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COMPETITIVE WISCONSIN

Be Bold IV – Private Sector Benefit Analysis

November 2018

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Executive Summary

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Context: In evaluating workforce recruitment and retention topics as part of Be Bold IV, we have previously explored the public sector value of workers from three key archetypes. As a follow-up, the following is an analysis of the private sector value of those same three archetypes (shown below)

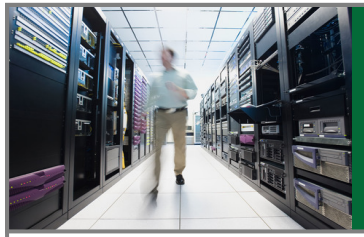
Objective: Quantify additional profits / cost savings brought by each worker archetype, assuming that workers are incentivized (through a workforce program) to remain with employers for a period of 5 years

ADN Summary Results

+	Additional Annual Profitability Driven Per Worker	$21.4 K
+	Annual Turnover Cost Savings Per Worker	$9.8 K
	Total Annual Private Sector Benefit Per Worker	$31.1 K
	Workforce Program Duration	
x		5 Years
	Five Year Private Sector Benefit Per Worker	$155.7 K

Welder Summary Results

+	Additional Annual Profitability Driven Per Worker	$14.9 K
+	Annual Turnover Cost Savings Per Worker	$7.2 K
	Total Annual Private Sector Benefit Per Worker	$22.1 K
	Workforce Program Duration	
x		5 Years
	Five Year Private Sector Benefit Per Worker	$110.3 K



Network Engineer Summary Results

+	Additional Annual Profitability Driven Per Worker	$16.3 K
+	Annual Turnover Cost Savings Per Worker	$15.9 K
	Total Annual Private Sector Benefit Per Worker	$32.3 K
	Workforce Program Duration	
x		5 Years
	Five Year Private Sector Benefit Per Worker	$161.3 K

Source: See Slides 21-23

Note: Values shown are round to the nearest hundred, resulting in slight rounding errors for the "Private Sector Benefit" values shown on this page

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Key Definitions

- **Private Sector Benefit Per Worker:** The sum of additional profits and cost savings that private sector enterprises can expect from employing one additional worker
- **Additional Profitability Driven Per Worker:** Incremental profits a private sector enterprise can attribute directly to the addition of a single worker
- **Additional Revenue Driven Per Worker:** Incremental revenues a private sector enterprise can attribute directly to the addition of a single worker
- **Average Turnover Cost Savings Per Worker:** The cost that a private sector enterprise will avoid by employing a worker that has been incentivized against turnover. This value includes costs of recruiting and training a new worker, as well as productivity losses incurred during the process of identifying and hiring a new worker
- **Low Case, Base Case, and High Case:** "Low Case" represents the minimum value calculated through our benchmarks; "Base Case" represents the average value calculated through our benchmarks; "High Case" represents the maximum value calculated through our benchmarks. Note that the "Low Case" and "High Case" are representative of estimates at a single benchmarked company, while "Base Case" is an estimate across benchmarks

Worker Profitability Analysis

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Overview of Worker Profitability Calculation

Our methodology consists of 7 steps in which we first establish total revenue driven by archetype workers, and then break that value down into profitability driven per worker

Calculation Steps		Outputs
1	For each of the three archetypes, we developed a set of benchmark companies based on financials of publicly listed businesses within relevant hiring industries	**List of Benchmark Companies**
2	Once we have a set of benchmark companies we then calculate the proportion of costs for each company that is attributable to labor compensation for our archetypes	**# of Archetype Workers (e.g. ADNs, Welders) Per Company**
3	We then divide each company's total labor comp. by a nationwide benchmark for archetype comp. per worker to determine the # of workers within each company	
4	Next, we assume that the proportion of costs attributable to each of the archetypes is equivalent to the proportion of revenues driven by each of the archetypes	**Total Revenue Attributable to Archetypes Per Company**
5	Now we can divide total revenue attributable to archetype workers by the # of archetype workers to identify the revenue driven by an individual worker	**Revenue and Profitability Driven Per Archetype Worker for Each Company**
6	We then deduct compensation costs from revenue per individual worker to determine profitability per worker	
7	Finally, we average profitability per worker values across our benchmarked companies to arrive at our final worker profitability value	**Average Profitability Driven Per Worker**

Step 1: Developing Benchmarks

For each of the three archetypes, we developed a set of benchmark companies based on financials of publicly listed businesses within relevant hiring industries

ADN Methodology Overview

Benchmarking Methodology Overview:

For ADNs, we examined a sample of 4 publicly listed hospitals of varying size

Sampled hospitals included:

University Health Systems
Rev.: $5.7 B **Beds: 5954**

Tenet Healthcare
Rev.: $15.7 B **Beds: 19141**

Community Health Systems
Rev.: $18.4 B **Beds: 20850**

HCA Healthcare
Rev.: $43.6 B **Beds: 47000**

Welder Methodology Overview

Benchmarking Methodology Overview:

For Welders, we examined a sample of 15 listed companies within 5 welding-intensive industries

Sampled industries included:

- Construction
- Heavy Manufacturing
- Automotive
- Light Manufacturing
- Aerospace

Network Engineer Methodology Overview

Benchmarking Methodology Overview:

For Network Engineers, we examined a sample of 33 listed companies within 11 relevant industries

Sampled industries included:

- Banking
- Business Services
- Education
- Hospitality
- Technology
- Insurance
- Healthcare
- Energy
- Consumer
- Construction
- Manufacturing (Overall)

Source: See Slides 21-23 for specific companies used as benchmarks

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Step 2: Identifying Labor Proportion Of Total Cost By Industry

Once we have a set of benchmark companies we then calculate the proportion of costs for each company that is attributable to labor compensation for our archetypes

ADN Methodology Overview

Cost Identification Methodology:

For ADNs, we assumed a single proportion of budget across all hospitals

Sample Industries	ADN Labor % of Op Costs
Healthcare (In-Patient Care)	26%

Welder Methodology Overview

Cost Identification Methodology:

"Welding % of COGS" X "Labor % of Welding Costs" = **"Welding Labor % of COGS"**

Sample Industries	Welding % of COGS	Labor % of Welding Costs	Welding Labor % of COGS
Construction	4.0%	79%	3.1%
Automotive	6.7%	74%	5.0%
Heavy Mfg.	2.8%	70%	2.0%
Light Mfg.	6.3%	74%	4.6%
Aerospace	0.3%	79%	0.2%

Network Engineer Methodology Overview

Cost Identification Methodology:

"IT % of Op Costs" X "Labor % of IT Costs" = **"IT Labor % of Op Costs"**

Sample Industries	IT % of Op Costs	Labor % of IT Costs	IT Labor % of Op Costs
Banking	7.2%	24%	1.7%
Business Srvcs	5.8%		1.4%
Education	5.8%		1.4%
Hospitality	4.4%		1.1%
Technology	3.7%		.9%
Insurance	3.6%		.9%
Healthcare	3.5%		.8%
Energy	2.5%		.6%
Consumer	2.0%		.5%
Manufacturing	2.0%		.5%
Construction	1.5%		.4%

Source: See Slides 21-23 for specific companies used as benchmarks

Note: Although values by industry are shown here, each sample industry can be further broken down into values for 3 sample companies within that industry. All calculations are done on the sample company levels, and calculations done on the industry level will deviate slightly

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Step 3: Determining # Of Workers By Benchmarked Company

We then divide each company's total labor comp. by a nationwide benchmark for archetype comp. per worker to determine the # of workers within each company

ADN Methodology Overview

Calculating # of ADNs:

"Total ADN Labor Cost" / "ADN Total Comp." = **"# of ADNs"**

Sample Health Systems	Total ADN Labor Cost	ADN Total Comp.	# of ADNs
University Health Systems	$1.2 B	$122.8 K	9.7 K
Tenet Healthcare	$9.3 B		75.9 K
Community Health Systems	$4.5 B		36.9 K
HCA Healthcare	$3.6 B		29.6 K

Welder Methodology Overview

Calculating # of Welders:

"Avg. Total Welder Labor Cost" / "Welder Total Comp." = **"# of Welders"**

Sample Industries	Avg. Total Welder Labor Cost	Welder Total Comp.	# of Welders
Construction	$325.1 M	$53.7 K	6.1 K
Automotive	$4.5 B		83.0 K
Heavy Mfg.	$1.4 B		25.6 K
Light Mfg.	$415.4 M		7.7 K
Aerospace	$100.5 M		1.9 K

Network Engineer Methodology Overview

Calculating # of Network Engineers:

"Avg. Total NW Eng. Labor Cost" / "NW Eng. Total Comp." = **"# of NW Eng."**

Sample Industries	Avg. Total NW Eng. Labor Cost	NW Eng. Total Comp.	# of NW Eng.
Banking	$280.8 M	$104.9 K	2.7 K
Business Srvcs	$82.2 M		2.3 K
Education	$2.6 B		24.8 K
Hospitality	$290.1 M		2.8 K
Technology	$705.9 M		6.7 K
Insurance	$285.5 M		2.7 K
Healthcare	$131.2 M		1.3 K
Energy	$248.2 M		2.4 K
Consumer	$17.1 M		.16 K
Manufacturing	$364.9 M		3.5 K
Construction	$28.4 M		.27 K

Source: See Slides 21-23

Note: Total compensation values are based on BLS medians and industry specific benchmark for Benefits % of Total Compensation

Note: Although values by industry are shown here, each sample industry can be further broken down into values for 3 sample companies within that industry. All calculations are done on the sample company levels, and calculations done on the industry level will deviate slightly

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Step 4: Calculating Revenues Driven By Archetypes

We then assume that the proportion of costs attributable to each of the archetypes is equivalent to the proportion of revenues driven by each of the archetypes

ADN Methodology Overview

Calculating Revenue By ADNs:

"ADN Labor % of Op Costs" X "Average Revenue" = **"Revenue Driven By ADNs"**

Sample Health Systems	ADN Labor % of Op Costs	Average Revenue	Revenue Driven By ADNs
University Health Systems	26%	$5.7 B	$1.5 B
Tenet Healthcare		$43.6 B	$11.5 B
Community Health Systems		$18.4 B	$4.8 B
HCA Healthcare		$15.7 B	$4.1 B

Welder Methodology Overview

Calculating Revenue By Welder:

"Welding Labor % of COGS" X "Average Revenue" = **"Revenue Driven By Welders"**

Sample Industries	Welding Labor % of COGS	Average Revenue	Revenue Driven By Welders
Construction	3.1%	$11.2 B	$353.7 M
Automotive	5.0%	$115.9 B	$1.1 B
Heavy Mfg.	2.0%	$32.9 B	$80.7 M
Light Mfg.	4.6%	$30.2 B	$526.9 M
Aerospace	0.2%	$56.7 B	$161 M

Network Engineer Methodology Overview

Calculating Revenue By Network Engineers:

"IT Labor % of Op Costs" X "Average Revenue" = **"Revenue Driven By Network Engineers"**

Sample Industries	IT Labor % of Op Costs	Average Revenue	Revenue Driven By NW Eng.
Banking	1.7%	$16.3 B	$362.1 M
Business Srvcs	1.4%	$5.9 B	$104.0 M
Education	1.4%	$188 B	$2.6 B
Hospitality	1.1%	$27.6 B	$326.9 M
Technology	.9%	$78.9 B	$963.8 M
Insurance	.9%	$32.9 B	$319.8 M
Healthcare	.8%	$15.6 B	$159.9 M
Energy	.6%	$41.4 B	$261.2 M
Consumer	.5%	$3.5 B	$19.4 M
Manufacturing	.5%	$78.0 B	$412.5 M
Construction	.4%	$7.8 B	$32.4 M

Source: See Slides 21-23

Note: Although values by industry are shown here, each sample industry can be further broken down into values for 3 sample companies within that industry. All calculations are done on the sample company levels, and calculations done on the industry level will deviate slightly

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Step 5: Determining Revenue Per Worker

Now we can divide total revenue attributable to archetype workers by the # of archetype workers to identify the revenue driven by an individual worker

ADN Methodology Overview

Calculating # of Workers:

"Revenue Driven by ADNs" / "# of ADNs" = **"Revenue Per ADN"**

Sample Health Systems	Revenue Driven By ADNs	# of ADNs	Revenue Per ADN
University Health Systems	$1.5 B	9.7 K	$155.0 K
Tenet Healthcare	$11.5 B	75.9 K	$151.2 K
Community Health Systems	$4.8 B	36.9 K	$131.1 K
HCA Healthcare	$4.1 B	29.6 K	$139.4 K

Welder Methodology Overview

Calculating # of Workers:

"Revenue Driven by Welder" / "# of Welders" = **"Revenue Per Welder"**

Sample Industries	Revenue Driven By Welders	# of Welders	Revenue Per Welder
Construction	$353.7 M	6.1 K	$58.0 K
Automotive	$1.1 B	83.0 K	$68.3 K
Heavy Mfg.	$80.7 M	25.6 K	$68.1 K
Light Mfg.	$526.9 M	7.7 K	$81.5 K
Aerospace	$161 M	1.9 K	$65.4 K

Network Engineer Methodology Overview

Calculating # of Workers:

"Revenue Driven by NW Eng." / "# of NW Eng." = **"Revenue Per NW Eng."**

Sample Industries	Revenue Driven By NW Eng.	# of NW Eng.	Revenue Per NW Eng.
Banking	$362.2 M	2.7 K	$140.2 K
Business Srvcs	$104.0 M	2.3 K	$133.8 K
Education	$2.6 B	24.8 K	$106.9 K
Hospitality	$326.9 M	2.8 K	$119.4 K
Technology	$963.8 M	6.7 K	$134.4 K
Insurance	$319.8 M	2.7 K	$117.2 K
Healthcare	$159.9 M	1.3 K	$126.7 K
Energy	$261.2 M	2.4 K	$113.6 K
Consumer	$19.4 M	.16 K	$113.9 K
Manufacturing	$412.5 M	3.5 K	$123.6 K
Construction	$32.4 M	.27 K	$117.7 K

Source: See Slides 21-23

Note: Although values by industry are shown here, each sample industry can be further broken down into values for 3 sample companies within that industry. All calculations are done on the sample company levels, and calculations done on the industry level will deviate slightly

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Step 6: Calculating Profitability Per Worker

We then deduct compensation costs from revenue per individual worker to determine profitability per worker

ADN Methodology Overview

Calculating Profit Per ADN:

"Revenue Per ADNs" - "ADN Total Comp." = **"Profit Per ADN"**

Sample Health Systems	Revenue Per ADN	ADN Total Comp.	Profit Per ADN
University Health Systems	$155.0 K	$122.8 K	$32.2 K
Tenet Healthcare	$151.2 K		$28.4 K
Community Health Systems	$131.1 K		$8.3 K
HCA Healthcare	$139.4 K		$16.6 K

Welder Methodology Overview

Calculating Profit Per Welder:

"Revenue Per Welder" - "Welder Total Comp." = **"Profit Per Welder"**

Sample Industries	Revenue Per Welder	Welder Total Comp.	Profit Per Welder
Construction	$59.7 K	$53.7 K	$6.1 K
Automotive	$68.3 K		$14.4 K
Heavy Mfg.	$68.1 K		$27.8 K
Light Mfg.	$81.5 K		$14.6 K
Aerospace	$65.4 K		$11.7 K

Network Engineer Methodology Overview

Calculating Profit Per Network Engineer:

"Revenue Per NW Eng." - "NW Eng. Total Comp." = **"Profit Per NW Eng."**

Sample Industries	Revenue Per NW Eng.	NW Eng. Total Comp.	Profit Per NW Eng.
Banking	$140.2 K	$104.9 K	$35.3 K
Business Srvcs	$133.8 K		$28.9 K
Education	$106.9 K		$2.0 K
Hospitality	$119.4 K		$14.4 K
Technology	$134.4 K		$29.4 K
Insurance	$117.2 K		$12.3 K
Healthcare	$126.7 K		$21.7 K
Energy	$113.6 K		$8.6 K
Consumer	$113.9 K		$8.9 K
Manufacturing	$123.6 K		$18.6 K
Construction	$117.7 K		$18.2 K

Source: See Slides 21-23

Note: Total compensation values are based on BLS medians and industry specific benchmark for Benefits % of Total Compensation

Note: Although values by industry are shown here, each sample industry can be further broken down into values for 3 sample companies within that industry. All calculations are done on the sample company levels, and calculations done on the industry level will deviate slightly

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Step 7: Calculating Profitability Per Worker

Finally, we average profitability per worker values across our benchmarked companies to arrive at our final worker profitability value

ADN Methodology Overview

Calculating Profit Per ADN:

We average profit per ADN across our 4 sample health systems to arrive at our final average

Sample Health Systems	Profit Per ADN
University Health Systems	$32.2 K
Tenet Healthcare	$28.4 K
Community Health Systems	$8.3 K
HCA Healthcare	$16.6 K

$21.38 K

Welder Methodology Overview

Calculating Profit Per Welder:

We average profit per welder across our 5 sample industries to arrive at our final average

Sample Industries	Profit Per Welder
Construction	$6.1 K
Automotive	$14.4 K
Heavy Mfg.	$27.8 K
Light Mfg.	$14.6 K
Aerospace	$11.7 K

$14.90 K

Network Engineer Methodology Overview

Calculating Profit Per Network Engineer:

We average profit per network engineer across our 11 sample industries to arrive at our final average

Sample Industries	Profit Per NW Eng.
Banking	$35.3 K
Business Srvcs	$28.9 K
Education	$2.0 K
Hospitality	$14.4 K
Technology	$29.4 K
Insurance	$12.3 K
Healthcare	$21.7 K
Energy	$8.6 K
Consumer	$8.9 K
Manufacturing	$18.6 K
Construction	$18.2 K

$17.54 K

Source: See Slides 21-23

Note: Although values by industry are shown here, each sample industry can be further broken down into values for 3 sample companies within that industry. All calculations are done on the sample company levels, and calculations done on the industry level will deviate slightly

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Turnover Cost Savings Analysis

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Overview of Turnover Cost Savings Analysis

Our methodology for turnover cost savings consists of only two steps in which we first identify and then combine benchmarks for turnover rate and turnover cost per worker

Calculation Steps		Outputs
1	Identify function-specific (i.e. archetype-specific) estimates for turnover cost and turnover rate Note that turnover cost will refer to the total hiring and training costs for new workers as well as the cost of lost productivity during the hiring period	**Set of Turnover Cost and Turnover Rate Estimates**
2	For each archetype, multiply turnover cost estimates by turnover rate to identify the average or expected turnover cost per worker per year. Assume that this value is the amount the companies would save for each year over the duration of a workforce program	**Turnover Cost Savings Estimates Per Worker**

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Step 1 & 2: Determining Turnover Cost Savings

We used function specific benchmarks for both turnover cost and turnover rate to identify the average turnover cost savings for each of our three archetypes

ADN Methodology Overview

Calculating Turnover Cost Savings Per ADN:

	Turnover Cost Per ADN	$50.1 K
x	Turnover Rate Per ADN	16%
	Annual Turnover Cost Savings Per ADN	$9.8 K

Welder Methodology Overview

Calculating Profit Per Welder:

	Turnover Cost Per Welder	$42.5 K
x	Turnover Rate Per Welder	17%
	Annual Turnover Cost Savings Per Welder	$7.2 K

Network Engineer Methodology Overview

Calculating Profit Per Network Engineer:

	Turnover Cost Per Network Engineer	$113 K
x	Turnover Rate Per Network Engineer	14%
	Annual Turnover Cost Savings Per Network Engineer	$15.9 K

Source: See Slides 21-23 for sources on the turnover cost and turnover rate data points used for this analysis

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Summary Analysis

Annual - Total Private Sector Benefit Per Worker

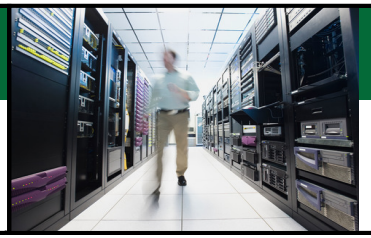
Private sector employers can expect average annual benefits of ~$20-30K / worker / year across the three worker archetypes profiled below

ADN

Average Annual Private Sector Benefit Per ADN: $31,150

Welder

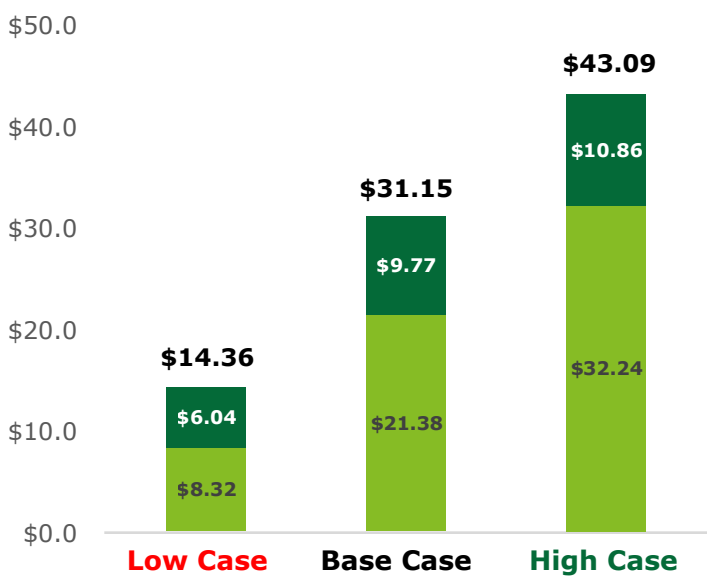
Average Annual Private Sector Benefit Per Welder: $22,060



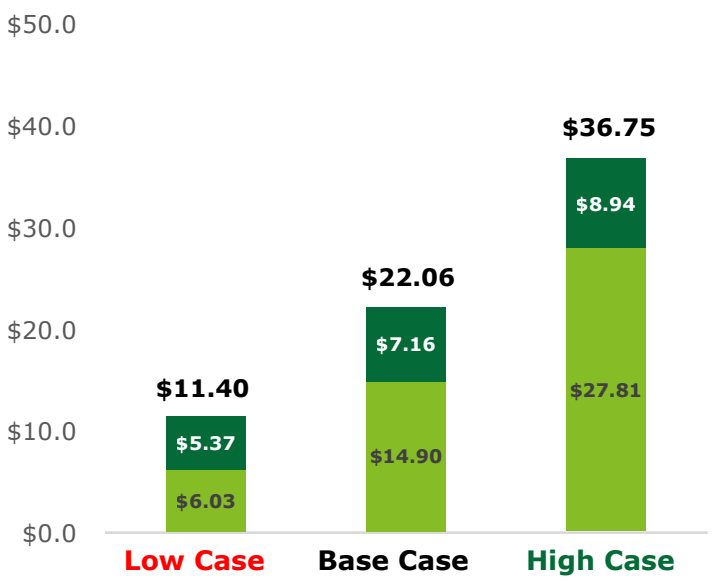
Network Engineer

Average Annual Private Sector Benefit Per NW Eng.: $32,270

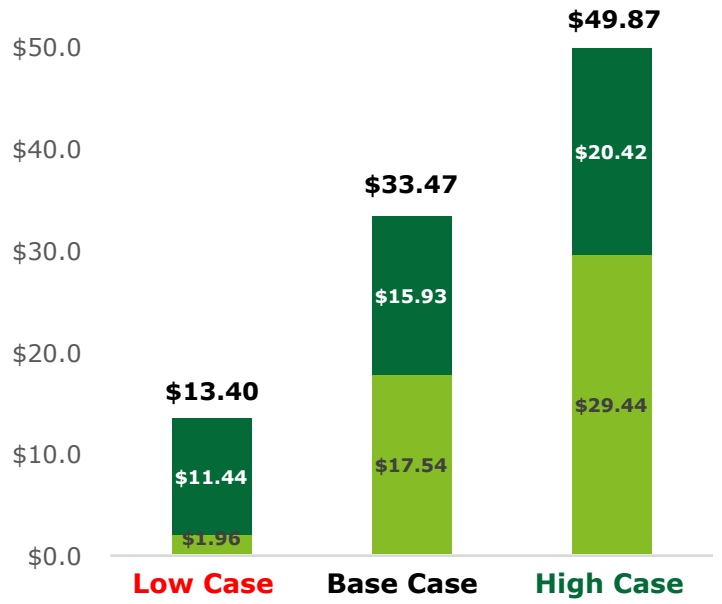
Annual Private Sector Benefit / ADN ($K)



Annual Private Sector Benefit / Welder ($K)



Annual Private Sector Benefit / NW Eng. ($K)



Additional Profits Driven Per Worker | **Average Annual Turnover Cost Savings Per Worker**

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Five Year - Total Private Sector Benefit Per Worker

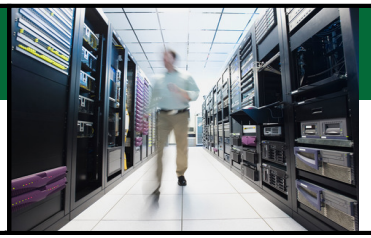
Over a five year period, those private sector benefits amount to ~$110K - 160K / worker / year

ADN

Average Five Year Private Sector Benefit Per ADN: $155.74

Welder

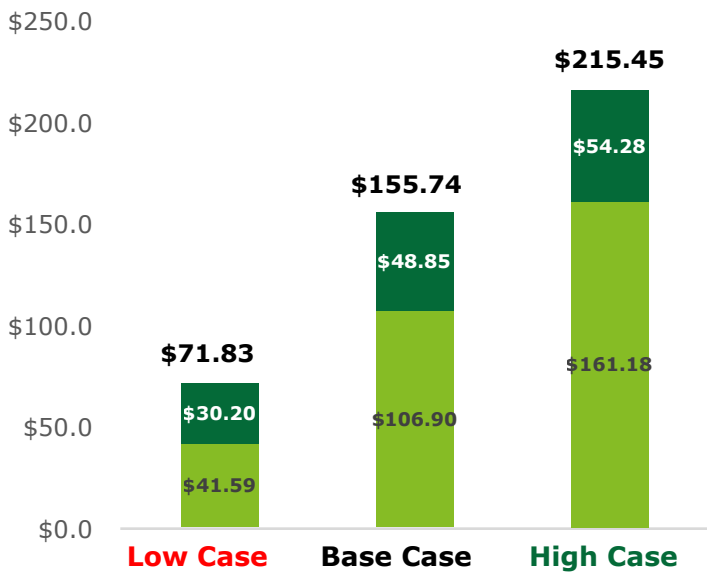
Average Five Year Private Sector Benefit Per Welder: $110.29



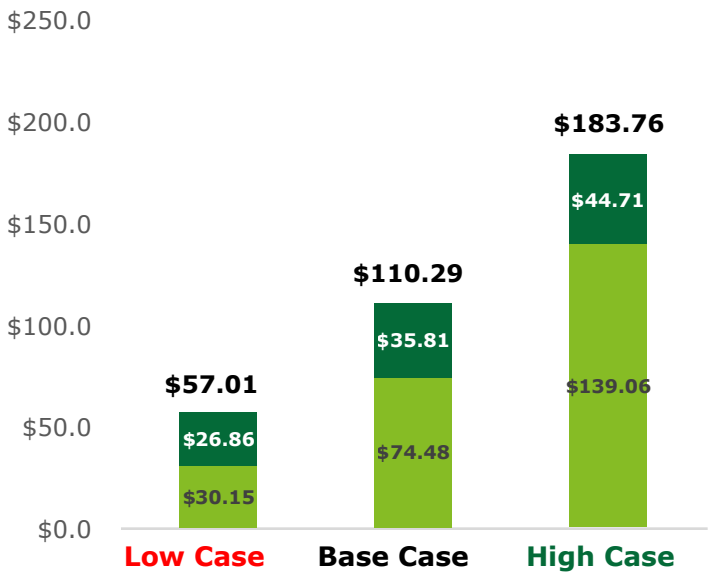
Network Engineer

Average Five Year Private Sector Benefit Per NW Eng.: $161.35

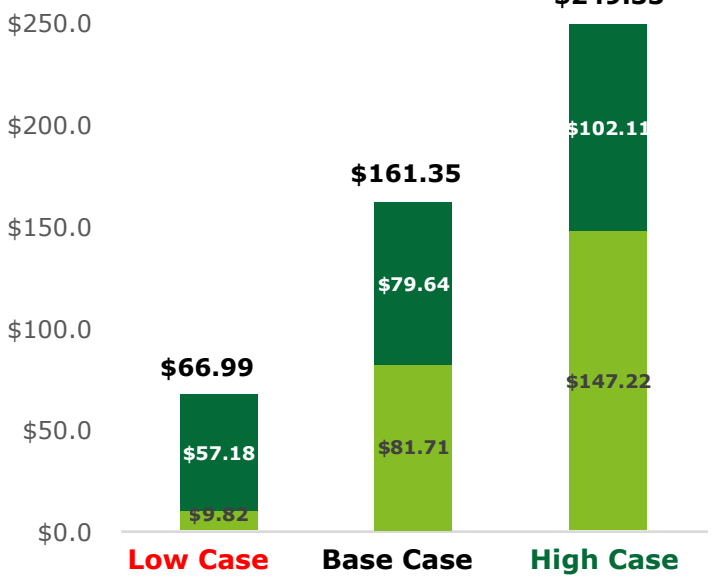
Five Year Private Sector Benefit / ADN ($K)



Five Year Private Sector Benefit / Welder ($K)



Five Year Private Sector Benefit / NW Eng. ($K)



Additional Profits Driven Per Worker **Average Annual Turnover Cost Savings Per Worker**

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Appendix

ADN Methodology and Sources

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Calculation Methodology	
Data Point	**Source**
National Median Salary	BLS
Nurse Benefits %	Health Leaders Media, BLS
Nursing Comp. % of Total Budget	Tufts Medical
	MA Nurses Association
	Becker's Hospital Review
Hospital Operating Cost and Revenue Benchmarks	UHS 10Ks
	CHS 10Ks
	HCA 10Ks
	THC 10Ks
Nurse Turnover Rates	NSI Nursing Solutions
	Avant Healthcare
Nurse Turnover Costs	NSI Nursing Solutions
	Avant Healthcare
	AFL-CIO
	Health Care Management Review
	Center for American Progress

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Welder Methodology and Sources

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Calculation Methodology	
Data Point	**Source**
National Median Salary	BLS
Welder Benefits %	BLS
Welding Costs as % of Total Manufacturing Costs	American Welding Society
Labor Proportion of Welding Costs By Industry	American Welding Society
Construction Benchmarks	FLR, JEC, KBR 10Ks
Heavy MFG Benchmarks	MT, EMN, CMI 10Ks
Light MFG Benchmarks	NKE, GPS, TSN 10Ks
Automotive Benchmarks	GM, CAT, F 10Ks
Aerospace Benchmarks	LMT, BA, NOC 10Ks
Welder Turnover Rates	Manufacturers Alliance
	BLS
Welder Turnover Costs	G&A Partners
	SHRM
	Center for American Progress

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Network Engineer Methodology and Sources

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Calculation Methodology	
Data Point	**Source**
National Median Salary	BLS
IT Employee Benefits %	BLS
IT Budget as % of Revenue By Industry	Deloitte Research Insights
Workers as % of IT Budget	Forrester
Banking Benchmarks	BBT, COF, KEY 10Ks
Prof. Services Benchmarks	EFX, NLSN, ADS 10Ks
Education Benchmarks	National Center for Education Statistics
Hospitality Benchmarks	AAL, CCL, MAR 10Ks
TMT Benchmarks	MSFT, VZ, BAND 10Ks
Insurance Benchmarks	AON, PRU, TRV 10Ks
Health Care Benchmarks	ACHC, HCA, TVTY 10Ks
Energy Benchmarks	VLO, CHK, HAL 10Ks
Cons. Prod. Benchmarks	REV, SCHL, CLX 10Ks
Mfg Benchmarks	F, CAT, MMM 10Ks
Construction Benchmarks	MAS, DHI, FIX 10Ks
Network Engineer Turnover Rates	Universitat Wien, SHRM, Forbes, Walden University
Network Engineer Turnover Costs	Deloitte Research Insights, Kapoor Center, Walden University