

**Inspire Medical Systems, Inc.**  
**INSP - \$217 – NYSE**

**Recommendation: Sell Short**

**Reasons For Short Sale Recommendation**

- **\$5.9 billion market cap for a company with \$115 million in sales?**
- **52 x Revenue.**
- **Revenue growing fast, losses growing faster.**
- **Competitors on the horizon.**
- **Almost 10% stock dilution in 2020.**
- **Company did an add on 2.3 million share offering at \$58 in Oct 2020.**
- **Unprofitable for 14 straight years, 2021 and 2022 will be as well.**
- **Only 3% of float is short.**
- **Stock up 325% last 52 weeks from \$51.**

**Financials**

Market Capitalization	\$5.751B	Revenue/Shr (TTM)	\$4.43
Enterprise Value	\$4.86B	EBITDA (TTM)	<b>-\$55.37M</b>
Trailing P/E	N/A	Diluted Earnings/Shr TTM)	<b>-\$2.19</b>
Forward P/E	N/A	Total Cash (MRQ)	\$234.36M
PEG ratio (5 Yr Expected)	N/A	Total Cash/Shr (mrq)	\$8.64
<b>Price/Sales (TTM)</b>	<b>50</b>	Total Debt (MRQ)	\$30.63M
Price/ Book (MRQ)	22.05	Current Ratio (MRQ)	13.02
Enterprise Value/Revenue	<b>42.15</b>	Book Value/Share (MRQ)	\$8.49
Enterprise Value/ EBITDA	<b>-89.84%</b>	Operating cash Flow (TTM)	<b>-\$53.05M</b>
Profit Margin %	<b>-49.58%</b>	Levered Free Cash Flow(TTM)	<b>-\$34.37M</b>
Operating Margin (TTM)	<b>-4.872%</b>	52 Week Change	41.37%
Return on Assets (TTM)	<b>-15.19%</b>	<b>Shares Short</b>	<b>819m</b>
Return on Equity (TTM)	<b>30.96%</b>	<b>% of Float Short</b>	<b>3.10%</b>
Revenue (TTM)	\$115.38M	Short Ratio	3.61

(TTM) = Trailing 12 months, (MRQ) = Most recent quarter, M = Millions, B = Billions, m = Thousands

## Short Thesis

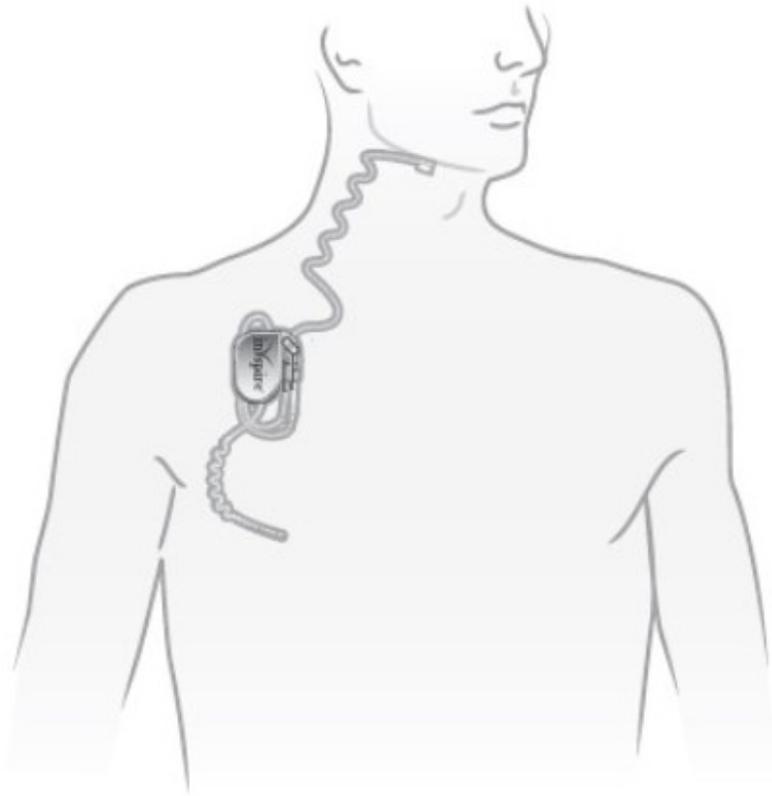
**Inspire Medical Systems has never made a profit for 14 straight years.** They make a minimal (?) invasive implant for moderate obstructive sleep apnea.

“We are a medical technology company focused on the development and commercialization of innovative and minimally invasive solutions for patients with obstructive sleep apnea ("OSA"). Our proprietary **Inspire system is the first and only FDA-approved neurostimulation technology** that provides a safe and effective treatment for moderate to severe OSA. We have developed a novel, closed-loop solution that continuously monitors a patient’s breathing and delivers mild hypoglossal nerve stimulation to maintain an open airway.

**They have had this market all to themselves for years and still can not make a profit.** Revenue has grown very well each year, but so have the losses. There is a competitor on the horizon according to INSP. If they can't make a profit with no competition, it stands to reason that they will do even worse with a competitor.

The stock trades at nose bleed levels for no apparent reason. Some quant funds own this thing, probably because the revenue has grown at 70% per year and the gross margins are 84%, and the TAM is a reported \$10 billion. It's not. They are the only company doing this procedure and their revenue was only \$115 million in 2020. Where does \$10 billion come from? The procedure costs \$30,000 and is covered by most insurers. While the implanted device is small, they have to run a wire from your jaw, under your skin down your neck to your chest. It is battery operated. The battery lasts for 11 years. You will then need an additional surgery to replace it. Doctors need to be trained in how to perform this procedure.

The image below depicts the location of the Inspire system under the patient's skin:



Source: INSP 2020 10K

As far as we have been able to tell, the device works as advertised. But it sure looks uncomfortable to us.

After 12 months' follow-up with 126 implanted patients, 124 patients (98%) remained active users of our Inspire therapy. One patient died unexpectedly due to an unrelated cause and one participant requested a device removal for personal reasons because the patient was a non-responder. Data at 12 months showed that 86% of patients (106 of 123) used the device daily and 93% (115 of 123) used the device at least five days a week, with data unavailable from one patient.

“We believe our patient outreach efforts have been effective in bringing potential patients to our website and facilitating contact with our clinical sites. **During 2020**, we had over 4.8 million **visits to our website from over 3.7 million unique users, of which 237,000 used our "Find a Doctor" function** to find a physician in their area. This generated more than **61,000 contacts with physicians** throughout the year and approximately **23,000 visitors to our website signed up** to attend a local or online Inspire informational event.”

So out 3.7 million unique users, only 237,000 (6.4%) used the find a doctor function. Of those, only 61,000 (1.6%) contacted a doctor. Of those, only 23,000 (0.6%) signed up to attend an information event. Of those, about 3,800 had the implant (0.1%).

Many people have some form of sleep disorder. Not all of them will need to have an implant. Once people find out how costly and invasive it actually is, many seek other treatments. If you take the 237,000 people who clicked on find a doctor and multiply by the \$30,000, you get \$7.1 billion. But only 61,000 people actually contacted a doctor.  $61,000 \times \$30,000 = \$1.8$  billion. 23,000 people signed up for more information,  $\times \$30,000 = \$690$  million. And only 3,800 people had the procedure = \$115 million. So, the total TAM is nowhere near \$10 billion. It is more like \$1 billion.

The true size of the TAM hardly matters. INSP is not having a hard time growing revenue. Revenue has been growing at 60-70% for years. Revenue growth slowed in 2020 to only 40.6%, but that was because of Covid. Revenue growth for 2021 was guided to up 60%. These are very high revenue growth rates, but it is coming off a very small base. **Revenue growth for 2022 is estimated to be up 40% a marked slowdown.**

Bulls could point to international expansion as a growth area, but 93% of their revenue is in the United States and 7% is international.

### Competition (10K)

Our industry is subject to rapid change from the introduction of new products and technologies and other activities of industry participants. **We compete as a second-line therapy in the OSA treatment market for patients with moderate to severe OSA.**

We consider our primary competition to be other neurostimulation technologies designed to treat OSA, **though we are currently the only such technology approved for commercialization in the U.S. by the FDA.**

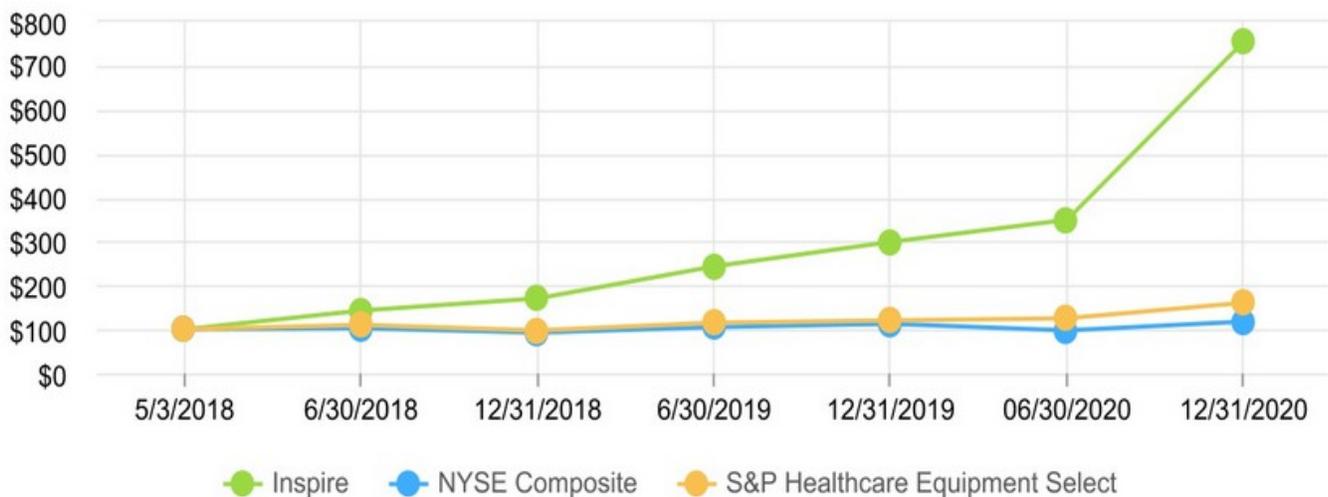
Outside the U.S., we compete with **LivaNova**, which markets an open-loop neurostimulation device. **LivaNova is currently conducting clinical trials of its device in the U.S. Nyxoah, which developed a bilateral hypoglossal nerve stimulation device, is conducting its first pivotal trial as it seeks FDA approval. We believe other emerging businesses are in the early stages of developing neurostimulation devices.**

We also compete, both within and outside of the U.S., with invasive surgical treatment options such as UPPP, maxillomandibular advancement ("MMA") and robotic tongue reduction surgery, and, to a lesser extent, oral appliances, which are primarily used in the treatment of mild to moderate OSA. We do not believe we directly compete with CPAP or other types of PAP devices because in the U.S., Inspire

therapy is only indicated for patients who have been confirmed to fail or cannot tolerate PAP treatments, such as CPAP.

As with all medical devices, if another CPAP company makes a better mousetrap, INSP is a one trick pony. They could literally be out of business overnight.

### Stock outperformance



INSP stock price has far outperformed the stock market and the healthcare index. We think a reversion to the mean is likely. **14 straight years of losses generates this kind of outperformance?**

	Year ended December 31,				
	2020	2019	2018	2017	2016
	(in thousands, except share and per share data)				
<b>Statement of Operations Data:</b>					
Revenue	\$ 115,381	\$ 82,050	\$ 50,593	\$ 28,567	\$ 16,427
Cost of goods sold	17,623	13,643	10,056	6,018	3,905
Gross profit	97,758	68,407	40,537	22,549	12,522
Operating expenses:					
Research and development	26,092	12,839	7,388	6,194	7,091
Selling, general and administrative	127,874	90,465	53,527	32,358	22,684
Total operating expenses	153,966	103,304	60,915	38,552	29,775
Operating loss	(56,208)	(34,897)	(20,378)	(16,003)	(17,253)
Other expense (income):					
Interest income	(1,092)	(3,801)	(1,870)	(203)	(57)
Interest expense	2,117	2,119	3,304	1,753	1,303
Other (income) expense, net	(145)	(12)	16	(42)	29
Total other expense (income)	880	(1,694)	1,450	1,508	1,275
Loss before income taxes	(57,088)	(33,203)	(21,828)	(17,511)	(18,528)
Income taxes	115	40	—	—	—
Net loss	\$ (57,203)	\$ (33,243)	\$ (21,828)	\$ (17,511)	\$ (18,528)
Net loss per share, basic and diluted	\$ (2.19)	\$ (1.40)	\$ (1.50)	\$ (14.88)	\$ (16.90)
Weighted average common shares used to compute net loss per share, basic and diluted <sup>(1)</sup>	26,073,418	23,804,452	14,579,662	1,176,650	1,096,013

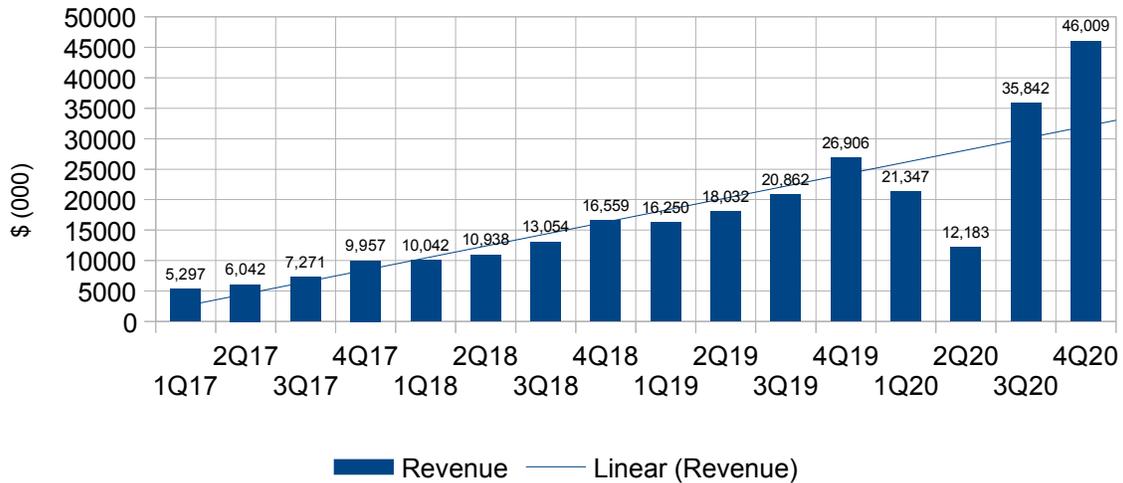
While revenue and gross profit have increased nicely, that is about all the good news.

	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>
Revenue	+40.6%	+62.2%	+77.1%	+73.9%
Operating Loss	<b>+61.1%</b>	<b>+71.2%</b>	+27.3%	-7.2%
Net Loss	<b>+72.1%</b>	+52.3%	+24.7%	-5.5%

**Losses are now growing faster than revenue!**

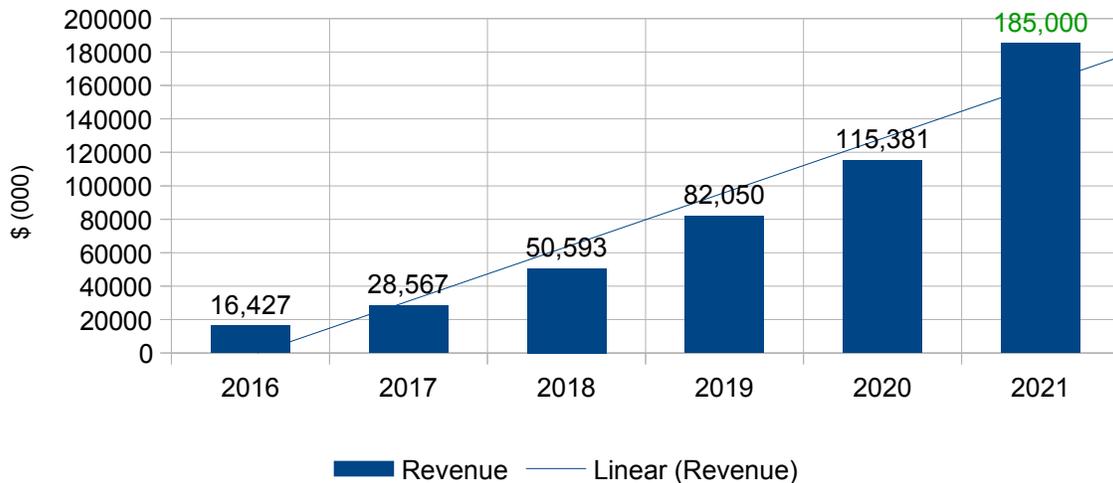
## INSP Revenue

2017 To 2021 Est.



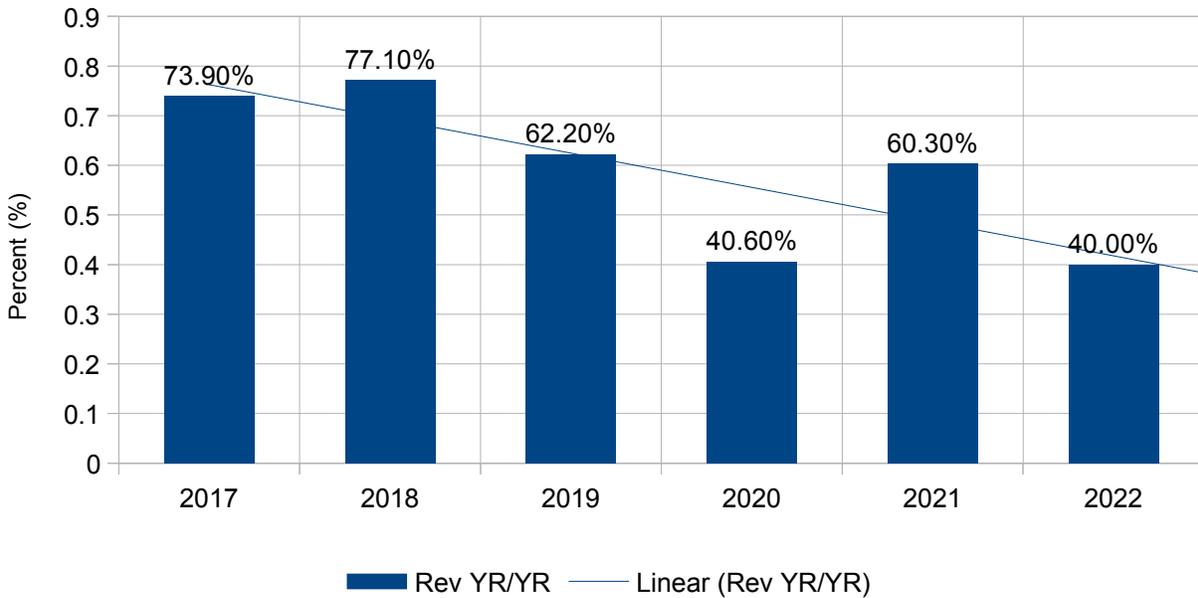
## INSP Revenue

2016 To 2021 Est.



INSP Revenue Growth

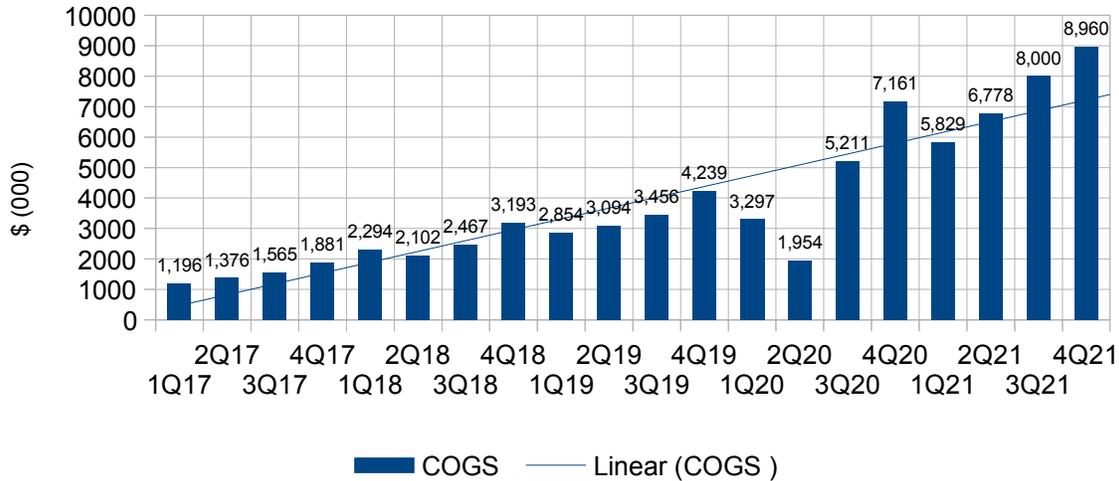
2017 To 2022 Est.



Revenue growth has been great. Even in 2020 with Covid, it increased 40%. All the backlog from the shutdown has been eliminated as of December 31, 2020. Still, this is mostly because revenue was at a small base, only \$28 million in 2018.

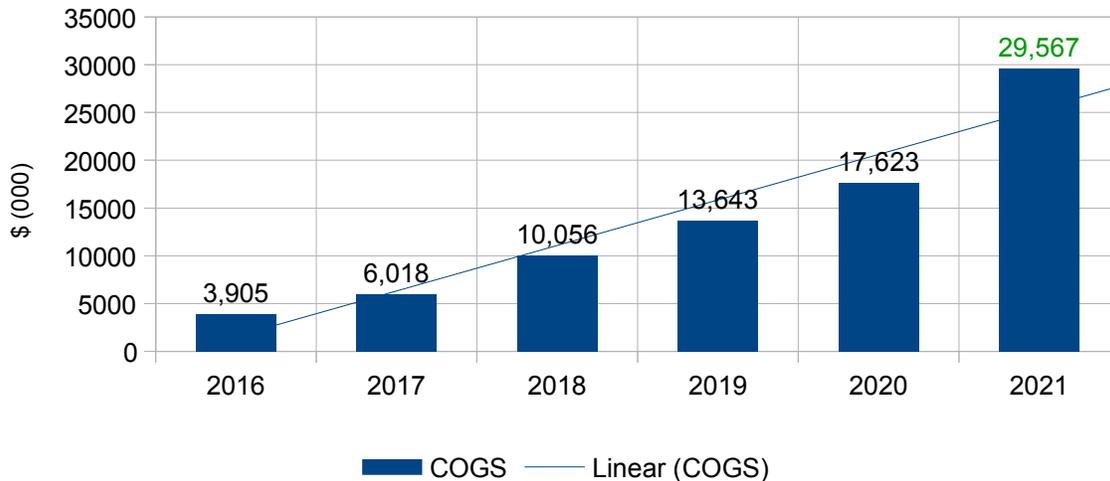
### INSP Cost of Goods Sold

2017 To 2021 Est.



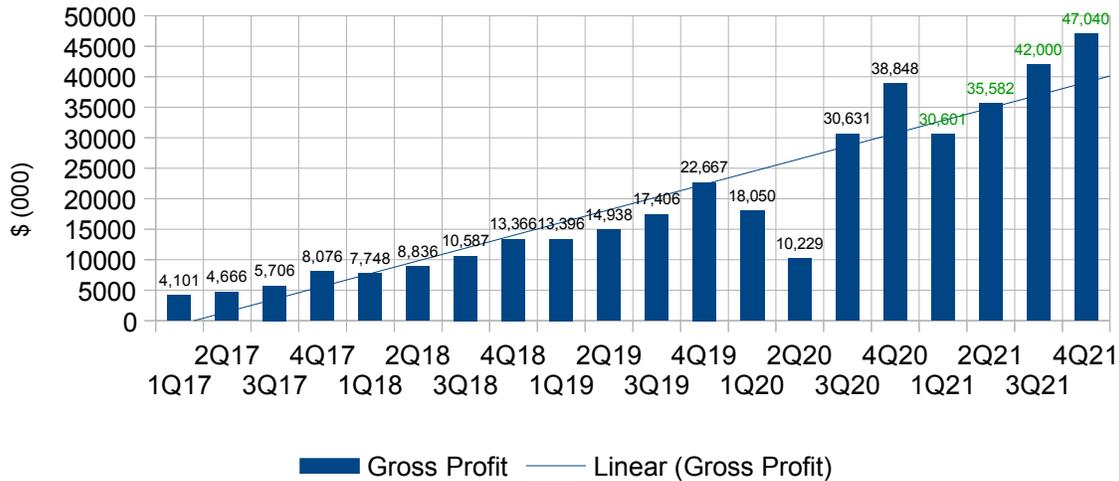
### INSP Cost Of Goods Sold

2016 To 2021 Est.



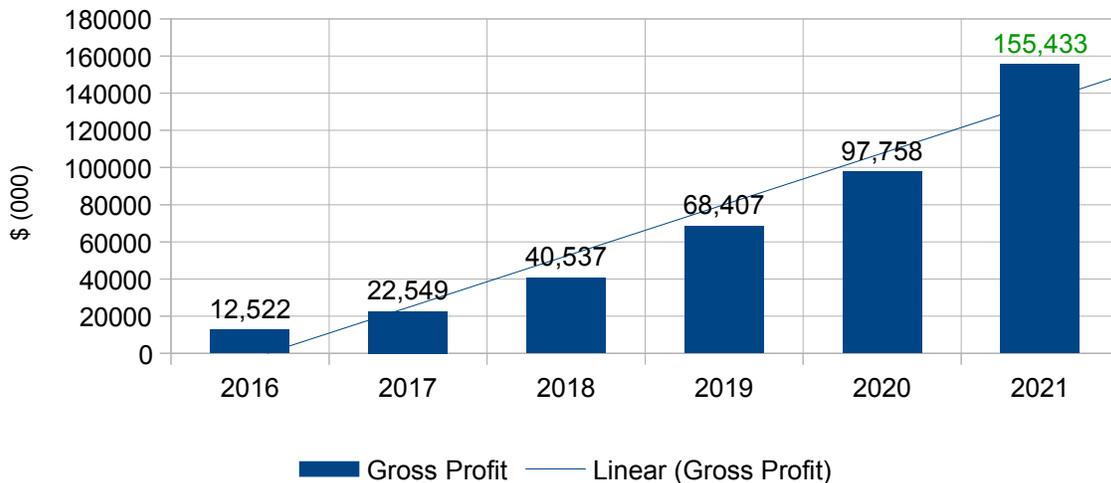
### INSP Gross Profit

2017 To 2021 Est.



### INSP Gross Profit

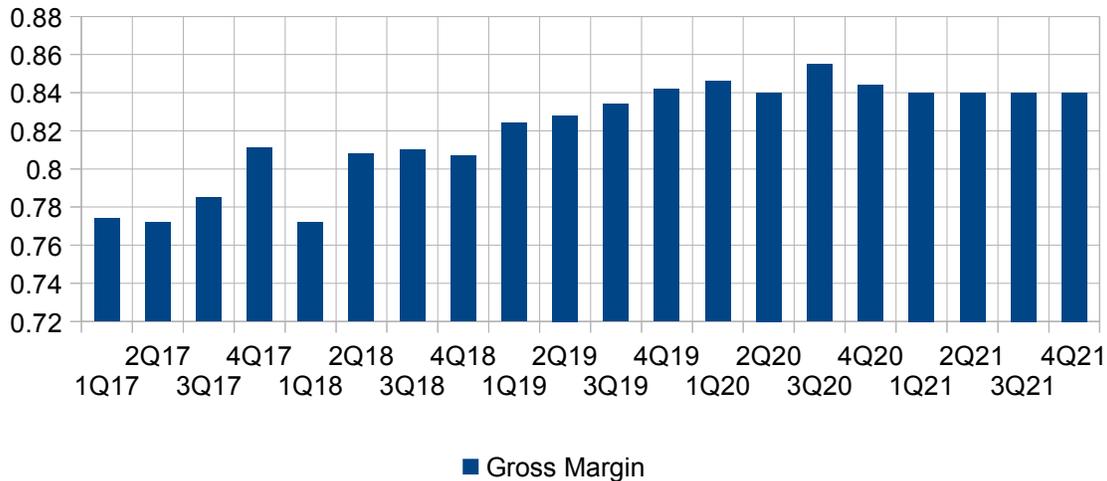
2016 To 2021 Est.



**Gross profit has kept up with revenue growth.**

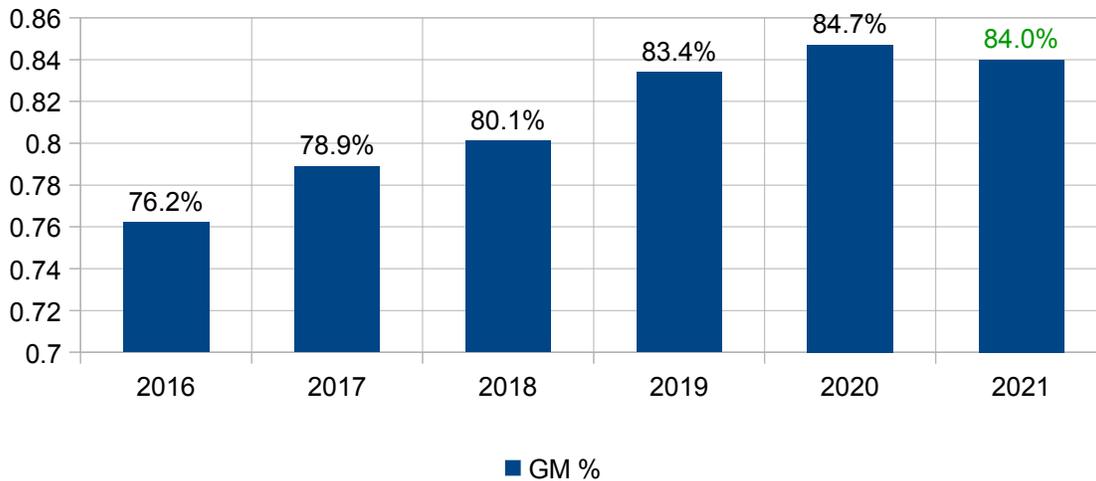
### INSP Gross Margin

2017 To 2021 Est.



### INSP Gross Margin

2016 To 2021 Est.



## INSP Total Operating Expenses

2017 To 2016



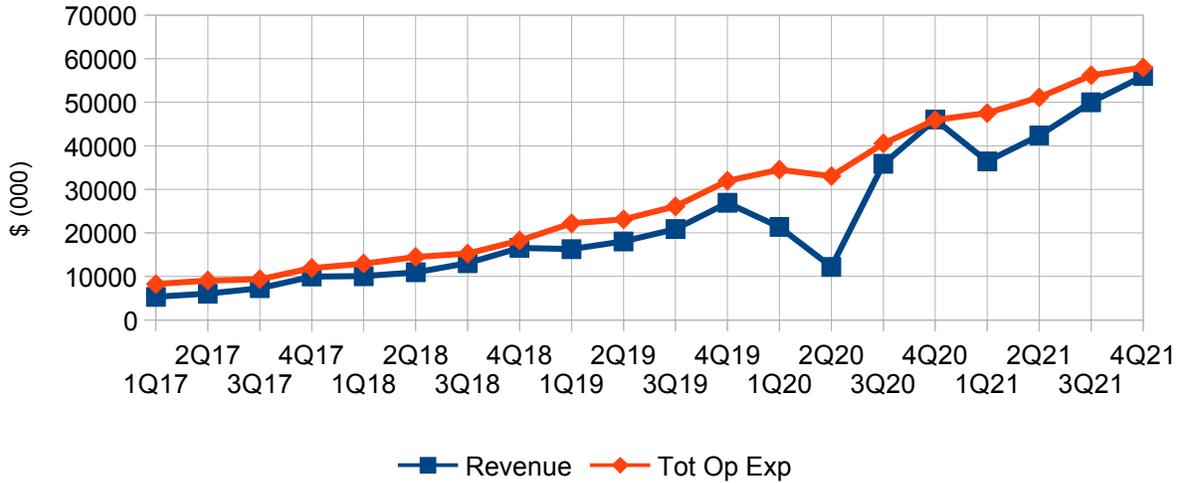
## INSP Total Operating Expenses

2016 To 2021 Est.



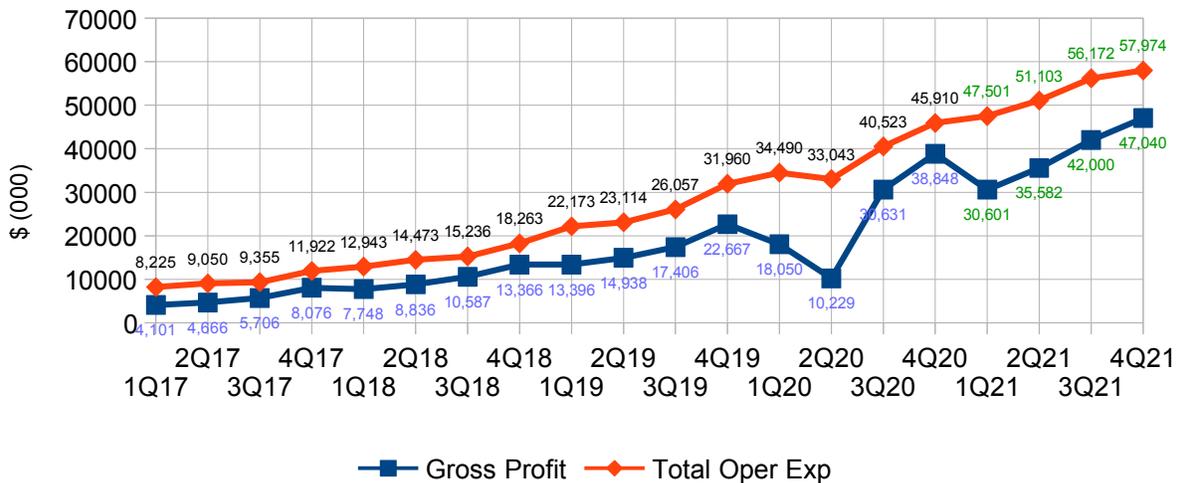
## INSP Revenue Vs Total Operating Expense

2017 To 2021 Est.



## INSP Gross Profit vs Total Operating Expenses

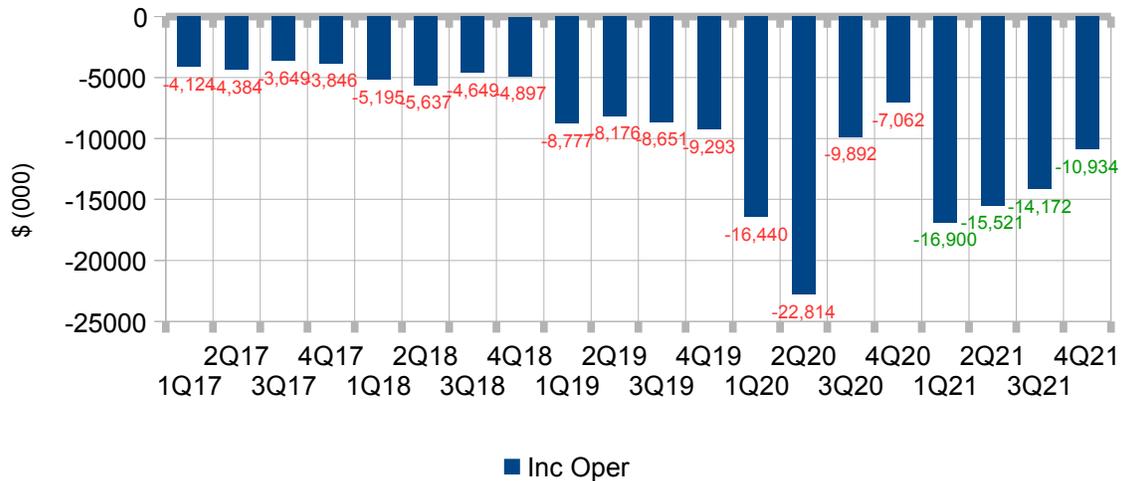
2017 To 2021 Est.



**Total operating expenses have stayed above revenue and gross profit.**

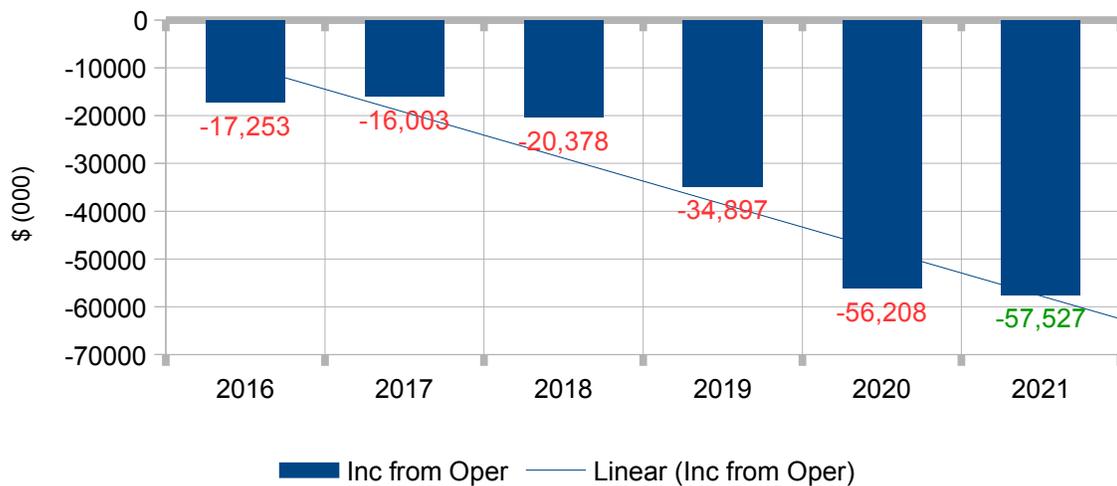
## INSP Income From Operations

2017 To 2021 Est.



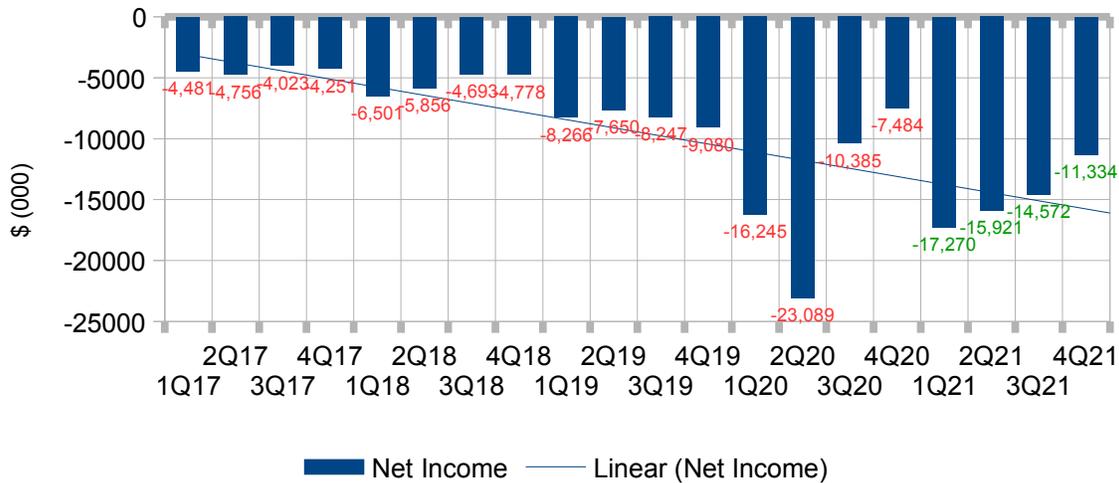
## INSP Income From Operations

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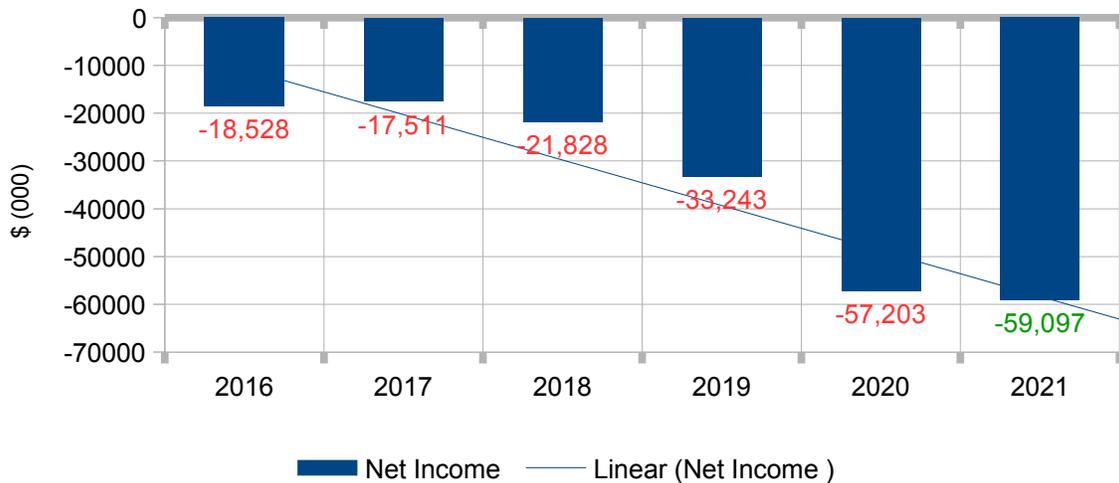


**2021 revenue is guided to be up 60%, yet loss from operations will increase about 2%!**

**INSP Net Income**  
 2017 To 2021 Est.



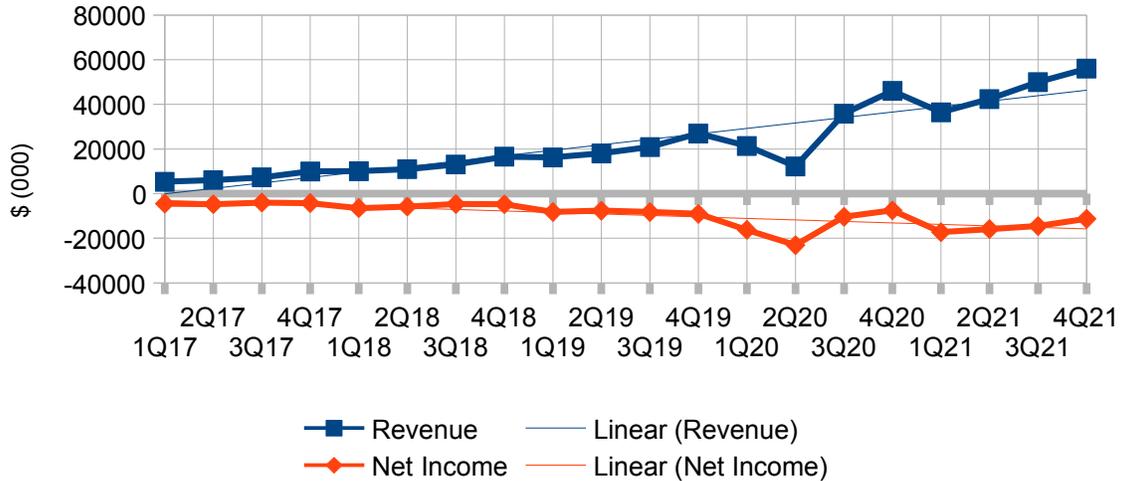
**INSP Net Income**  
 2016 To 2021 Est.



**This is their Net Income with no competition?**

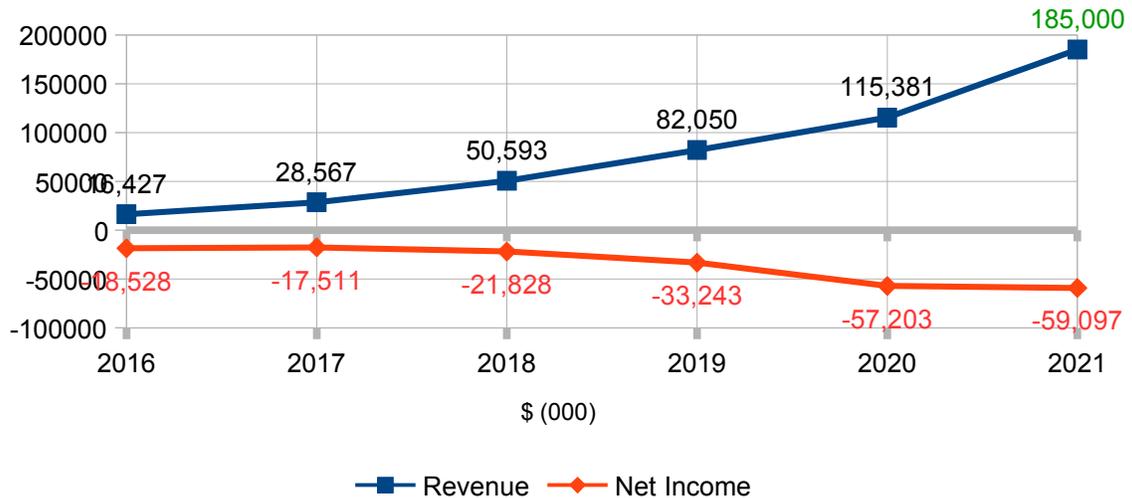
## INSP Revenue Vs Net Income

2017 To 2021 Est.



## INSP Revenue Vs Net Income

2016 To 2021 Est.



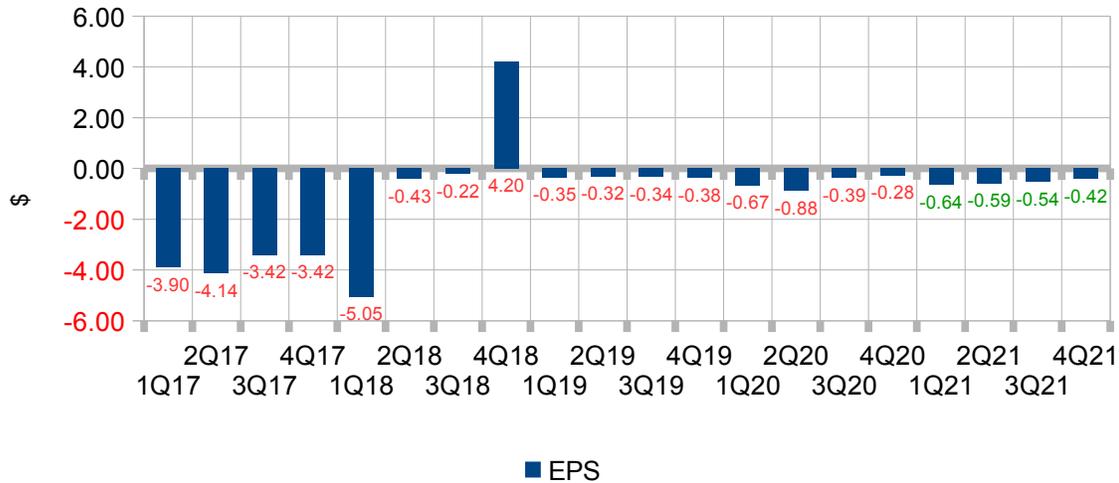
**Revenue going straight up, net income trending down!**

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### INSP Earnings Per Share

2017 To 2021 Est.



### INSP Earnings Per Share

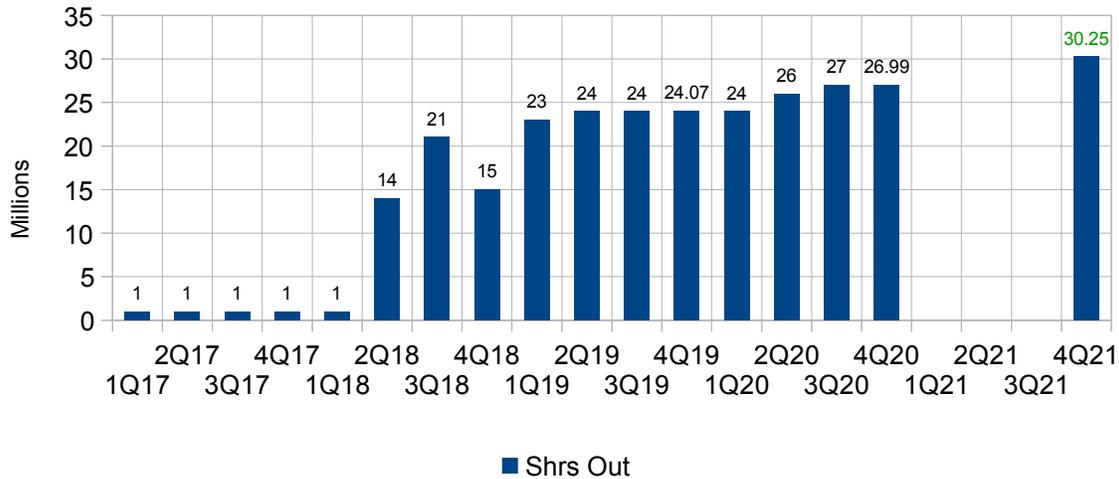
2018 To 2021 Est.



Net income in 2021 will be lower than 2020, but EPS will improve about 13 cents only because there are almost 12% more shares outstanding.

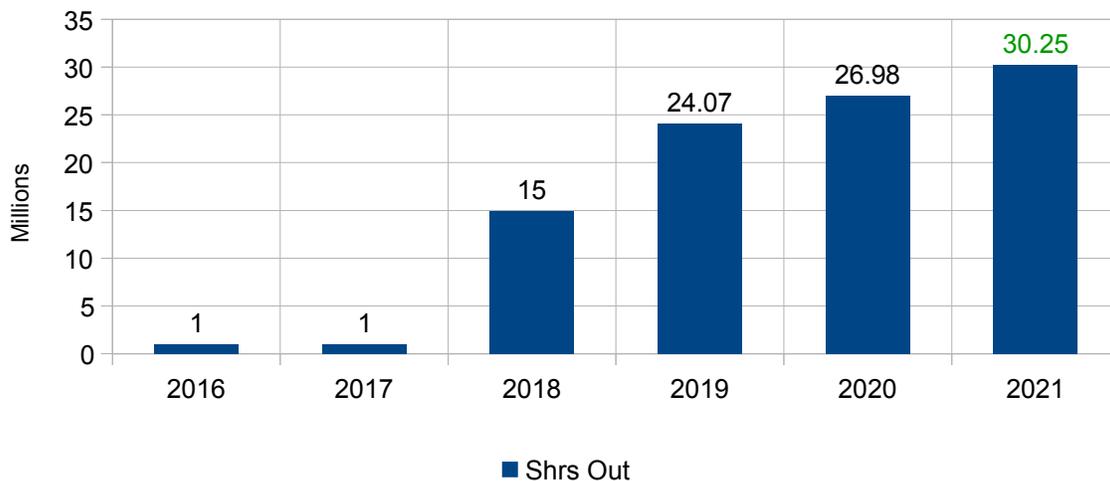
### INSP Shares Outstanding

2017 To 2021 Est.



### INSP Shares Outstanding

2016 To 2021 Est.



**Not only do you get 14 straight years of losses, soon to be 16 years, but you also get diluted by 12 percent!**

## Conclusion

INSP is a fast growing profitless company. It is trading at a ridiculous nose bleed level. It is trading at 52 times revenue! An almost \$6 billion market capitalization for a company that only did \$115 million in revenue in 2020?

This stock seems to be very sensitive to interest rates. In early March 2021 when the 10 year yield spiked, this stock went from \$249 to \$187, a 25% drop in a week. If you think that rates will be higher one year from now, like we do, this stock will be growing slower, and still losing money. This stock could drop in half and still be overvalued. They are years away, if ever, from making a profit.

This stock is a symptom of a 10 year, zero percent interest rate environment. These are the kind of stocks that decline 85% over the next couple of years. At \$217 per share, this company should need at least \$5-\$7 per share in earnings. We don't believe we will see that in our lifetime.

INSP is a one product company. If a competitor develops a better treatment, they could see their revenue dry up quickly. It is very difficult to come up with a bullish case for this stock at these levels. Revenue growth is very good, but will start to slow next year. Gross margin is good at 84%, but expenses grow just as fast or faster than revenue for 14 straight years. It is a lot easier to grow revenue 70% when your revenue is only \$50 million. It will get much harder, once they are past \$200 million. What is this company worth if revenue growth slows to 25% and they still are unprofitable and you keep getting diluted with more shares outstanding?

This whole thing just seems silly to us. But that is today's stock market, a casino, where valuation has no place. We think at some point, when rates go back up, suddenly valuation will matter again. This stock will have a long way

to fall. There is **only 3% of the float currently short**, so there should not be much of a short squeeze threat, if at all.

Price targets:

Short Term: We have no idea

Medium term: \$180-\$190

One year:\$170-\$175

Two year: \$100-\$150

Our advice: Take a small position now and on any rallies. If it retests the recent low of \$187 take some profit. Short every rally, take some profit on the drops. Rinse and repeat, all the way down to \$100.



Badger Consultants, LLC Compliance Document - 2021

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