

# Pittsburgh Pharmacy Investment Portfolio



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## Section 1. Introduction

The Pitt Pharmacy Investment Portfolio is a student-run investment portfolio that focuses on securities with a high exposure to healthcare. The portfolio was created as a result of the success and sustained interest resulting from the inception of the Biotech Investment Fantasy League in 2016 by students from the University of Pittsburgh School of Pharmacy. The Pitt Pharmacy Investment Portfolio was created with the idea that healthcare students will be the experts in recognizing the potential value that healthcare companies pose to the market.

This report serves as an update on the performance of the portfolio, the performance of the market, major industry news, and a company level breakdown of all current holdings. Any alterations made to the portfolio will be discussed with proper justification. The final section will serve as an executive summary of the contents.

At the end of each year, analysts complete a full due diligence report encompassing all current holdings as well as companies outside of the current portfolio. These findings are presented for the group to vote on all investment decisions. A summary of investment decisions including a financial breakdown is detailed in the table below. All trades were carried out on May 1 2019. A detailed view of the transaction can be found in the graphic below the table.

Current Holding Adjustments	shares	4/30 close	total	decision	new shares	new total
Abbott (ABT)	84	\$79.54	\$6,681.36	reduce	63	\$5,011.02
Johnson and Johnson (JNJ)	27	\$141.15	\$3,811.05	buy more	43	\$6,069.45
Agios (AGIO)	17	\$55.92	\$950.64	hold	17	\$950.64
Merck (MRK)	76	\$78.71	\$5,981.96	reduce	63	\$4,958.73
Glaxo (GSK)	100	\$41.13	\$4,113.00	reduce	50	\$2,056.50
Gilead (GILD)	47	\$65.04	\$3,056.88	sell	0	\$0.00
Medtronic (MDT)	62	\$88.81	\$5,506.22	reduce	56	\$4,973.36
Concert (CNCE)	26	\$10.28	\$267.28	sell	0	\$0.00
BMS (BMY)	97	\$46.43	\$4,503.71	sell	0	\$0.00
United (UNH)	21	\$233.07	\$4,894.47	hold	21	\$4,894.47
Abbvie (ABBV)	53	\$79.39	\$4,207.67	hold	53	\$4,207.67
Novartis (NVS)	64	\$82.23	\$5,262.72	reduce	50	\$4,111.50
Idexx (IDXX)	12	\$232.00	\$2,784.00	reduce	10	\$2,320.00
					Cash	\$1,622.14
					Total held	\$41,175.48
					Power	
<b>New Purchases</b>						
AstraZeneca (AZN)	65	\$37.66	\$2,447.90	buy		
CVS (CVS)	91	\$54.38	\$4,948.58	buy		
Sarepta (SPT)	11	\$116.94	\$1,286.34	buy		
Mylan (MYL)	93	\$26.99	\$2,510.07	buy		
Intra Cellular (ITCI)	95	\$13.17	\$1,251.15	buy		
		Total	\$12,444.04			
		New Cash	\$23.58			
					Portfolio value	\$53,643.10



## PPIP Simulation - Trade History

DATE	TRADE TYPE	SYMBOL	QUANTITY	TARGET PRICE	PRICE	COMMISSION	TOTAL CASH VALUE	ACCOUNT VALUE
5/1/2019 10:16 AM	Stock: Buy at Market	ITCI	95		\$13.08	\$4.99	\$1,247.59	\$53,340.62
5/1/2019 10:15 AM	Stock: Buy at Market	MYL	93		\$26.96	\$4.99	\$2,512.27	\$53,334.43
5/1/2019 10:15 AM	Stock: Buy at Market	SRPT	11		\$113.71	\$4.99	\$1,255.80	\$53,339.42
5/1/2019 10:15 AM	Stock: Buy at Market	CVS	65		\$56.71	\$4.99	\$3,691.14	\$53,344.41
5/1/2019 10:14 AM	Stock: Buy at Market	AZN	100		\$37.34	\$4.99	\$3,738.49	\$53,349.40
5/1/2019 10:14 AM	Stock: Buy at Market	JNJ	16		\$140.46	\$4.99	\$2,252.35	\$53,354.39
5/1/2019 10:12 AM	Stock: Sell at Market Open	ABT	21		\$79.35	\$4.99	\$1,661.36	\$53,295.38
5/1/2019 10:11 AM	Stock: Sell at Market Open	IDXX	2		\$231.63	\$4.99	\$458.27	\$53,306.13
5/1/2019 10:11 AM	Stock: Sell at Market Open	NVS	14		\$82.10	\$4.99	\$1,144.41	\$53,307.71
5/1/2019 10:11 AM	Stock: Sell at Market Open	MDT	6		\$88.82	\$4.99	\$527.93	\$53,306.04
5/1/2019 10:11 AM	Stock: Sell at Market Open	GSK	50		\$40.85	\$4.99	\$2,037.51	\$53,276.03
5/1/2019 10:11 AM	Stock: Sell at Market Open	MRK	13		\$78.69	\$4.99	\$1,017.98	\$53,281.41
5/1/2019 10:11 AM	Stock: Sell at Market Open	BMJ	97		\$46.32	\$4.99	\$4,488.05	\$53,267.48
5/1/2019 10:11 AM	Stock: Sell at Market Open	GILD	47		\$64.82	\$4.99	\$3,041.55	\$53,267.77
5/1/2019 10:11 AM	Stock: Sell at Market Open	CNCE	26		\$10.35	\$4.99	\$264.11	\$53,270.94

All current holdings are outlined in appendix A. Until the next trading cycle (April 2020), the portfolio will remain constant unless leadership determines a move is necessary. These reports will serve as constant due diligence to ensure that nothing goes unnoticed and that the portfolio is constantly under evaluation. The current format for investing utilizes a simulation on investopedia.com. An initial \$50,000 was invested in April 2018. The portfolio as well as all current reporting tactics will be reevaluated on a monthly basis to ensure proper record keeping is maintained.

### Section 2. Market Comparison

S&P 500 is a stock index composed of 500 companies with the largest market capitalizations that are listed on the NASDAQ, NYSE, and Cboe BZX exchanges. Any S&P 500 companies that are classified as members of the GICS® health care sector are included in the S&P 500 Health Care index (SPXHC, also known as S5HLTH).

As of this writing, there are 60 companies within the SPXHC index (see Appendix A). Of those companies, PPIP holds a position in the following 9 companies: Abbott Laboratories, Johnson & Johnson, Merck & Co., Medtronic plc, UnitedHealth Group Inc., AbbVie, Inc., IDEXX Laboratories, CVS Health Corporation, and Mylan N.V. The remaining 6 PPIP companies not listed in the SPXHC are: Agios Pharmaceuticals, Inc., GlaxoSmithKline plc, Novartis AG, AstraZeneca plc, Sarepta Therapeutics, Inc., and Intra-Cellular Therapies, Inc.

We believe that the SPXHC index best represents the entire healthcare sector. For this reason, we have selected the SPXHC index as a comparator in order to evaluate the performance of PPIP relative to the rest of the healthcare sector. This was accomplished by measuring the

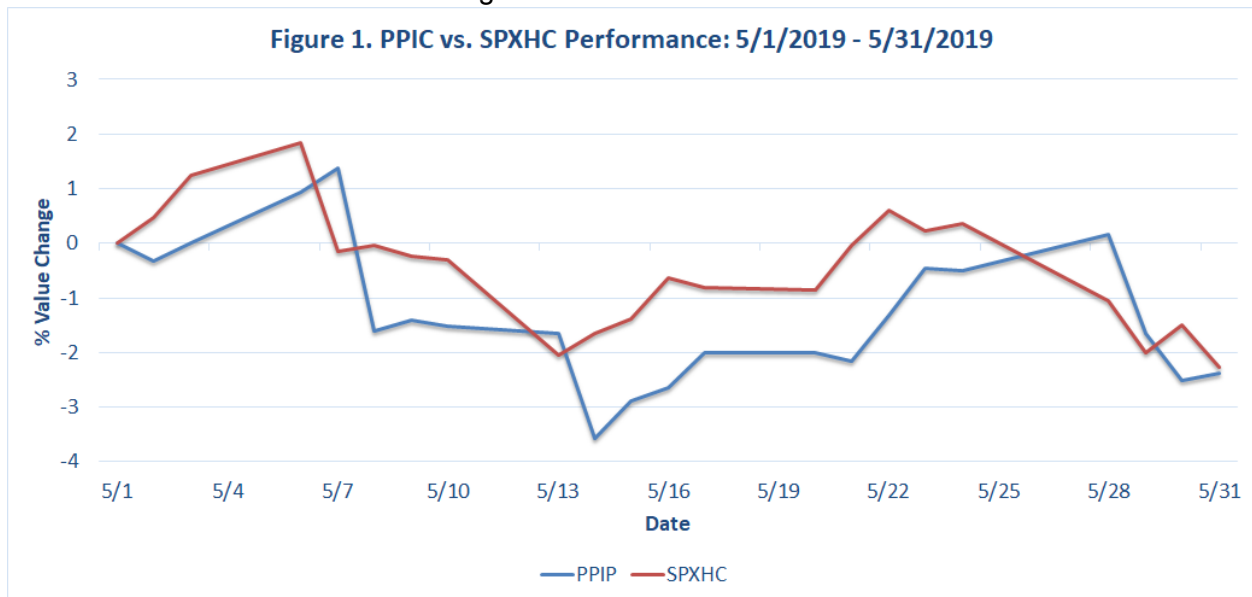


percent-change of the PPIP value relative to the percent-change of the SPXHC index value during the following investment periods:

- A. Trailing 1 Month: 05/01/2019 - 05/31/2019
- B. Trailing 3 Months: 03/01/2019 - 05/31/2019
- C. Trailing 6 Months: 01/02/2019 - 05/31/2019
- D. Trailing 12 Months: 06/01/2018 - 05/31/2019
- E. Since Inception: 04/23/2018 - 05/31/2019

**A. Trailing 1 Month: 5/1/2019 - 5/31/2019**

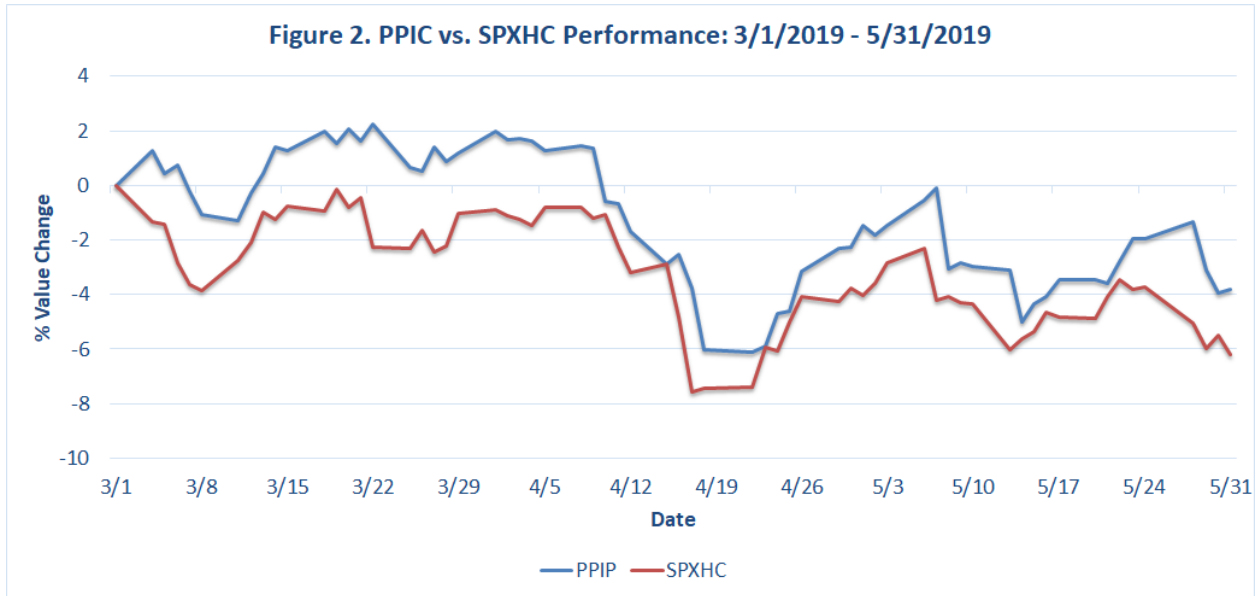
During the investment period beginning May 1st, 2019 and ending May 31st, 2019, the PPIP value decreased 2.38% while the SPXHC index value decreased 2.26%. Thus, the SPXHC index outperformed PPIP by 0.12% during this period. In the context of a hypothetical \$50,000 investment during this period, the PPIP would have yielded a loss of \$1,190 while investing in the SPXHC index would have yielded a loss of \$1,130. The percent-changes in PPIP and SPXHC value are shown below in Figure 1.



**B. Trailing 3 Months: 3/1/2019 - 5/31/2019**

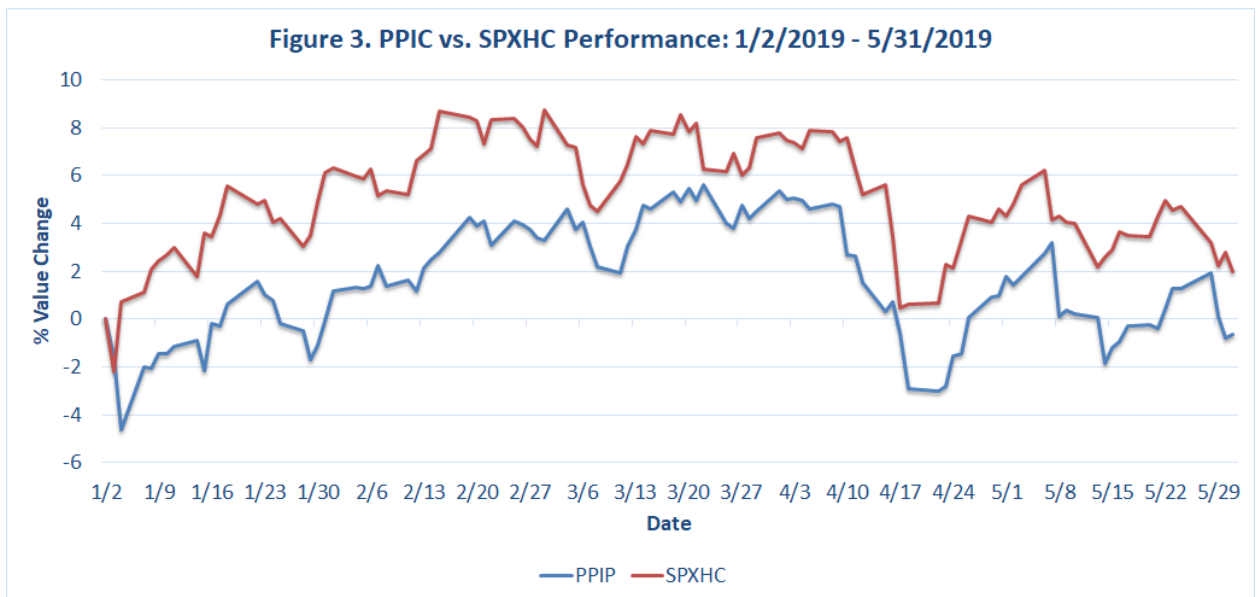
During the investment period beginning March 1st, 2019 and ending May 31st, 2019, the PPIP value decreased 3.82% while the SPXHC index value decreased 6.22%. Thus, PPIP outperformed the SPXHC index by 2.4% during this period. In the context of a hypothetical \$50,000 investment during this period, the PPIP would have yielded a loss of \$1,910 while investing in the SPXHC index would have yielded a loss of \$3,110. The percent-changes in PPIP and SPXHC value are shown below in Figure 2.





**C. Trailing 6 Months: 1/2/2019 - 5/31/2019**

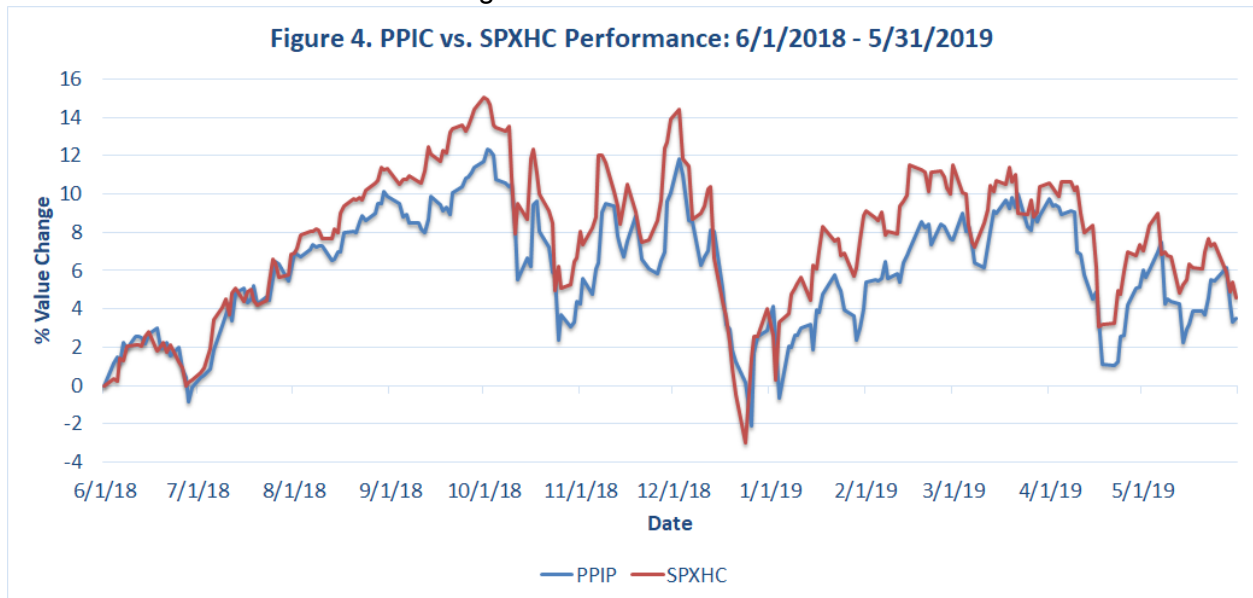
During the investment period beginning January 2nd, 2019 and ending May 31st, 2019, the PPIP value decreased 0.65% while the SPXHC index value increased 1.96%. Thus, the SPXHC index outperformed PPIP by 2.61% during this period. In the context of a hypothetical \$50,000 investment during this period, the PPIP would have yielded a loss of \$325 while investing in the SPXHC index would have yielded a gain of \$980. The percent-changes in PPIP and SPXHC value are shown below in Figure 3.



**D. Trailing 12 Months: 6/1/2018 - 5/31/2019**



During the investment period beginning June 1st, 2018 and ending May 31st, 2019, the PPIP value increased 3.48% while the SPXHC index value increased 4.60%. Thus, the SPXHC index outperformed PPIP by 1.12% during this period. In the context of a hypothetical \$50,000 investment during this period, the PPIP would have yielded a gain of \$1,740 while investing in the SPXHC index would have yielded a gain of \$2,300. The percent-changes in PPIP and SPXHC value are shown below in Figure 4.

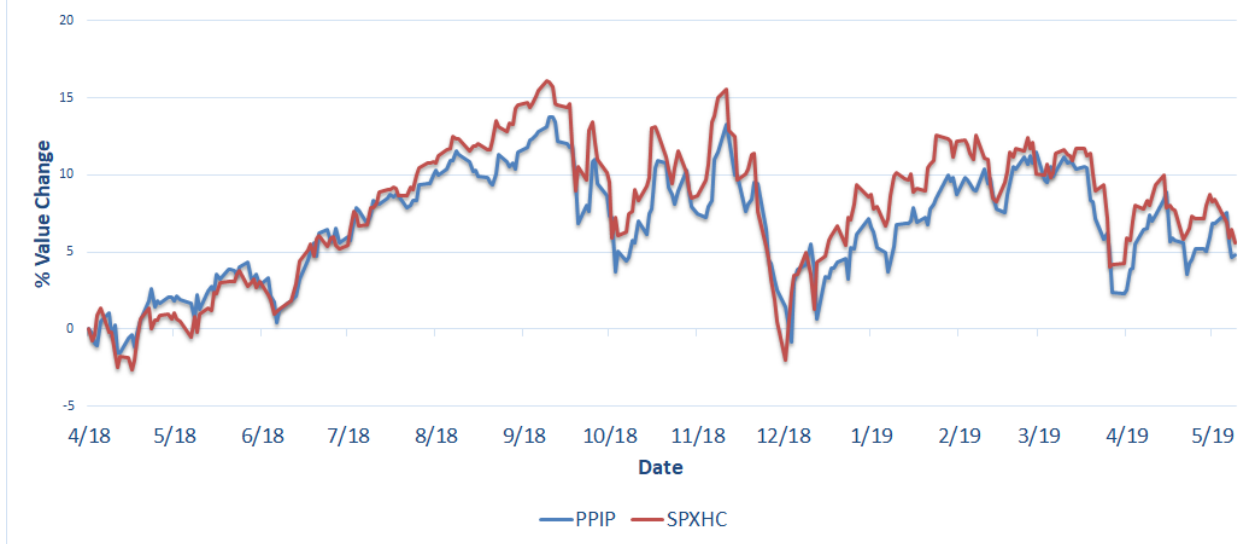


**E. Inception to Present: 4/23/18 - 5/31/19**

During the investment period beginning April 23rd, 2018 and ending May 31st, 2019, the PPIP value increased 4.82% while the SPXHC index value increased 5.60%. Thus, the SPXHC index outperformed PPIP by 0.78% during this period. In the context of a hypothetical \$50,000 investment during this period, the PPIP would have yielded a gain of \$2,410 while investing in the SPXHC index would have yielded a gain of \$2,800. The percent-changes in PPIP and SPXHC value are shown below in Figure 5.



Figure 5. PPIC vs. SPXHC Performance: 4/23/2018 - 5/31/2019



### Section 3. Major Industry Updates

Healthcare markets continue to benefit from generally good broad market performance, but the threat of political change in Washington may shake up the industry in the coming months. Overall, financial markets took a hit through the month of May. The DJI declined for most of the month, opening at \$26,430 on May 1st and closing at \$24,845 on May 31st. The S&P 500 Healthcare Index followed a similar pattern, declining from \$1030 to \$1007 in the same time period. The Trump administration has been promising changes to drug pricing, but has faced challenges in implementation. An HHS act requiring all drug commercials to display the list price of the medication was struck down by a federal judge. The judge reasoned that this lawsuit would allow any order with the potential cost-savings to be passed without oversight. Merck, Eli Lilly, and Amgen have also sued the HHS over the legislation

### Section 4. Major Product Updates

This month, the major companies that have been driving the development of this portfolio have been Mylan, GlaxoSmithKlien and UnitedHealth. As of late, Mylan has been really struggling to perform. Its value has dropped significantly over the past few months, for the most part due to poor product performance. The Company has been unable to provide enough EpiPen to successfully meet demand for an extended time now. Furthermore, decrease in the sales of generic medications due to changes in the competitive landscape of the market both in the United States in Europe. This issue has been further compounded by price cuts in both the United States and Europe stemming from increased political pressure to decrease medication costs. This Mylan performance is concerning. Due to the lack of brand power, and rumored issues with executive positions, it may be difficult to recuperate from the losses soon. Another key player in the portfolio that has been struggling is GlaxoSmithKlien (GSK). The company recently lost the exclusivity on Advair, a very well known, high performing part of GSK's



established products. Generic competition has been eroding the revenue potential of this product and cutting in to GSK's value as a result. Fortunately, the insurance and medical devices industry has been performing well. A strong performance from UnitedHealth, which has seen a dramatic increase clientele over the past year specifically with in their UnitedHealth Medicare program and their optum group. After posting a strong Q1 report, UnitedHealth went on to have a good performance this month.

## Section 5. Individual Company Performance

### ***Abbott Laboratories***

#### Products

- New Products:
  - Approval of MitraClip device by FDA to treat secondary mitral regurgitation
  - Approval of Tacticath by FDA to aid in the treatment of A-Fib
  - Alinity molecular diagnostics system Obtained CE mark to aid in infectious disease testing
- Medical devices making up the bulk of sales
- Ensure and glucerna driving growth of nutrition sales, sales up 2.0% worldwide
  - Increased 0.1% on reported basis, 6.8% on an organic basis in world wide adult nutrition, international sales increased 3.9% on reported basis and 11% organic basis
  - Pediatric sales up 3.5%, strong performance abroad
- Worldwide diagnostic sales up 0.2%
  - Alinity family of products driving 4.1% increase in core lab diagnostic sales
  - Molecular diagnostic sales down 8.4%, recent Alinity M approval in this area may pad this loss
  - Point of care and rapid diagnostic sales down 4.8% and 4.0% respectively
    - Abbot claims strong cardiometabolic sales and ID-NOW platform were eclipsed by 2018 Q1 sales, which were abnormally high due to the flu season
- Established Pharmaceutical sales down 4.9%, eyeing potential emerging markets for generics abroad including India, Brazil, Russia, and China
- Worldwide medical device sales up 5.5%, strong growth in Electrophysiology, heart failure, structural heart care and diabetes care.
  - Tacticath approval in electrophysiology
  - Heart Failure growth driven by HeartMate 3, boosted by Momentum 3 data
  - Structural heart care growth supported by Mitraclip which moved into a new indication
- Diabetes care sales up 34.4% on a reported basis and 42% on organic basis driven by FreeStyle Libre System.

#### Pipeline

- Received positive data on its TRILUMINTE trial for its minimally invasive tricuspid valve repair system





- m-PIMA™ HIV-1/2 VL, the world's first point-of-care viral load diagnostic test, has received the World Health Organization's Pre Qualification approval (WHO PQ)

#### Financials -3.31%

ABT market capitalization began the month at \$138.9B and ended at \$134.3B. Peak market capitalization was reached on May 6th at \$139.4B and trough market capitalization was reached on May 13th at \$133.2B. Overall, from May 1st through May 31st, the share price of ABT declined -3.31%.

#### ***AbbVie, Inc.***

#### Products

- Humira Revenue up 7.1% in the US but down 23% internationally due to biosimilar competition (total revenue \$3.215B, and \$1.231B)
- HemeOnc portfolio up 43.2 %, key players: IMBRUVICA showed increase of 34.0% (\$1.022B), and VENCLEXTA w/ net revenue \$151M
- SKYRIZI approved in moderate-severe plaque psoriasis
- VENCLEXTA received breakthrough therapy and priority review in frontline CLL
  - Clinical Trial in multiple myeloma recently reinstated following hold due to deaths
- HCV portfolio lead by Mavyret, Portfolio down 11.3% globally, US revenue grew 17.3%
- Other Key products include Creon, Lupron, and Synthroid represent stable income sources

#### Pipeline

- Upadacitinib- oral JAK-1 inhibitor for rheumatoid arthritis, FDA decision expected Q3 2019
- Phase 3 for Crohn's Disease, ulcerative colitis, psoriatic arthritis, and atopic dermatitis
- Skyrizi- recently approved for psoriasis, Phase 3 for Crohn's Disease, ulcerative colitis, and psoriatic arthritis
- Empliciti- phase 3 for multiple myeloma first line therapy
- Imbruvica- phase 3 for follicular lymphoma
- Very large and developing oncology pipeline

#### Financials -2.76%

ABBV market capitalization began the month at \$116.6B and ended at \$113.4B. Peak market capitalization was reached on May 22nd at \$120.6B and trough market capitalization was reached on May 31st at \$113.4B. Overall, from May 1st through May 31st, the share price of ABBV declined -2.76%.

#### ***Agios Pharmaceuticals, Inc.***

#### Products

- \$9.1M first quarter net revenue from TIBSOVO, Cash, Cash Equivalents and Marketable Securities was \$707.8M



- TIBSOVO only current source of revenue

#### Pipeline

- 2 phase 3 trials undergoing for approved Tibsovo
- 2 phase 3 trials undergoing for Mitapivat

#### Financials -13.2%

AGIO market capitalization began the month at \$3.1B and ended at \$2.7B. Peak market capitalization was reached on May 3rd at \$3.2B and trough market capitalization was reached on May 31st at \$2.7B. Overall, from May 1st through May 31st, the share price of AGIO declined -13.2%.

### ***AstraZeneca plc***

#### Products

- 14% product sales growth Driven by key products: Targisso, Imfinzi, Lynparza, Farxiga, Brilinta and Fasenra.
- Tagrisso sold \$630M, 86% growth in Oncology as a first line treatment. Imfinzi made \$630M with 376% growth with a very successful launch. Lynparza garnered \$237M and has expanded into first line breast cancer treatment
- Farxiga sold \$349M with a growth of 17% following results of DECLARE trial
- Brilianta sold \$348M with a growth 19% due to “increased market penetration”
- Symbicort was down 8% but still garnered \$585M while Pulmicort sales increased 11% and made \$383M in revenue to drive the performance of the companies respiratory profile

#### Pipeline

- Epanova recently approved for the treatment of adults with severe hypertriglyceridemia
- Lokelma approved for the treatment of adults with hyperkalemia
- Various combinations of Imfinzi are in phase 3 trials

#### Financials +0.08%

ABBV market capitalization began the month at \$96.6B and ended at \$96.7B. Peak market capitalization was reached on May 24th at \$101.6B and trough market capitalization was reached on May 13th at \$96.5B. Overall, from May 1st through May 31st, the share price of ABBV increased +0.08%.

### ***CVS Health Corporation***

#### Products

- Aetna acquisition drove a \$16.6B increase in health care benefits service, reflects a growth in membership in Medicare products, partially offset but interest payments on acquisition.
- Pharmacy service revenue increased 3.1% due to inflation and increased script volumes.



- Retail revenue increased 3.3% for the same reason as the pharmacy service revenue

#### Pipeline

- Will open 1,500 HealthHUB stores over the next two years
- Another step in becoming a seamless, all-encompassing healthcare company
- Deal to acquire Aetna could be blocked by a federal judge

#### Financials -8.65%

CVS market capitalization began the month at \$74.5B and ended at \$68.0B. Peak market capitalization was reached on May 1st at \$74.5B and trough market capitalization was reached on May 16th at \$67.9B. Overall, from May 1st through May 31st, the share price of CVS decreased -8.65%.

### ***GlaxoSmithKline plc***

#### Products

- HIV products make up the majority of income and were up 7% as of the end of Q1 2019
  - Dolutegravir franchise drugs Triumeq and Tivicay drove growth in this area, partially aided by Juluca. This family grew 11% and garnished £1,067M, a huge fraction of the £1,121M income of the HIV portfolio
- Respiratory sales were up 29% at the end of Q1 with strong growth in all regions, this increase was driven by increased demand for Trelegy and Nucala
  - Loss of Advair exclusivity led to decreased performance of established products
  - Breo sales were down in US but up abroad
- Immuno-Inflammatory drug Benlysta sales were up 21%, garnering £121M and Oncology drug Zejula sold £42M following the acquisition of Tesaro
- Sales of established medications were down 5%, driven by the loss of advair exclusivity as stated above, but potential losses were padded by increased Ventolin demand. Lamitcal sales also decreased 10% due to generic competition
- Excellent sales of Shingles Vaccine Shingrex, with £663M earned.

#### Pipeline

- Has decided to discontinue development of their universal flu vaccine after assessing interim phase 1 data for the candidate
- Respiratory drug Trelegy Ellipta met the main goal of a late-stage asthma study by improving lung function in patients with uncontrolled asthma
  - Trelegy Ellipta is already approved for COPD
  - Generic competition for blockbuster Advair is pushing GSK to pursue newer respiratory therapies to take it's place

#### Financials -3.19%

GSK market capitalization began the month at \$100.7B and ended at \$95.5B. Peak market capitalization was reached on May 3rd at \$101.1B and trough market capitalization was reached on May 31st at \$95.5B. Overall, from May 1st through May 31st, the share price of GSK decreased -3.19%.



## ***IDEXX Laboratories***

### Products

- Company Growth driven by Companion Animal Group, followed by DEXX VETLAB consumables and IDEXX Laboratory diagnostic and consulting services.
- Key instruments: 24% increase in Catalyst chemistry analyzer placements (1463 total)
- VetLab success driven by increased instrument installation, customer retention, and increased test usage
- Rapid Assay products gained 5% reported and 6% organic growth on 2018 due to performance of SNAP 4Dx Plus testing platform
- Other Key instruments: Premium Hematology and SediVue Dx instrument
- Newly launched Cornerstone, Neo, Animana and Smart Flow systems should be observed closely

### Pipeline

- No update/change in pipeline

### Financials +6.71%

IDXX market capitalization began the month at \$20.1B and ended at \$21.5B. Peak market capitalization was reached on May 24th at \$22.0B and trough market capitalization was reached on May 1st at \$20.1B. Overall, from May 1st through May 31st, the share price of IDXX increased +6.71%.

## ***Intra-Cellular Therapies, Inc.***

### Products

- No products on the market

### Pipeline

- Lumateperone, a novel drug for the potential treatment of adults with schizophrenia, is currently being reviewed by the FDA
- Intra- Cellular Therapeutics has outlined the clinical results, safety, and tolerability of Lumateperone in various presentations at the American Psychiatric Association annual meeting in San Francisco in May

### Financials -2.77%

ITCI market capitalization began the month at \$736.6M and ended at \$716.2M. Peak market capitalization was reached on May 3rd at \$787.9M and trough market capitalization was reached on May 13th at \$646.2M. Overall, from May 1st through May 31st, the share price of ITCI decreased -2.77%.

## ***Johnson & Johnson***

### Products

- Highest earning in Pharmaceutical Division, growth of 7.9% driven by Stelara, Imbruciva, Darzalex, Tremfya, the Invega family, Prezista, Upravi, Erleada.



- Success of the above drugs offset declines in the sales of Remicade and Zytiga
- Sales of consumer products grew 0.7% and were driven by Over the Counter products and Neutrogena beauty products
- The medical device sales grew 4.3%
  - Driven by electrophysiology products, ACUVUE contacts, Biosurgical products, and wound closure products.

#### Pipeline

- FDA granted priority review of Invokana (canagliflozin) sNDA to treat chronic kidney disease in patients with type 2 diabetes
  - If approved, will become the first and only therapy to treat CKD in patients with type 2 diabetes
- In the investigational phase 3 TITAN study, Erleada (apalutamide) in addition to androgen deprivation therapy showed significant improvement in overall survival and radiographic progression-free survival in patients with metastatic castration-sensitive prostate cancer

#### Financials -6.98%

JNJ market capitalization began the month at \$376.9B and ended at \$348.2B. Peak market capitalization was reached on May 6th at \$377.3B and trough market capitalization was reached on May 31st at \$348.2B. Overall, from May 1st through May 31st, the share price of JNJ decreased -6.98%.

#### ***Medtronic plc***

##### Products

- Cardiac and Heart Failure section of the Cardiac and Vascular Group (CVG) experienced a 4.8% decrease in revenue. drivers of growth include TYRX Antibacterial envelope, Reveal LINQ cardiac monitoring system, and AF Solutions.
  - This group also experienced a decline in sales in heart failure aids, specifically Left Ventricular Assist Devices
- Coronary and Structural Heart section of the CVG also experienced a slight decrease in revenue, (1.1%). Revenue was primarily gained through the performance of Transcatheter Aortic Valves, particularly the CoreValve Evolut PRO platform.
- The Aortic, Peripheral and Venous section experienced a slight growth (1.0%) through the Success of the VenaSeal closure system, Valiant Navion Thoracic Stent system, and PTA ballows
- The minimally invasive therapies group experienced slight growth in both its sections (1.1% in surgical innovation and 0.3 in Respiratory, GI, and Renal) driven by the LigaSure instruments, Tri-Staple 2.0 reloads, the Signia powered stapler, Puritan Bennett™ 980 ventilators, McGRATH™ MAC video laryngoscopes, Microstream™ capnography monitoring products, and INVOS™ cerebral oximetry systems
- The Restorative Therapies group saw positive growth with a 4.1%, with growth driven by the Brain Therapies group and specialty therapies subdivision



- Key products included Mazor X™ robotic guidance systems, StealthStation® S8 surgical navigation systems, Midas Rex® powered surgical instrument systems, and O-arm® surgical imaging systems for the Brain therapies group. As Well as the Aquamantys™ bipolar sealers and PlasmaBlade™ dissection devices from the Specialty Therapies group
- Spinal Chord stimulation therapy up 5.4%, outpacing the market
- The Diabetes group reported a 2.9% growth driven by the Advanced Insulin Management devices and Emerging technologies. Products associated with these groups include MiniMed™ 670G hybrid closed loop insulin pump system with the Guardian™ Sensor 3 and the Guardian™ Connect CGM system with Sugar.IQ™ personal diabetes assistant.
  - It was noted that sensor based diabetes monitors are seeing increase competition

#### Pipeline

- Announced findings from a pilot study of their Extravascular Implantable Cardioverter Defibrillator system which showed that the system can be implanted with no major complications and can sense, pace, and defibrillate the heart
- SelectSite C304-HIS deflectable catheter system has been cleared by the FDA for launch to market
  - Expansion to the company's cardiac care portfolio
  - This catheter system ensures proper positioning of Medtronic's other product, SelectSecure MRI SureScan Model 3830 cardiac pacing lead

#### Financials +4.84%

MDT market capitalization began the month at \$118.4B and ended at \$124.0B. Peak market capitalization was reached on May 24th at \$124.7B and trough market capitalization was reached on May 13th at \$117.1B. Overall, from May 1st through May 31st, the share price of MDT increased +4.84%.

#### ***Merck & Co.***

##### Products

- Key growth driving groups are Oncology and Vaccinations
- Keytruda continues to expand as a multi billion dollar blockbuster drug, smaller gains from Lynparza and Lenvima
- Vaccine growth driven by Gardasil HPV vaccine, Varivax, Proquad
- Strong performance in acute care came from increased demand for Bridion and the launch of Prevymis.
- Animal Health sales grew 3% from Bravecto, however, this was offset due to unfavorable foreign exchange
- Experience revenue loss from pharmaceutical products losing exclusivity, such as: Zetia, Vytorin, Invanz, Cancidas, Remicade
- Pricing pressure in the US lead to decreased sales of Januvia and Janumet

#### Pipeline



- BELSOMRA (suvorexant) met primary and secondary efficacy endpoints in its phase 3 study dedicated to treat insomnia in patients with mild-to-moderate alzheimer's disease dementia
  - Primary: 4 weeks of treatment with Belsomra improved patients mean sleep time by 28.2 minutes compared to placebo
- Results from Merck's phase 2 trial of Investigational 15-valent Pneumococcal Conjugate Vaccine (V114) in Infants were announced
  - Met primary endpoint by demonstrating non-inferiority to PCV13 for all serotypes plus 2 additional serotypes
- Merck acquired Peloton Therapeutics for \$1.05B in cash
  - Now owns the rights to Peloton's lead candidate, PT2977, which is referred to as a novel oral HIF-2 $\alpha$  inhibitor
    - Treatment designed to fight late-stage development of renal cell carcinoma, which is a form of kidney cancer responsible for approximately 90-95% of cases in adults
  - Boosts Merck's late-phase oncology pipeline
- Keytruda fails to meet its main goal in a late-stage study focusing on the treatment of triple negative breast cancer

#### Financials +0.62%

MRK market capitalization began the month at \$203.3B and ended at \$203.9B. Peak market capitalization was reached on May 24th at \$209.0B and trough market capitalization was reached on May 13th at \$198.7B. Overall, from May 1st through May 31st, the share price of MRK increased +0.62%.

### ***Mylan N.V***

#### Products

- Total Revenue down from 2018
- Sales of new products such as Wixela, Inhub, Fulphila and increased market share on Glatiramer Acetate injection in the US has helped pad effects from price cuts, and low sales of existing products due to Morgantown plant remediation, and changes in the competitive environment
- EpiPen shortage with generics in production
- Launch of generic Tarceva in mid May

#### Pipeline

- Mainly focused on the development of biosimilars
- Currently developing biosimilars for Neulasta, Avastin, Humira, Neupogen, Enbrel, and Perjeta
- investigating the possibility of developing a Botox biosimilar

#### Financials -37.94%

MYL market capitalization began the month at \$14.0B and ended at \$8.7B. Peak market capitalization was reached on May 6th at \$14.6B and trough market capitalization was reached



on May 31st at \$8.7B. Overall, from May 1st through May 31st, the share price of MYL decreased -37.94%.

## ***Novartis AG***

### Products

- Established medications experienced a 7% increase, key products include Consentyx which grew 41% and grossed \$791M, Entresto with grew 85% and made \$357M
- Oncology Sales up 9% driven by Lutathera, Promacta, Kisqali, and Kymirah
- Strong launches for Mayzent, Brolocizumab, and Zolgesma
- Strong Biological performance with double digit growth from Rixathon, Hyrimoz, Erelzi due to demand in Europe

### Pipeline

- Zolgensma recently approved for SMA type 1 with types 2 and 3 on the way
- Submitted brolocizumab for priority approval, decision expected by the end of 2019
- By 2020, over 1.5 million people in the US are likely to have wet AMD, the leading cause of blindness in industrialized countries
- Fevipirant slated for approval at the end of 2019
- Could revolutionize the treatment of asthma
- Breakthrough Therapy for sickle cell disease, crizanlizumab, could be approved by the end of the year

### Financials +4.55%

NVS market capitalization began the month at \$189.9B and ended at \$196.6B. Peak market capitalization was reached on May 27th at \$201.5B and trough market capitalization was reached on May 14th at \$184.6B. Overall, from May 1st through May 31st, the share price of NVS increased +4.55%.

## ***Sarepta Therapeutics, Inc.***

### Products

- No Products on that market

### Pipeline

- Golodirsén and Casimersén are slated for approval very soon
- Will further enhance their hold on the DMD treatment market
- Currently developing very robust gene therapy program that could be revolutionary for DMD

### Financials -1.51%

SRPT market capitalization began the month at \$8.6B and ended at \$8.4B. Peak market capitalization was reached on May 16th at \$9.1B and trough market capitalization was reached on May 13th at \$8.3B. Overall, from May 1st through May 31st, the share price of SRPT decreased -1.51%.





## ***UnitedHealth Group Inc.***

### Products

- Revenues grew 9.3 Percent, leading products are UnitedHealthcare Medicare and Retirement, OptumRx, and Optum Health
  - Medicare Revenues have grown by 11.5%, representing almost 2 billion dollars and now serving 405,000 more people
  - OptumHealth increased by \$1.0B (16.6%) and has increased by insuring 2 million more people in the past year
  - OptumRx experienced similar growth and grew by \$1.2B (10.6%) on a year to year basis
- Employer and Individual Insurance grew to insure 705,000 more people and gross \$14.1B
- Community and State Revenue grew 4.8% driven by increased need for the service of people with high acuity, such as dual eligibles, long term services, and support programs
- Global Healthcare grew 3.5%
- OptumInsight grew 5.8% representing \$2.2B

### Pipeline

- No update/change in pipeline

### Financials +4.25%

UNH market capitalization began the month at \$220.9B and ended at \$229.8B. Peak market capitalization was reached on May 21st at \$237.5B and trough market capitalization was reached on May 1st at \$220.9B. Overall, from May 1st through May 31st, the share price of UNH increased +4.25%.

## **Section 6. Conclusion**

Due to this report being the first analysis of the portfolio post trade, there will be no adjustments made at this time. One company that will continue to be monitored closely is AGIOS, as their lack of current revenue and approved products represents a large risk. The company is largely dependent on the results of their current Phase 3 trials.

Throughout the first year, the Pittsburgh Pharmacy Investment Portfolio has very closely mirrored the trends of the SPXHC. Despite this, the PPIP has consistently been just below in terms of adjusted gains. Discussions will be held in an attempt to improve our overall performance.



## Appendix A: PPIP Investment Positions as of 5/31/19

Investment	Shares	Share Value	Total Value	% of Total Portfolio
Abbott Laboratories	63	\$ 76.13	\$ 4,796.19	9.20%
Johnson & Johnson	43	\$ 131.15	\$ 5,639.45	10.82%
Agios Pharmaceuticals	17	\$ 46.17	\$ 784.89	1.51%
Merck & Co., Inc.	63	\$ 79.21	\$ 4,990.23	9.57%
GlaxoSmithKline plc	50	\$ 38.64	\$ 1,932.00	3.71%
Medtronic plc	56	\$ 92.58	\$ 5,184.48	9.95%
UnitedHealth Group	21	\$ 241.80	\$ 5,077.80	9.74%
AbbVie, Inc.	53	\$ 76.71	\$ 4,065.63	7.80%
Novartis AG	50	\$ 85.64	\$ 4,282.00	8.21%
IDEXX Laboratories.	10	\$ 249.77	\$ 2,497.70	4.79%
AstraZeneca plc	100	\$ 37.38	\$ 3,738.00	7.17%
CVS Health	65	\$ 52.37	\$ 3,404.05	6.53%
Sarepta Therapeutics	11	\$ 113.85	\$ 1,252.35	2.40%
Mylan NV	93	\$ 16.80	\$ 1,562.40	3.00%
Intra-Cellular Therapies	95	\$ 12.99	\$ 1,234.05	2.37%
Cash from Dividends	N/A	N/A	\$ 1,689.03	3.24%
<b>Total</b>	<b>N/A</b>	<b>N/A</b>	<b>\$ 52,130.25</b>	<b>100.00%</b>

## Appendix B: Companies in S&P 500 Health Care Index (SPXHC)

1. AGILENT TECHNOLOGIES INC
2. ABBVIE INC.
3. AMERISOURCEBERGEN CORPORATION
4. ABIOMED INC
5. ABOIT LABORATORIES
6. ALLERGAN PLC.
7. ALIGN TECHNOLOGY INC.
8. ALEXION PHARMACEUTICAL INC.
9. AMGEN INC.
10. ANTHEM INC.
11. BAXTER INTERNATIONAL INC.
12. BECTON DICKINSON & CO
13. BIOGEN INC
14. BRISTOL-MYERS SQUIBB CO
15. BOSTON SCIENTIFIC CORP
16. CARDINAL HEALTH INC.
17. CELGENE CORP.
18. CERNER CORP.
19. CIGNA HOLDING COMPANY
20. CENTENE CORPORATION
21. COOPER COS INC.
22. CVS HEALTH CORPORATION



23. QUEST DIAGNOSTICS INC.
24. DANAHER CORP.
25. DAVITA INC.
26. EDWARDS LIFESCIENCES CORP.
27. GILEAD SCIENCES INC.
28. HCA HEALTHCARE INC.
29. HOLOGIC INC.
30. HENRY SCHEIN INC.
31. HUMANA INC.
32. IDEXX LABORATORIES
33. ILLUMINA INC.
34. INCYTE CORPORATION
35. IQVIA HOLDINGS INC.
36. INTUITIVE SURGICAL INC.
37. JOHNSON & JOHNSON
38. LABORATORY CORP AMER HLDGS.
39. ELI LILLY AND COMPANY
40. MCKESSON CORPORATON
41. MEDTRONIC PLC
42. MERCK & CO INC.
43. METTLER-TOLEDO INTERNATIONAL INC
44. MYLAN NV
45. NEKTAR THERAPEUTICS
46. PFIZER INC.
47. PERKINELMER INC.
48. PERRIGO COMPANY PLC
49. REGENERON PHARMACEUTICALS INC.
50. RESMED INC.
51. STRYKER CORP.
52. THERMO FISHER SCIENTIFIC INC.
53. UNIVERSAL HEALTH SERVICES INC.
54. UNITEDHEALTH GROUP INC.
55. VARIAN MEDICAL SYSTEMS INC.
56. VERTEX PHARMACEUTICAL
57. WATERS CORP.
58. DENTSPLY SIRONA INC.
59. ZIMMER BIOMET HOLDINGS INC.
60. ZOETIS INC.

