

The Economic Impact of the Pennsylvania Agricultural Surplus System

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ABSTRACT

This report analyzes the economic impact of the Pennsylvania Agricultural Surplus System (PASS) of Feeding Pennsylvania. The economic impact analysis is a method for PASS to understand its impact on farms and food processors, and consequently on households and other businesses. The results show an overall economic output of \$11,820,317 from 2015 to 2021, created from \$7,500,000 in PASS funding. The CARES-PASS Act of 2020 generated a total economic output of \$18,366,148, originating from \$10,000,000. The impact analysis demonstrates the economic effects PASS has on a wide variety of industries and on the economy as a whole. Furthermore, in a survey, the participants of PASS declared positive experiences from receiving funds for their surplus. The processors and farms reported the hiring of new employees, expansions, and appreciation for the ability to give back to the local community. The report finds that vendors are mainly in need of aid in distributing their surplus. The findings of this study assist Feeding Pennsylvania in understanding the impact of PASS.

INTRODUCTION

Throughout Pennsylvania, the agricultural production industry often has a surplus of products, contributing to the large amount of food waste the United States creates. Often, this surplus of produce gets left to rot in the field or remains unharvested, with an estimated 33% of food getting left to that fate (Baker, et al., 2019). A large reason for this massive amount of farm surplus is due to consumer preferences. In the agriculture industry, produce that is not able to be sold is designated as “seconds” or “ugly” because there is often not a market for this produce. However, with large amounts of the country going hungry, building connections between farms with surplus and food pantries offers substantial positive benefits.

Feeding Pennsylvania is the state association of Feeding American food banks. Feeding Pennsylvania works to reduce food insecurity through the representation of nine food banks, and through managing the Pennsylvania Agricultural Surplus System (PASS). PASS is an example of the incredible effects in bringing surplus produce to those facing food insecurity. The program provides funding to 13 food banks across all 67 counties of Pennsylvania. The food banks collect surplus from the agriculture industry and farmers, and then reimburses them to cover the costs of harvesting, processing, packaging, and transportation of locally grown Pennsylvania food products. The food banks then distribute the products to the 2,700 local Feeding Pennsylvania partners, including food pantries, shelters, and soup kitchens (PA DEP, n.d.).

During the COVID-19 pandemic, the Coronavirus Aid, Relief, and Economic Security (CARES) Funding Act allowed PASS to continue in its support of vendors and food banks. PASS’ purchases fed families in need with fresh, local food and assisted farms struggling due to the change in demand and change in the overall economy. An additional \$10 million of CARES Acts funds were directed to the PASS Program in 2020 (PA DEP, n.d.). This increased the impact PASS has significantly during an especially difficult time of financial loss and heightened food insecurity.

Feeding Pennsylvania has partnered with the College of Agricultural Sciences of The Pennsylvania State University to perform an economic analysis to determine the impact of the PASS program and how to improve the program to better serve the agricultural industry. In this

report, we utilize the program IMPLAN and an online survey to delineate two main results: an impact model estimation of the economic impacts and the collection of vendors input into the PASS program.

While PASS has information on the processors and food banks, they are interested in the data regarding the farms from where the surplus food is purchased. We mainly focus on the additional economic benefits that the farms are receiving, as well as their experience with the program in a qualitative manner. To achieve this, we assess both the economics (dollars) and what the impact on the farmers and suppliers has been. We seek to collect information from the local farms and suppliers involved to find how PASS is benefiting the agriculture industry in Pennsylvania using both IMPLAN and a web-based survey. Emphasis will be placed on the CARES Act in relation to the economic downturn due to the COVID-19 pandemic.

GOALS AND OBJECTIVES

For this project, the overall goal is to determine the economic impact the PASS system has created. More specifically, it is to determine how farmers and other agricultural partners were affected by PASS in the 2021 season. PASS bought products from processors, but they do not know all the information and farms the processors obtained food from, therefore we hope to provide PASS with information on the financial and anecdotal influence of the program.

There are three main objectives that guide us in achieving our goal. We seeked to determine how farmers that participate in the PASS program are affected in economic terms, including jobs created, business-to-business purchases, and wages. Next, we survey how farmers feel about the PASS program and the benefits it provides for them. Finally, we present the collected information for agricultural industry representatives in an Infographic poster

METHODS

For the analysis of the PASS program, the project is broken into two main parts. The first part is an economic analysis of the program. The second part is a survey of the agricultural industry production partners with PASS.

IMPLAN

To find an estimate of the economic impact of the PASS program on the agricultural producers in the state, an economic modeling software called IMPLAN was used. IMPLAN is an input-output program that takes input data for a desired sector and models the project's impacts, including the value of the additional supplies used, the jobs created from the inputs, and the money flowing into the economy when those workers hired for those new jobs spend their paychecks. These are all then put into three main categories of direct, indirect and induced effects. Direct effects are the impacts that the initial source is receiving from the PASS funds. The indirect effects are the impacts on the industries that work with the initial agricultural industry. Induced effects are the impacts that the rest of the economy is receiving due to the spending of the people in direct and indirect industries in their economy. To get these figures, the spending of PASS on agricultural sectors was fit into 14 industry sectors that best represented the types of products that were purchased based on a 2020 Pennsylvania economy model. IMPLAN also outputs the top ten sectors by employment. For extrapolation of additional funding, total spending ratios per sector were calculated from spending from past years as well as analysis of past years that had \$1 million and \$1.5 million funding. With this, then \$2.5 million was picked to represent increased future funding and this value was multiplied by the calculated sector ratios to get an estimation of how much would likely be spent in each sector.

Survey

For the survey portion of the project, the survey was created using Microsoft Forms, a service provided through Penn State University. It consists of both open-ended and static close-ended questions. The questions were based around gathering information on the PASS participants' experience with the program. It will begin with questions regarding the basic logistics of the operation, and will then move into asking PASS-specific questions. This includes if they hired new labor for their business, what service would be most beneficial to their

business, and description of their experience or suggestions. The survey was sent out on behalf of the Penn State University College of Agricultural Economics, Sociology, and Education by Tom Mainzer of Feeding Pennsylvania. The purpose of sending it out directly through Feeding Pennsylvania is to boost the authenticity of the survey to its recipients, and therefore increase the number of respondents. November 8th, 2021 the survey was sent out via email to a total of 117 vendors of agricultural industry partners and farmers who participated in PASS. The 117 vendors were chosen based on the email contact information provided by PASS participants. These vendors will serve as the sample of the entire vendor population that works with PASS.

Using the collected data from both IMPLAN and the survey, we create a final report to submit to Feeding Pennsylvania. The report will then be transferred into an infographic poster following the completion of the Capstone course. The infographic poster will be used to present useful material for the agriculture industry at the 2022 Pennsylvania Farm Show.

IMPLAN BACKGROUND

IMPLAN includes many terminologies in the data outputs. Below is an explanation of the IMPLAN designation that is discussed throughout the Findings section of the report. The descriptions are directly sourced from the IMPLAN website (IMPLAN, n.d.). Figure 1 below also provides an overview of the categories.

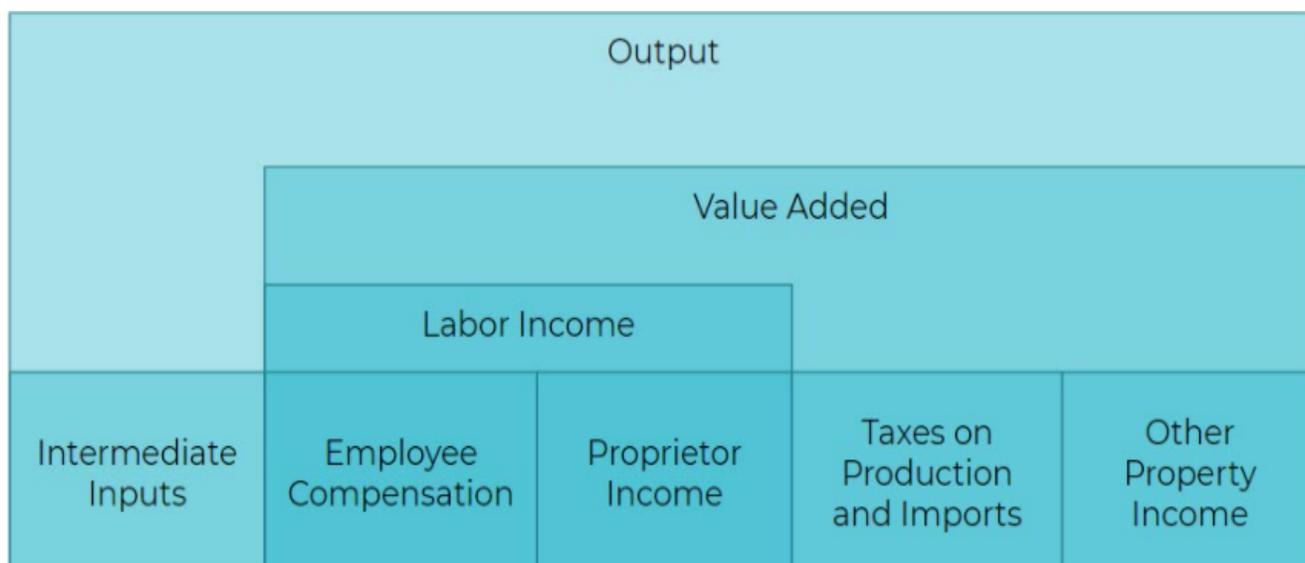
Categories:

- **Employment**: Full-time, part-time, and seasonal employment
 - Full-time/part-time annual average in line with the Bureau of Economic Analysis Regional Economic Accounts (BEA REA) and Bureau of Labor Statistics Census of Employment and Wages (BLS CEW) data
- **Labor Income (LI)**: The sum of Employee Income and Proprietor Income
 - Employee Compensation (EC): wages, salaries, benefits (retirement, health, etc.), and payroll taxes (e.g. social security and unemployment insurance taxes)
 - Proprietor Income (PI): payments received by self-employed people and unincorporated business owners; includes the capital consumption allowance, but

excludes dividends, monetary interest received by nonfinancial businesses, and rental income received by non-real estate business workers

- Value-Added: it is a measure of the contribution to GDP. Value Added is a large portion of Output, as it encompasses
 - Labor Income (LI): Sum of Employee Income and Proprietor Income (description above)
 - Other Property Income (OPI): (Previously Profit or OPTI) Includes consumption of fixed capital (CFC), corporate profits, and net of business current transfer payments. It includes income derived from dividends, royalties, corporate profits, and interest income.
 - Taxes on Production and Imports (TOPI): (previously called Taxes) Include sales and excise taxes, customs duties, property taxes, motor vehicle licenses, severance taxes, other taxes, and special assessments covering all Industries other than government enterprises.
- Output: Equals the value of Industry production, which is equal to sales plus net inventory change. In IMPLAN these are annual production estimates for the year of the dataset in producer prices.

Figure 1: Understanding Output (Lucas, M. 2021)



FINDINGS

Economic Impact

The economic impact of PASS was separated into two main categories for the findings. First the impact that the program has had so far, and the second is an evaluation and extrapolation of how increases in funding creates additional impacts.

PASS has been purchasing from agricultural producers since 2015, but the economic impact on these producers has not been clear. To get an estimate of the economic impact up to the current year used PASS spending from 2015 to 2021 broken into 14 separate industry sectors that best fit where the funds were going to. The total effect that was created had 74.4 for employment, \$2,598,887 in labor income, \$4,666,370 in value added, and \$11,820,317 in output. These numbers can be confusing, but the important ones to focus on will be employment and labor income to show how the people are being affected.

The total employment of 74.4 is broken down into three effect categories of direct, indirect, and induced. The direct effect for employment holds the largest share at an estimated 42.9 meaning that the industries from where products were being purchased should have added an additional 42.9 positions over the first 5 years of PASS. The indirect effect was 19.8 followed by the induced effect at 11.6 for employment. The associated industries should have gained almost 20 positions and the extra economic activity should have created another 11.6 positions during this same time. The labor income of \$2,598,887 is also broken down into direct indirect and induced effects. The indirect effect had the greatest value at \$1,021,368 followed closely by the direct effect of \$924,435. The induced effect for labor income was at \$635,085. For labor income the industries that work with the initial industries had a greater increase in labor income than the initial industries themselves.

IMPLAN has an additional breakdown of what industry sectors that these changes are happening. The top 5 industry sectors that are seeing the greatest impact by PASS in order from greatest impacts to least include: Fruit farming, Vegetable and melon farming, Support activities for agriculture and forestry, Poultry and egg production, and all other crop farming. These sectors are IMPLAN industry sectors that are calculated during model calculations. Fruit and

Vegetable and melon farming were both sectors that PASS had directly sourced agricultural products from which explains why these two sectors had the largest impacts. Fruit farming employment was 21.3 and a labor income of \$315,777 with a total output of \$1,305,711. Vegetable and melon farming employment was 13.4 and labor income of \$262,994 with a total output of \$1,250,672. These two sectors, that PASS is directly sourcing products from, should have gained 34.7 employment positions due to the funding from PASS between 2015 and 2021. The industry sector of Support activities of agriculture and forestry creates the induced category effect. It includes agricultural equipment operators, farmworkers, farm managers, forestry workers, and graders and sorters (BLS, 2021). This sector has the third largest impact, with employment at 7.4, the labor income at \$261,024, and the total output of \$274,092. This shows how the initial effects can continue adding to the total effect.

Along with the analysis of the total impact that PASS has had so far, analysis of CARES-PASS 2020-2021 was also assessed to see how this additional funding impacted the economy. CARES-PASS of 2020-2021 sourced from the same 14 industry sectors that were used previously and had a total effect of 101.4 under employment, \$4,121,491 in labor income, \$7,237,176 in value added, and \$18,366,148 in output. As with the 2015-2021 data analysis, IMPLAN breaks these figures down into direct, indirect, and induced effects. Our focus is on employment and labor income. For employment, the direct effect was 52.3, indirect effect 30.7 and induced effect at 18.4 for positions created. For this single year of CARES-PASS, there should have been 101.4 positions created. It is important to note that these figures do not account for the economic changes during the peak of the pandemic, but solely on the additional money going to these sectors. The same goes for labor income, which had \$1,626,737 indirect effects, \$1,459,206 for direct effect, and \$1,035,548 for indirect effects. Similar to the 2015-2021 analysis of labor income, the industries that work with the initial industries had a greater increase in labor income than the initial industries themselves.

The top five industry sectors that are receiving the impacts from the CARES-PASS funds are Vegetable and melon farming, Support activities for agriculture and forestry, Dairy cattle and milk production, Other pressed and blown glass and glassware manufacturing, and Other real estate. Once again, the Vegetable and melon farming, Support activities for agriculture, and

forestry industries were in the top three industries that were impacted. Vegetable and melon farming employment was 42.4 and labor income of \$832,861 with a total output of \$3,960,683. This industry made up the majority of the employment effects as well as a large part of the output. The other two sectors together only had 13.1 for employment, \$432,793 for labor income, and \$1,416,553 for output. The second and third most impacted industries had less than half the impact of the first. For the CARES-PASS for 2020-2021 analysis, the results should be viewed as rough estimations of how impacts could have happened as the model was based only on the economy and provided data and did not take into account the pandemic.

The second part of the economic impact of PASS was conducted to analyze and extrapolate the increased impact that happened and could happen when there was additional funding. The extrapolated value used was \$2.5 million with calculated sector ratios to estimate how these funds would be spent based on past data. This estimation was also compared to sourcing data from 2016-2017 with a \$1 million dollar budget as well as 2020-2021 with a \$1.5 million dollar budget.

In the 2016-2017 sourcing year, a budget of \$1 million had a total employment effect of 12.4, total labor income effect of \$365,584, total value added effect of \$672,576, and total output effect of \$1,503,063. The \$1 million of funding created a total output effect that added an additional \$503,063 in impact. The top three industry sectors that received these impacts were Fruit farming, Vegetable and melon farming, and Support activities for agriculture and forestry. Together they had 7.8 for employment, labor income of \$151,276 and an output of \$502,814.

In the 2020-2021 sourcing year, the budget was \$1.5 million and had a total employment effect of 11, total labor income effect of \$536,126, total value added effect of \$905,647, and total output effect of \$2,633,887. The \$1.5 million of funding created a total output effect that added an additional \$1,133,887 in output. The top three sectors were Vegetable and melon farming, Canned fruits and vegetables manufacturing, and Support activities for agriculture and forestry. Together they had 3.9 for employment, labor income of \$121,278 and an output of \$651,347.

When comparing the 2016-2017 \$1 million budget and 2020-2021 \$1.5 million budget, the figures for the top three industries are quite similar when compared. The more important part and relevant information for extrapolation is the total effects. In the 2020-2021 sourcing year, an additional \$500,000 was added and resulted in an increase of \$1,133,887 for total output and an increase of \$180,542 total labor income effect. This is important as when extrapolating this data will reflect the areas that the economy and people will feel the most.

For extrapolation, the agreed upon analysis was an increase to \$2.5 million that would be modeled to be spent in similar ways to how spending was distributed between sectors in the past. The \$2.5 million budget had a total employment effect of 28.4, total labor income effect of \$1,044,920, total value added effect of \$1,860,301, and total output effect of \$4,760,877. The additional \$1 million in funding created \$2,126,990 in total output effects. The top three industry sectors were Vegetable and melon farming, Fruit farming, and Support activities for agriculture and forestry. Together they had 15.7 for employment, a labor income of \$328,725 and an output of \$1,130,808. For the extrapolated increase in funding from \$1.5 million to \$2.5 million of funding, there would be an increase of \$481,794 in the total labor income effect and an increase of \$2,126,990 in the total output.

The overall increase of impact from \$1 million to \$1.5 million was an additional \$1,133,887 in output and the increase from \$1.5 million to \$2.5 million in funding created an additional \$2,216,990 in output. With this data, we can extrapolate and estimate that for every additional dollar in funding for PASS, that the total output will increase by two. For PASS, this means that the increases that they make to their budget are extremely beneficial for the agricultural and related industries.

The table on the subsequent page summarizes the findings of the economic impact of the PASS program. The input of PASS funding not only helps the vendors' businesses, but expands the formation of jobs, boosts labor income, and provides incredible returns in economic output.

Table 1: Economic Impact Summary of PASS

Year	Input (PASS Funding)	Employment (# of Jobs Supported)	Labor Income	Output
2016-2017	\$1,000,000	12.4	\$365,584	\$1,503,063
2020-2021	\$1,500,000	11	\$536,126	\$2,633,887
2015-2021	\$7,500,000	74.4	\$2,598,887	\$11,820,317
2020-2021 (CARES-PASS funds)	\$10,000,000	101.4	\$ 4,121,491	\$18,366,148
2021-2022 Estimation	\$2,500,000	28.4	\$1,044,920	\$4,760,877

Program Assessment

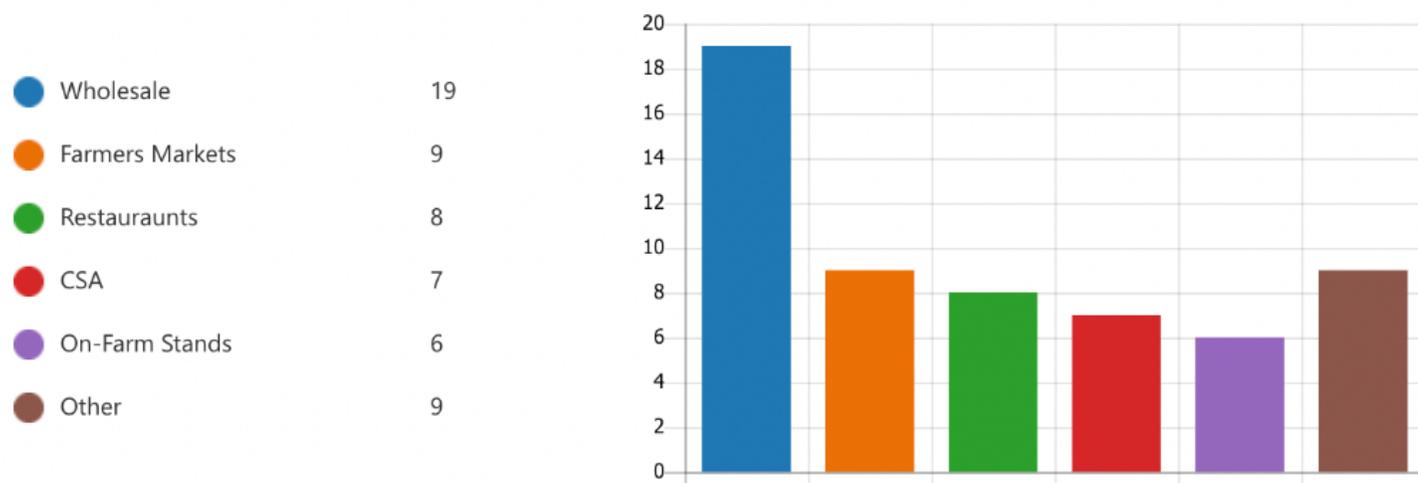
From the data collected in surveying the PASS participants, we are able to achieve a better understanding of the surplus issue the agriculture and food industries face. From the survey, twenty three responses were collected from November 8, 2021 to November 24, 2021. The twenty three respondents are used as a sample, and their answers are used to represent the population of vendor participants in the PASS program.

Vendor Background

The farm and farm processors surveyed include a wide-range of operation sizes. The smallest farm, Scholl Orchards, LLC, indicated an operation of 1 acre, while Masser Potato Farm's operation was specified as 1000 acres. The annual production capacity ranged from 10,000 pounds from Garden of Health, to 300 million pounds from Masser Potato Farms. The variety in these answers displays that PASS is able to support both small farms and larger operations.

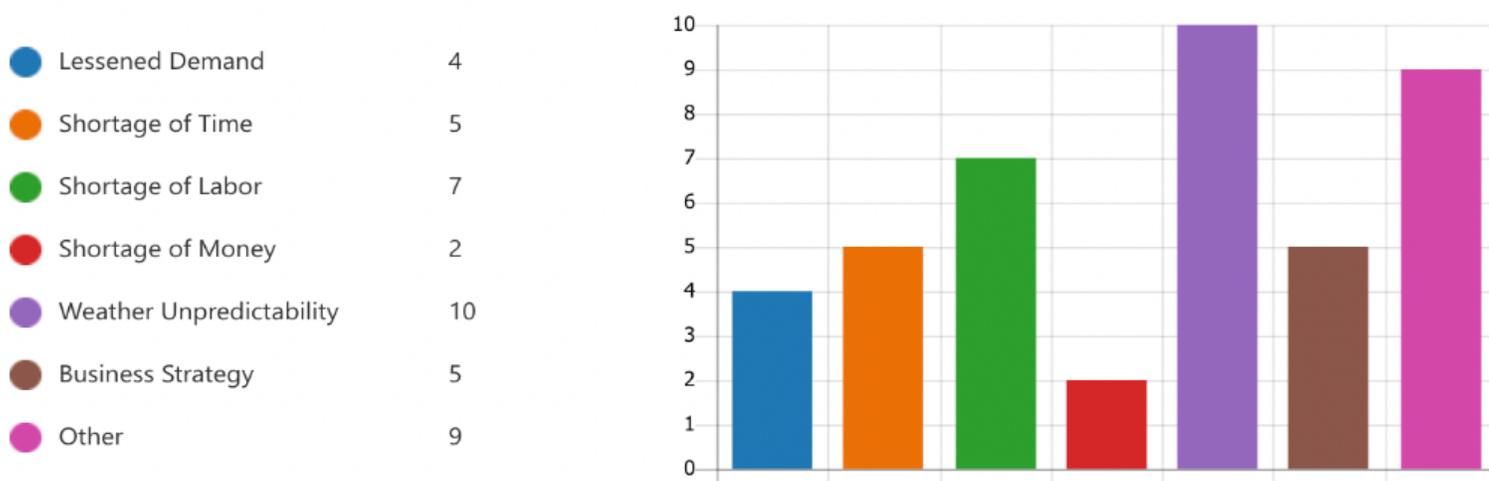
The next portion of the survey focused on the current market channels of both sold and donated surplus products. Of the vendors surveyed, most responded they distribute their product through wholesale, farmers markets, restaurants, CSAs, and on-farm stands. Other respondents shared selling through small retailers, online, grocery stores, and food banks. One vendor, Garden of Health, donates all of their products, rather than selling. Knouse Foods, Inc. provides food to the USDA. Figure 2 on the next page displays the responses for where vendors sell their products. The vendors also responded that their harvested and unsold products are mainly distributed to PASS. Many of the vendors also compost their products, and others distribute to family and friends or use themselves. Garden of Health also donates some of their products to senior centers. Who Cooks for You Farm shared they probably would have composted if they didn't know about PASS. 8 of the 23 responders indicated that some of their surplus is left in the field and unharvested. This is most likely due to obstacles faced that are discussed later on, including shortage of labor and time (Table 2).

Figure 2: Market Channels for Sold Products



We also asked vendors why they believe they experience a surplus. Most of the responses indicated that weather unpredictability was a huge factor in the creation of surplus, as well as a shortage of labor. Other answers indicated not matching consumer specifications, all products being donation (Business Strategy), customers not picking up orders, and purposely overproducing (Business Strategy). Figure 3 below shows a summary of the reasons provided behind the surplus.

Figure 3: Reason for Surplus Products



COVID-19

With the pandemic, the number of people experiencing unemployment skyrocketed. According to the Bureau of Labor Statistics' Work Experience Summary, an astounding 26.4 million people experienced unemployment at a point during 2020, which is an increase of 12.9 million from the previous year (BLS, 2021b). Job loss was an issue across all sectors of the employment industries, and the agriculture industry was certainly hit hard. The PASS funding, with the addition of the CARES-PASS funds, provided an income that may have prevented a hit in employment for participants. To assess this, we asked vendors if they had acquired more labor during 2020. A majority of the responses were yes. This points towards the vendors having the funding to allow them to hire more staff, especially during a difficult time of economic downturn and when many people are getting laid off. When asked why they needed more labor, the increase in consumer demand and an increase in harvest were the two reasons provided. Figure 4 and the table below provide a visual of the results.

Figure 4: Responses to whether a vendor hired new employees in 2020

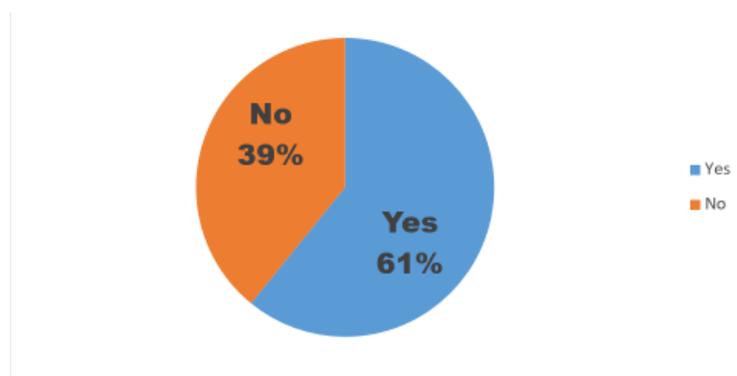
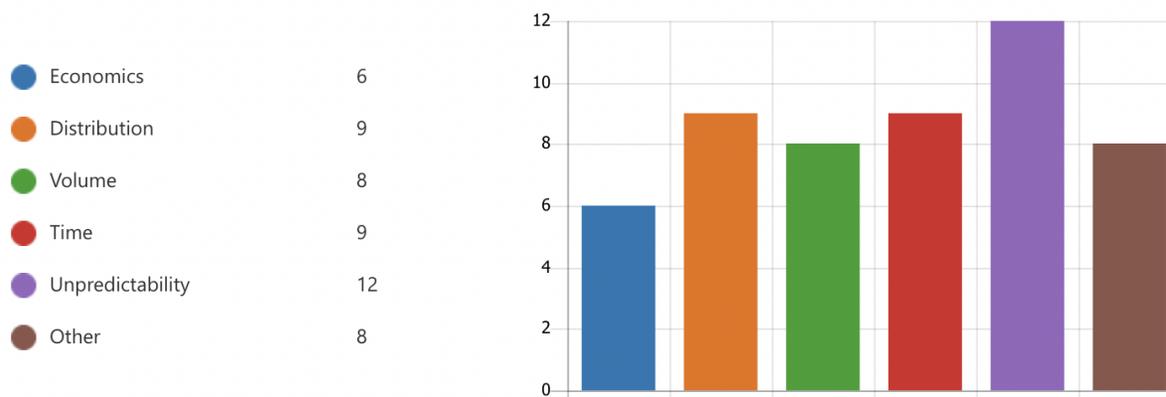


Table 2: Vendor quotes on why they acquired more labor in 2020

Increase in Consumer Demand	Increase in Harvest
Business is growing - <i>Penn Dairy</i>	We had a larger fruit crop - <i>Scholl Orchards LLC</i>
Pandemic demand - <i>Twin Maples Farms</i>	Needed more labor to harvest increased crop yields - <i>Lancaster Farm Fresh Cooperative</i>
Increased demand for product - <i>Marburger Dairy</i>	

Next, we surveyed the vendors on the difficulties they experienced in 2020. In figure 5 below, we see that unpredictability is where a lot of the problems were seen, however, all across the board there are issues. For ‘Other’, the answers indicated operating expenses increasing due to the pandemic, industry impacts, staffing, and restaurant closures. The majority of the answers were related to the COVID-19 pandemic, which created problems for operating, loss in labor, demand, and distribution. The expenses to operate and the change in business structure created issues for vendors. However, there were also problems with the weather, as indicated when we asked the participants to expand upon their answers. Table 3 on the following page displays quotes from the vendor describing the obstacles.

Figure 5: Responses to where they faced difficulties/obstacles during 2020



When asked what service would benefit them the most, the majority answered distribution (50%), while 6 answered they need help with pick up and delivery and 3 with harvest. For some, food banks provide pick up service, but many of the vendors stated that they themselves are transporting the product.

Table 3: Difficulties/Obstacles Vendors Faced in 2020

Change in Demand/ COVID-19	Weather	Labor/ Volunteers	Distribution
<p>We were much busier during the pandemic due to people's reluctance to go to grocery stores. -Scholl Orchards LLC</p>	<p>Climate change and the severe weather that is coming with it -Village Acres Farm</p>	<p>Our biggest obstacle is being an all volunteer organization. We think we could produce even more if we had even a part-time paid worker. -Garden of Health</p>	<p>Transporting excess cornmeal to the Pittsburgh food bank is problematic as it is located one hour from Three Rivers Grown. -Weatherbury Farm</p>
<p>Restructuring our business to deal with restaurant closures and farmers market shopping rules and CDC health guidelines -Who Cooks For You Farm</p>	<p>Great weather produced more quantity on less acreage. -Lancaster Farm Fresh Cooperative</p>	<p>Not enough labor, packaging supply chain (shortage), truck (shortage) -Masser Potato Farms</p>	<p>Distribution became our primary bottleneck in 2020 -Pleasant Lane Farms Creamery LLC</p>
<p>Our business increased due to the pandemic. People wanted to shop in smaller stores, and know who and/or how many people came in contact with their food. -Kistaco Farm</p>		<p>Labor is an extremely difficult area as finding employees has become near impossible -Marburger Dairy</p>	<p>Not having an outlet for surplus makes it harder to grow more fresh crops, the two go hand in hand. -Clarion River Organics</p>
<p>We had to close our farm market for 6 weeks during the pandemic. -Harvest Valley Farms</p>		<p>It was difficult to fill open labor positions -Ryeco, LLC</p>	
<p>Our Foodservice business experienced a decline as the industry suffered as a result of the pandemic. -Knouse Foods, Inc.</p>		<p>We needed additional motivated team members and more trucking options. -Penn Dairy</p>	
<p>Operating expenses increased significantly across the board. Additional labor was also hard to find. -Lady Moon Farms</p>			
<p>The entire supply chain felt pressures and then we suffered the downstream effects. -Maia Yogurt</p>			

PASS Experience

When asking the farmers to describe their experience with selling surplus to the vendors, the response was very positive. Table 4, displayed on the next page, shows quotes from the vendors explaining the positives they acquired from working with PASS. People described the pleasure received in helping their communities and the assistance the additional revenue provided. Of the 23 responders, 20 indicated the PASS experience was favorable.

Marburger Dairy stated “Great, I enjoyed so much the organizers and their heart to feed and help the less fortunate”. Harvest Valley Farms shared “Wonderful! The agency "Feeding the Flock " came and picked up everything”. Who Cooks for You Farm shared the Greater Pittsburgh Community Food Bank has very kind and accessible people.

However, a few of the farms had concerns when it came to their experience. Twin Maples Farms stated “We sold once or twice then never heard from them again even after we contacted them”. Weatherbury Farm had a great experience, but they had trouble transporting their surplus to the vendor. Beaver Meadow Creamery did not experience surplus.

Finally, the survey ended with asking for comments and suggestions. Many of the quotes collected in Table 5, page 18, reflect gratitude for the program. One vendor expressed interest in the food bank purchasing more of the surplus. The only comment of constructive criticism was to increase the budget and that Pennsylvania should consume only Pennsylvania made goods. However, that is not something for Feeding Pennsylvania to address.

Table 4: Farm responses on the positives that came from PASS

Successes/positives that came from the surplus being purchased

We love sharing healthy food with our neighbors. The PASS program makes it so much easier to manage.

- *Village Acres Farm*

I think it made us more aware of the condition of our communities and seeing the families that were helped was a blessing to us.

- *Marburger Dairy*

Provided a predictable revenue stream, even if we were selling the product for a slight discount to market. It also feels nice to be able to provide product to our community.

- *Pleasant Lane Farms Creamery LLC*

We are happy that our fruit and vegetables are staying local and feeding the people in our own community.

- *Scholl Orchards LLC*

Next year we will be able to grow a larger fresh market crop knowing that the imperfect crop will have a channel to be used with surplus.

- *Clarion River Organics*

It helped put more money back into the small farmers pocket.

- *Lancaster Farm Fresh Cooperative*

Being able to get reimbursed from PASS covers our costs of the plants, seeds, carts to help carry the heavy bins to our vehicles, plant supports, etc.

- *Garden of Health*

It helps to recover freight expenses as well as offsetting composting expenses

- *Ryeco, LLC*

We don't have to have milk dumped

- *Land O'Lakes*

It helps us to remain a viable business and hopefully lessens food insecurity for a few people.

- *Kistaco Farm*

We value the NAP tax credit provided by our food donations.

- *Lady Moon Farms*
-

Table 5: Vendor comments and suggestions for PASS

Additional Comments/Suggestions
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This is a fantastic program that supports people and companies that need it most. Thank you for everything.

- *Maia Yogurt*

PASS is a wonderful opportunity to connect the bounty of PA fields with unserved populations

- *Masser Potato Farms*

Thank you for what you do. It feels great that we can call someone in short notice and get food to the foodbank. We've never had the foodbank pick up, but this may be something we take advantage of in the future.

- *Who Cooks For You Farm*

Tom made the program enjoyable and organized. Thank you

- *Marburger Dairy*

I represent 15 family farmers in western, PA - we are very thankful for all the dimensions of this program and having access to it regionally. It is a very important part of our grow and harvest strategy as well as it aligns with our mission to keep more food local. Thank you.

- *Clarion River Organics*

PASS is a great program and I will utilize it again.

- *Harvest Valley Farms*

We would like our local food bank to purchase more!

- *Scholl Orchards LLC*

It is a great program, just increase the budget and help the PA population. PA should consume PA dairy made yogurts.

- *Country Food LLC*

We will be moving to a much bigger farm next fall. We have partnered with Hatfield Township to start a farm on just under 8 acres! Allowing us to grow so much more to donate!

- *Garden of Health*

LIMITATIONS

Due to the nature of the analysis, there are limitations in the findings. Firstmost, IMPLAN is an input-output economic analysis based on assumption. While IMPLAN is regarded as the most accurate and reliable impact model in the field of economics, the output numbers are estimates, and thus the economic impact of PASS is indefinite. IMPLAN also fails to account for the opportunity cost, which would be subtracted from the net values calculated in the program. This would cause the output values to change significantly.

Conducting the survey also comes with limitations. The survey was sent out to 117 vendors, however only 23 responses were collected, which is about a 20% response rate. The survey could have been sent out earlier to allow time for more responses. Also, there was the possibility of rewards to incentivize the recipients. However, it did not seem professional to offer rewards to businesses. Although 20% is not the entire sample, the responses can be used to represent the PASS vendor population. The respondents were varied in both size and location, offering various perspectives. Another limitation with the survey is potential bias due to question design and the questionnaire being online. However, the bias is incredibly difficult to completely remove, and so there should not be a heavy bias in the survey.

CONCLUSION

The impact of the PASS system is found to be significant in terms of the direct, indirect, and induced effects in the economy. The program contributed to an increase in employment, and wages for the companies both directly and indirectly involved with PASS. The major findings of the analysis were the impact from 2015 to 2021, as well as a prediction based on increased funding. From 2015 to 2021, the overall economic impact was \$11,820,317 in output. Thus, the purchases that PASS made created almost \$12 million in economic impact. The estimate of increased funding from \$1.5 million to \$2.5 million generated an additional \$2,126,990 in total output. Adding an additional \$1 million in purchases generates over \$2 million in additional economic impact. This relationship fits accurately when compared to past spending increases, the additional 2:1 ratio for PASS impact to total spending. The results show a \$2 economic impact for every additional \$1 investment into the PASS program.

The experiences with PASS were found to be incredibly positive. Farmers were able to report important gains to their revenue that allowed them to persevere through difficult operational and financial times. As the economy adjusts to COVID-19, many of the vendors are able to not just survive, but grow their operations because of PASS. More labor is being acquired, and farms are expanding their acreage and production. Furthermore, many of the vendors valued the ability to provide local communities with fresh food and combat food insecurity. Assessing the needs, it seems that many of the farms are in need of distribution. There is a lack of food banks picking up for the vendors and transporting the surplus. PASS has the funds to meet the needs of these vendors, and now they just have to connect the food banks with the producers.

Feeding Pennsylvania's PASS program creates substantial positive economic impacts for the agriculture industry and beyond. PASS supports jobs in a wide variety of industries, contributes to the growth in labor income, and generates the spending of household and supplier spending to add value to the economy.

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