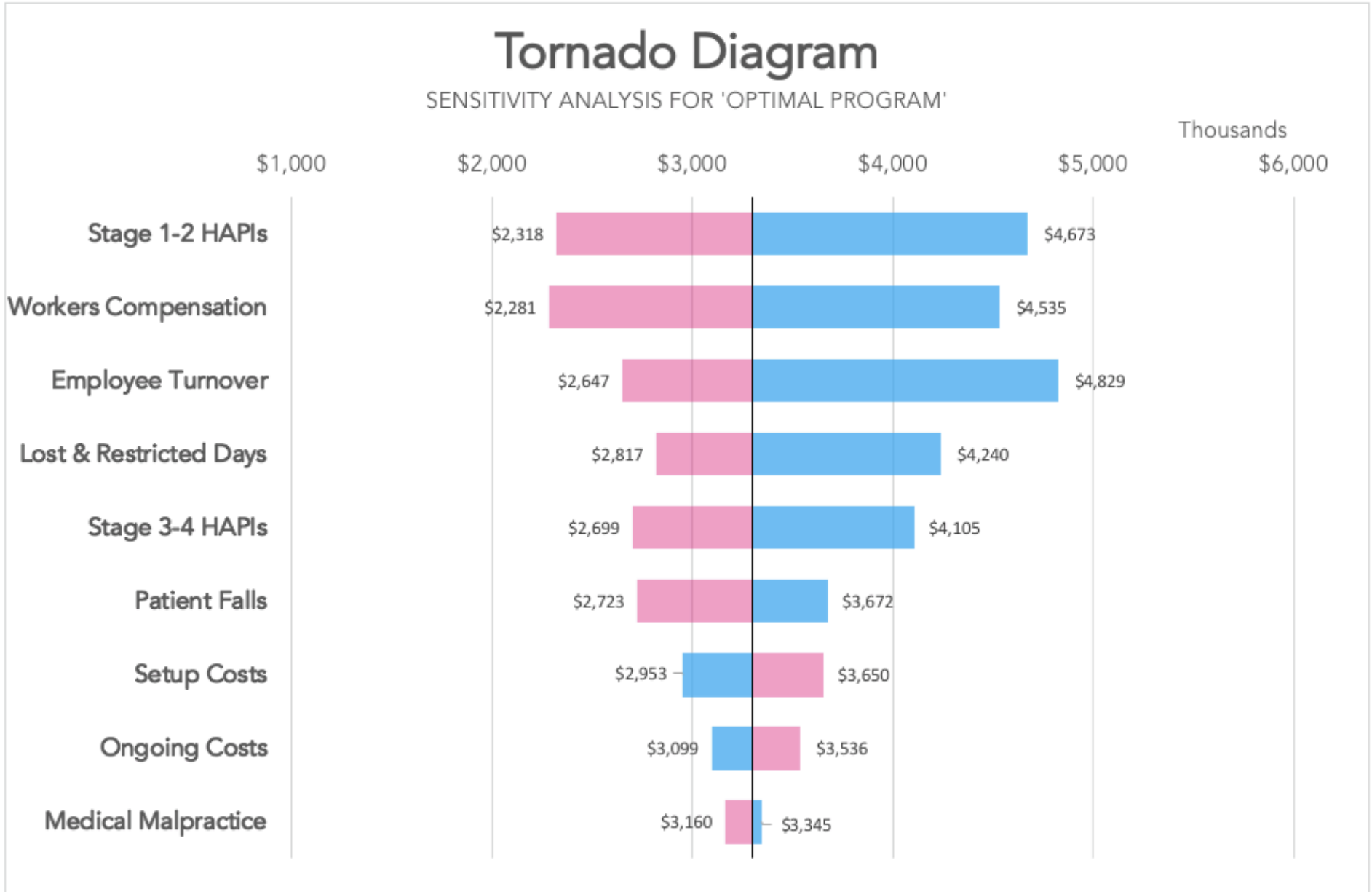
	1	2	3	4	5
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Medical Malpractice					
Med Mal Costs (baseline)	$ 439,898	$ 461,892	$ 484,987	$ 509,236	$ 534,698
Med Mal Reduction Rate	6%	13%	19%	25%	25%
Med Mal Costs (with Intervention)	$ 412,404	$ 404,156	$ 394,052	$ 381,927	$ 401,024
Med Mal Savings	**$ 27,494**	**$ 57,737**	**$ 90,935**	**$ 127,309**	**$ 133,675**
Workers Compensation					
WC costs (baseline)	$ 1,812,642	$ 1,903,274	$ 1,998,438	$ 2,098,360	$ 2,203,278
WC Reduction Rate	17%	33%	50%	50%	50%
WC Costs (with Intervention)	$ 1,510,535	$ 1,268,850	$ 999,219	$ 1,049,180	$ 1,101,639
Med Mal Savings	**$ 302,107**	**$ 634,425**	**$ 999,219**	**$ 1,049,180**	**$ 1,101,639**
Lost & Restricted Days					
L&R costs (baseline)	$ 1,190,700	$ 1,250,235	$ 1,312,747	$ 1,378,384	$ 1,447,303
L&R Reduction Rate	17%	33%	50%	50%	50%
L&R Savings (w/ Program)	$ 992,250	$ 833,490	$ 656,373	$ 689,192	$ 723,652
Loss & Restricted Days Savings	**$ 198,450**	**$ 416,745**	**$ 656,373**	**$ 689,192**	**$ 723,652**
Employee Turnover					
Number of SHC Employees (RNs, Techs, etc)	2,060	2,122	2,185	2,251	2,319
Number of Staff Quit 2/2 Injury (baseline)	12	13	13	14	14
Average Cost to Recruit & Train	$ 154,500	$ 159,135	$ 163,909	$ 168,826	$ 173,891
Annual Retention Cost 2/2 Injuries (baseline)	$ 1,909,620	$ 2,025,916	$ 2,149,294	$ 2,280,186	$ 2,419,049
Reduction on PH-related turnover	13%	25%	38%	50%	50%
Total Retention Cost (w/ Program)	$ 1,670,918	$ 1,519,437	$ 1,343,309	$ 1,140,093	$ 1,209,525
Retention Costs Savings	**$ 238,703**	**$ 506,479**	**$ 805,985**	**$ 1,140,093**	**$ 1,209,525**

Program Comparison

5 YEAR NET PRESENT VALUES




Waterfall Chart
COMPONENTS OF VALUE FOR 'OPTIMAL PROGRAM'
Thousands
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$-
$267
$2,547
$1,673
$2,374
$914
$1,937
$1,156
$(1,550)
$(6,054)
$3,263
Medical Malpractice
Workers Compensation
Lost & Restricted Days
Employee Turnover
Patient Falls
Stage 1-2 HAPIs
Stage 3-4 HAPIs
Setup Costs
Ongoing Costs
Total value


Tornado Diagram
SENSITIVITY ANALYSIS FOR 'OPTIMAL PROGRAM'
Thousands
$1,000
$2,000
$3,000
$4,000
$5,000
$6,000
Stage 1-2 HAPIs
$2,318
$4,673
Workers Compensation
$2,281
$4,535
Employee Turnover
$2,647
$4,829
Lost & Restricted Days
$2,817
$4,240
Stage 3-4 HAPIs
$2,699
$4,105
Patient Falls
$2,723
$3,672
Setup Costs
$2,953
$3,650
Ongoing Costs
$3,099
$3,536
Medical Malpractice
$3,160
$3,345

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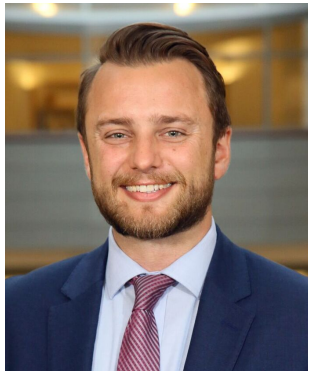
Ed Hall
Executive Director, Risk and Claims, Stanford Medicine
ehall@stanfordhealthcare.org



Simon Mawer
Program Manager, Risk Management, Stanford Medicine
smawer@stanfordhealthcare.org