

# WEIS DECISIONS INDEX

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*"Increase profit margins by making wise weather-based decisions with the exclusive Weis Decisions Index."  
— Roaring Lions Weather Associates*

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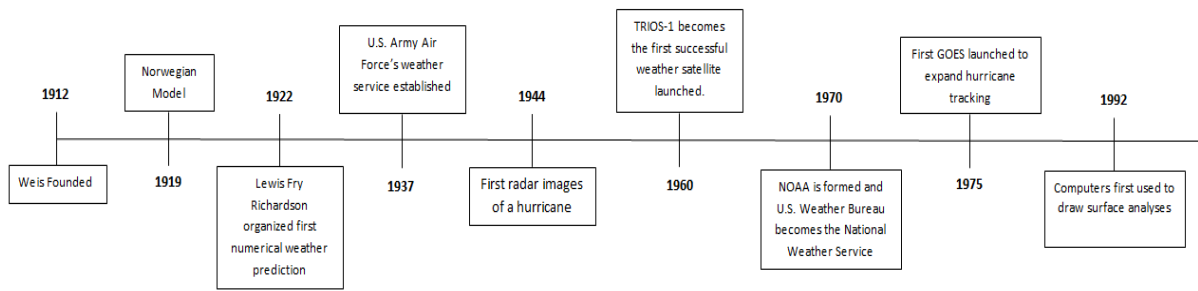
***"Meteorology has made leaps and bounds."***

— JOHN VITTORIO, METEOROLOGICAL ADVANCEMENT DIRECTOR

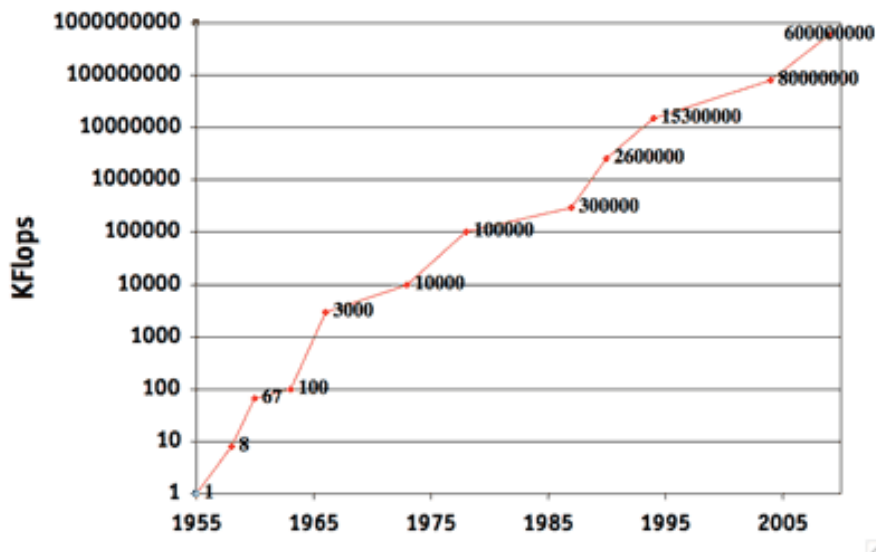
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Before developing a valuable weather index, it is important to understand the climatology of the area. This is important since the types of weather that influence business the most have to be identified. The three major meteorological events that can influence the both the business and smooth operation of the company are snowstorms, hurricanes, and squall lines (lines of severe thunderstorms with strong winds). Snowstorms can make roads hazardous or even impossible; this can snarl trucking efforts within Weis and prevent its customers from making it to the store. In addition to flooding, hurricanes can bring down trees onto power lines and roads. Climatological data on snowstorms and hurricanes is more readily available and will be analyzed more than individual squall line events.

Since Weis was founded in 1912, there have been countless advances in meteorology and weather forecasting. In just over 100 years, meteorologists have progressed from preliminary sketches of the weather such as the Norwegian Model to using high-tech super computers to predict the weather. The following image is a timeline of significant 20<sup>th</sup> Century meteorological achievements.



The advancements in computing power have played a pivotal role in increasing the accuracy of forecasts. ENIAC (Electronic Numerical Integrator and Computer), the first electronic general-purpose computer could perform around 5,000 calculations per second. As seen in the graphic below, computing speed has increased nearly exponentially since then. The average home computer can do about 2 billion calculations per second. A KFlop is 1,000 Floating-point operations per second.



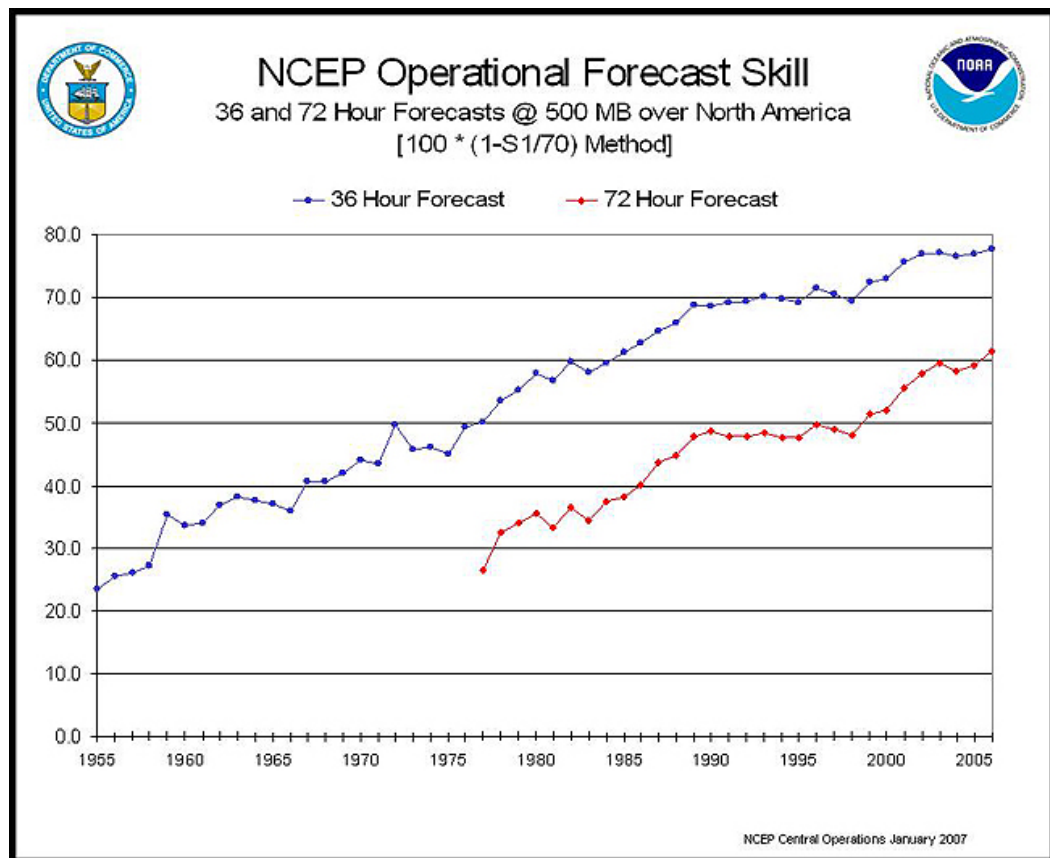
According to the National Atmospheric and Oceanic Administration (NOAA), the computers it uses for forecasting can perform about 14 trillion calculations per second.

Even with all of the computing power that NOAA has, the forecast models still take a long time to run through their paces. Because of this, the amount of initial conditions that meteorologists can enter into the model is limited. If there are too many initial conditions, the equations in the model can “blow up” or they can take so long that they would finish running after the time that they were forecasting for, making them irrelevant.

Today, the National Weather Service uses several advanced models to help predict the weather. The North American Model (NAM), Global Forecast System (GFS), and the European Center for Medium Range Weather Forecasting model or “European” model are some of the better-known numerical prediction models.

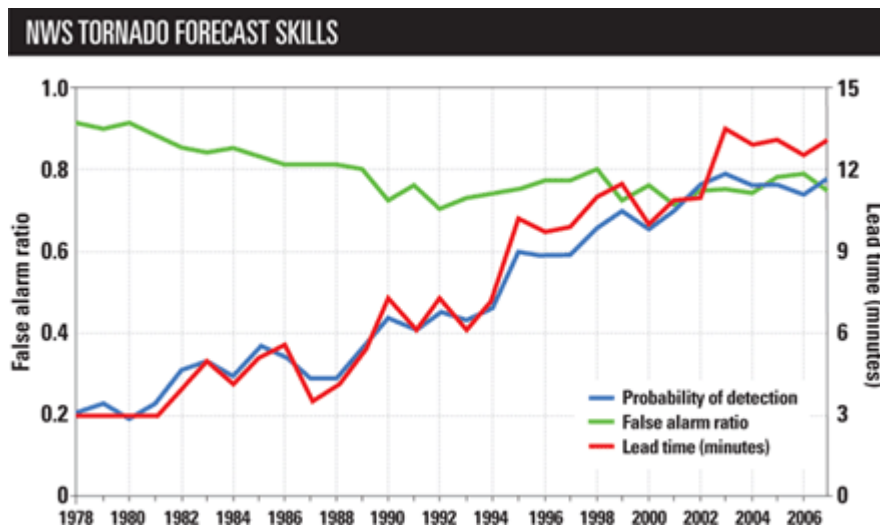
Like almost anything, if you put junk in that you are going to get junk out, so the models need to have a good set of initial data to start with. If the initial parameters are off by a miniscule amount, the mistakes in the model will continue to grow and grow until the end result is nearly useless. This is where satellites play a significant role. The satellites carry instruments that can sense temperature, humidity, and other key parameters giving millions of accurate observations to put in the model. The atmosphere is divided into vertical grids that have an area of a several kilometers. Once the grids are set; the supercomputer then uses the initial conditions to build a forecast. Right now weather forecasts are reliable for up to about five days and that number will only increase. An article on [timeanddate.com](http://timeanddate.com) states that, “a 5 day forecast today is as accurate as a two day forecast was 20 years ago.” The chart below shows an increase in forecast accuracy from 1955-2005. The National Weather Service uses a scale called the S1 score to grade the accuracy of a forecast. The S1 uses the relative error between what was forecasted for a given time and what actually occurred at that time. A score of 20 or below is considered to

be nearly useless, while anything above 70 is a nearly perfect forecast. The forecast is for the 500-millibar level, or about 18,000 feet above the surface. This level is chosen because it is where the most vorticity, or spin, is in the atmosphere. Depending on the direction or the spin, meteorologists can determine if it is associated with a high or low pressure system.



To further emphasize the progressing accuracy of weather forecasting, it is important to observe one of the most difficult phenomena to forecast, tornadoes. These storms have the capability to strike very quickly and destroy lives in the blink of an eye.

The National Weather Service put many years of diligent research into tornadoes to increase tornado warning lead times in an effort to save more lives. The image below shows this progress. The chart shows that the lead-time, or warning before a tornado has increased dramatically over the past 28 years. The warning time in 1978 was just 3 minutes now that time as increased to 13 minutes. It is also clear that the probability of detection has increased from 20 percent to nearly 80 percent over the same time frame. Even the amount of false alarms decreased. These statistics prove that weather forecasting is increasing in accuracy dramatically.



Hurricane Sandy was a prime example of just how accurate weather forecasting is becoming. In an article obtained from the Washington Post, "...the National Hurricane Center pegged the prediction for Hurricane Sandy..." The center of the storm made landfall around Atlantic City, New Jersey. The forecast for Sandy five days in advance of its landfall had an error of just 31 miles. In 1970, the average error for a 3-day hurricane landfall forecast was about 518 miles. That number dropped to just 345 miles by 2011. Below is a graphic displaying this extremely tight forecast window. Meteorologists are not quite at the

level where forecasts such as Sandy occur on every storm. However, excellent forecasts such as the one for Sandy will become more and more common as time progresses.

The future is looking very bright for more accurate weather forecasting. With the advancement in computer technology and satellite data, it can only get better from this point on. It will no doubt be beneficial for Weis to take weather forecasts as a case of what will happen instead of what might happen. Forecasters are becoming more and more confident with their forecasts and the increased accuracy proves it.



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**“We know grocery.”**

— CHRISTY SHIELDS, GROCERY INDUSTRY ANALYST

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Even though Roaring Lions Weather Associates is a company that directly deals with weather indices, it is important to know the ins and outs of the companies we do business with. Currently, our goal is to provide Weis Markets, Inc. with a trucking index that also considers customer demand in order to help them efficiently distribute their goods and manage staffing levels without running into problems with inclement weather. Weis Markets, Inc. has two distribution centers; one located in Milton, PA the other in Northumberland, PA. There is also a warehouse in Sunbury, PA. From these distribution

centers, Weis Markets, Inc. travels to its store locations in Maryland, New Jersey, New York, Pennsylvania, and West Virginia to provide the products for sale.

Weis Markets, Inc. mission statement is “Committed to our customers and communities to continually adopt sustainable practices to minimize our impact on the environment today for tomorrow.” Weis Markets, Inc. has a strong belief in buying products locally and trying to stay “green.” The company also believes in sustainability and has four pillars to aid it in following this belief throughout years to come. The four pillars Weis Markets, Inc. finds important are as follows: Green Design, Natural Resources, Food and Agriculture, and Social Responsibility.

Weis Markets, Inc. has been in business since 1912, and it was incorporated 1924. The business has shown it can withstand changing times and continue to be competitive in the grocery store market. Weis Markets, Inc. is a public company; however, the owners hold most of the stock. In 2011, Weis Markets Inc. had total sales of \$2,752,504,000 dollars. The profit that year was approximately \$114,250,000. All this information can be found in its 2011 10K report.

Weis Markets, Inc. faces many competitors in the grocery market. Some of it's largest competitors include Price Chopper, Shop Rite, Shaw's, Aldi, Delhaize America Inc., Ahold, Giant Food Inc., Wegman's, and many others. To stay competitive, Weis Markets, Inc. needs to compare its sales and ways of practice with its competitors and learn new innovative ways to cut company costs along the way – in an attempt to set the standard in the grocery store market. One way Weis Markets, Inc. can do this is by using Roaring Lions Weather Associates' weather index for trucking distribution and consumer demand.

Roaring Lions Weather Associates was able to research some of the top competitors of Weis Markets, Inc. in an effort to make a comparison on various fronts. We wanted to see how Weis stacks up against the competition and also what business practices the competitors are utilizing to cut costs and make a larger profit. Aside from Weis, the 10K reports that are in this report are Delhaize America Inc., and Ahold. Most of Weis Markets, Inc. top competitors' are privately held companies and thus don't release substantive financial information. Weis Markets, Inc. views sustainability and reducing carbon footprints as a priority. This makes it important to see what other grocery stores fundamental beliefs are when it comes to sustainability.

First, let's look at Weis Markets, Inc. sustainability practices – particularly what Weis is utilizing compared to other companies. Weis has equipped its new stores and newly renovated stores with water and energy saving technologies. Weis Markets, Inc. has also given customers and employees areas of recycling opportunities and has changed its packaging practices. Weis Markets, Inc. produces its own milk as well as buying mostly locally grown goods from northeastern states. Weis Markets, Inc. also helps in fighting hunger in its communities to help the good of all.

Next, Weis Markets, Inc. top competitor – Wegman's – also has a sustainability policy in place. Wegman's focuses more on providing organic foods and saving forests than being energy efficient in its buildings and stores. Roaring Lions Weather Associates can help Weis Markets, Inc. with energy saving with the trucking and consumer demand index.

Stop and Shop does not have a sustainability agenda, however it does believe in helping communities fight hunger and also has recycling processes in place for customers and employees to utilize like Weis Markets, Inc.



Giant Eagle has a sustainability and waste management policy in place. Giant Eagle has more of a focus on waste management than going green. It is big into learning how to recycle our waste.

Aldi, Price Chopper, Food Lion, and Shop Rite do not have policies of sustainability in place. Considering this, Weis Markets, Inc. is certainly on the right path by having sustainability policies in place – which in the long run will save them money. Roaring Lions Weather Associate’s trucking and consumer demand index will most definitely help Weis be more cost efficient by using less diesel fuel. This will help Weis advance its public image and increase profit margins in the long run by continuing to lead the “go green” movement.

Looking into 10K reports and comparing them to Weis Markets, Inc., Weis is somewhat of a smaller company, which makes comparing it to larger companies a bit difficult. However, it can be done through percentages. Also, some aspects of the companies are more easily compared than others when it comes to discovering how Weis Markets, Inc. stacks up and if it needs to drastically change its policies and practices. After some extensive research, it was discovered that Delhaize America, Inc. and Ahold own many of the grocery stores that are competing with Weis Markets, Inc. in the same region. Delhaize America, Inc. owns and operates Food Lion, Hannaford, Bottom Dollar, Harvey’s and Sweetbay. Delhaize also operates overseas but these are the grocery stores it owns in the United States. Ahold owns and operates Stop and Shop, Giant Carlisle, Giant Landover, and Peapod. Ahold is also a worldwide company, however, again we will be focusing on its United States operations considering Weis Markets, Inc. is exclusively located in the United States. Roaring Lions Weather Associates were able to locate Delhaize America, Inc.’s 2007 10K report and Ahold’s 2011 10K report. On the next page the important information for

our trucking and consumer demand index are listed. One thing to note is that Ahold's amounts were reported in euros and were converted to dollars for the purpose of comparison.

<b>Weis Markets, Inc. 2011</b>	
<i>FY 2011 Figures</i>	<i>Amounts</i>
Total Sales	\$2,752,504,000
Total Net Profit	\$114,280,000
Number of Stores	161
Cost of Goods Sold	\$2,016,649
Shipping and Spoilage	\$80,665,960
Labor Cost	\$372,945,000
Number of Employees	17,400 People
Profit Percentage	4.2%

*Source: Weis Markets, Inc. 2011 10K Report*

<b>Delhaize America, Inc. 2007</b>	
<i>FY 2007 Figures</i>	<i>Amounts</i>
Total Sales	\$17,289,200,000
Total Net Profit	\$376,000,000
Number of Stores	1,549
Cost of Goods Sold	\$12,596,400,000
Shipping and Spoilage	N/A
Labor Cost	\$161,700,000
Number of Employees	108,883 People
Profit Percentage	2.2%

*Source: Delhaize America, Inc. 2007 10K Report*

<b>Ahold 2011</b>	
<i>FY 2011 Figures</i>	<i>Amounts</i>
Total Sales	\$24,005,224,200
Total Net Profit	\$1,359,951,000
Number of Stores	756
Cost of Goods Sold	N/A
Shipping and Spoilage	\$3,217,027 (worldwide)
Labor Cost	N/A
Number of Employees	82,000 People
Profit Percentage	5.7%

*Source: Ahold 2011 10K Report*

Here at Roaring Lions Weather Associates we calculated the last figure in the tables of their percentage of profit for every corporation. Percentage of profit was calculated to put these companies at an even playing field to easily compare how they stacked up to each other considering each corporation is a different size compared to the other. To figure this out, we divided net profits from total sales. Comparing these percentages of profits it can be noted that Weis Markets, Inc. is seeing profit margins competitive with Ahold. Also, we noted that Weis Markets, Inc. saw about doubled the profit margin than Delhaize America, Inc. Weis Markets, Inc. is doing relatively well compared to competitors if looking at this.

At Roaring Lions Weather Associates, we can easily make savings larger for Weis Markets, Inc. This will make its percentage of profits bigger, which will help it to be more efficient compared to these larger companies. This is because with the trucking and consumer demand index, which includes advanced weather forecasting techniques, Weis Markets, Inc. can save a substantial amount of money. Weis will save money by determining what time of the day they send their trucks out depending on the weather. Saving on trucking will help Weis Markets, Inc. be even more competitive considering unlike these other two corporations, who ship from around the world, Weis Markets, Inc. only ships from the northeastern states. Our index will help Weis widen their small lead profit margin lead when compared to the competitors. The bigger the gap is between Weis Markets, Inc. and its competitors, the more it will be able to expand their company and watch profits grow. The chances of greater success are vastly better with Roaring Lions Weather Associate's exclusive trucking and consumer demand index.

Our index can also help Weis Markets, Inc. considerably with consumer demands by knowing when to have more people working at stores and when to cut back. By utilizing this information it will lead to even more saving than just from spoilage and trucking costs. Looking at the figures above, one can see that Weis Markets, Inc. has the least amount of people working for them. However, Weis Markets, Inc. also has the least amount of stores that need to be taken care of when compared to the other corporations. Ultimately, this demands exceptional management of staff levels. Weis Markets, Inc. has only 161 stores with 17,400 people employed. Delhaize America, Inc. has 1,549 stores and around 108,883 people working for them, while Ahold has about 756 stores and around 82,000 employees. Just like making a percentage of profit for these companies, percentage of stores to laborers can also give a lot of information about how Weis Markets, Inc. stacks up to its competitors by putting them on an even playing field. To do this, Roaring Lions Weather Associates divided the number of employees by the number of stores.

Weis Markets, Inc. has 108 laborers per store. Delhaize America, Inc. has a laborer to store number of 70. Ahold has around 108 laborers per store. Delhaize America, Inc. has a lot less employees per store. Weis Markets, Inc. needs to become more efficient in this area of their business.

Weis Markets, Inc. has a possibility to blow Delhaize America, Inc. out of the water in employee rates to save costs by using the Roaring Lions Weather Associates trucking and consumer demand index. For example, if a large snow storm is about to hit one of Weis Markets, Inc. grocery stores, using this index Weis Markets, Inc. will be able to determine when they should have more employees in the store and when they can cut back people when the storm is hitting. This will save them on labor costs. It is apparent that Weis

Markets, Inc. emphasizes labor costs and tries to cut them when they can. With Roaring Lions Weather Associates trucking and consumer index demand, Weis Markets, Inc. can be even more efficient in this area.

As stated above, the index can also help cut Weis' substantial labor costs by knowing when to have the stores staffed with more employees when consumer demand is high and more people will be visiting the store. It will also be able to aid in knowing when not to have a full staff at the store when consumer demand will be down. Again, stressing that this index can make Weis Markets, Inc. even more efficient.

Weis Markets, Inc. will also be able to tell when they should cut back on their orders of produce and foods that will spoil in the store through this index, and when they should buy more and stock their shelves full of goods when consumer demand is higher.

Weis Markets, Inc. is doing well compared to competitors, however if it utilizes Roaring Lions Weather Associates trucking and consumer demand index, it could easily shoot up its profits and savings and become the company other companies in the grocery market aspire to be. Weis Markets, Inc. will only be able to make their company more efficient if they pair up with Roaring Lions Weather Associates. This would be a very safe and profitable business decision for Weis Markets, Inc. to take.

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***“Our index is tailored for your company.”***

— JOSHUA KARAHALIS, WEATHER INDEX DEVELOPER

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Throughout history we have been at the mercy of Mother Nature. We have seen our share of severe weather over the years and have had to make do with what we have in front of us. For years researchers have been working hard to understand the weather, so

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we can better understand how to prepare for future weather events. While these researchers have been trying to predict the weather, we have been trying to discover how we can use those predictions to help companies, such as Weis Markets, Inc., turn what would be losses into profit. This is why we have created the Weis Decisions Index.

As it is defined in its most basic form, an index is simply a number derived from a series of observations and used as an indicator or measure. In this case, our index would take meteorological data from forecasts and convert them into an easy to use image. The forecasts we use come from multiple advanced numerical weather prediction models known as the GFS (Global Forecasting System) and ECMWF (European Center for Medium-Range Weather Forecasting). The GFS is the United States' weather prediction model and is run four times a day concurrently with our index updates. The ECMWF is the European weather prediction model and is updated twice daily. We also consider MOS (Model Output Statistics), which is based off of a series of statistical equations and historical weather data. MOS forecasts are a base that meteorologists use for short-range (48hr) forecasts and are not generally used as an exact forecast. They are not used as a precise forecast because they are generally less accurate than newer numerical models.

It is our hope that Weis Markets, Inc. would use our index to monitor when they should distribute goods from their distribution center so that there would be no delays in travel. The index to be shown later will use the following parameters, which we believe would hinder a trucks ability to transport goods in a timely manner: high winds, precipitation intensity, snowfall rate (winter), total ice accretion (winter) and visibility. It is also our goal to inform Weis Markets, Inc. about potential staffing losses due to impending weather events, through our Weis Decisions Index. Each parameter will be

assigned weights given their effect on travel and put into an equation that will provide us with a number. We will then use that number, correlated with its assigned color code, to map areas that will be potentially hazardous in the near term so that Weis Markets, Inc. can ship goods earlier or later if necessary.

We realize that snowfall rates and total ice accretion do not occur year-round in the Northeast, which is why we will also tailor an equation to the spring, fall and summer months that do not fall within meteorological winter. Meteorological winter falls between December 1<sup>st</sup> and March 1<sup>st</sup>. Due to the complex nature of the winter season, we feel as though it is necessary to expand our meteorological winter by two months. This would allow us to apply the winter equation from November 1<sup>st</sup> to April 1<sup>st</sup>. For the summer, we weigh the categories wind, precipitation intensity and visibility more because we now have two less categories. This will also allow us to cover thunderstorms because they too are known to have various precipitation intensities and wind speeds that would reduce visibility and hinder travel.

The first category we wish to focus on is wind. This category focuses on the intensity of wind gusts, which can push a truck from one lane to another without warning. According to the National Weather Service a wind gust is a rapid fluctuation in wind speed with a variation of 10 kts (11.51 mph) or more between peaks and lulls. The speed of the gust is the maximum instantaneous wind speed. Many states in the Northeast post restrictions on large trucks when wind gusts are high because it could be potentially hazardous for other drivers. These restrictions range from speed reductions to highway shutdowns. We will assign points to determined wind speeds that are known to affect travel.

Wind Speed	0-10 mph	11-20 mph	21-30 mph	31-40 mph	41-50 mph	51+ mph
Points	0	1	2	3	4	5

The next category is precipitation rate. Instead of focusing on total precipitation we chose to focus more on the rate at which the precipitation is predicted to fall. In the case of a liquid precipitation event, such as rain, weaker precipitation rates may slow traffic due to road spray, but the main concern is when high precipitation rates are forecast. Higher precipitation rates have the potential to flood poor drainage areas and can shut down roads that are susceptible to flooding. Along with the potential for flooding, high precipitation rates also affect visibility, which we will keep separate. Due to these potential hazards associated with high precipitation rates trucking, staffing and sales can be directly affected. We have identified the types of precipitation rates that would affect travel and have assigned points to each below.

Precip. Rate	0-.15 in/hr	.16-.30 In/hr	.31-.45 in/hr	.46-.60 in/hr	.61-.75 in/hr	.76+ in/hr
Points	0	1	2	3	4	5

Snowfall rates are considered next. For this category we again only wish to consider the rate at which the snow is falling and not the total snow accumulation. The main reason for this being that the truck driver is only allowed to drive at certain times of day. If the snow had fallen overnight, the Department of Transportation crews would have ample time to clear the roads by morning. This also lends to the idea that higher snowfall rates accumulate faster on roadways and can cause crippling conditions on major highways



because snow is accumulating faster than what can be plowed. If we take anything from the past it is that when crews cannot clear roads during periods of high snowfall rates traffic builds and when traffic builds a major delay may occur. Both staffing and customer flux will be low if snowfall rates hit their maximum during working or operating hours. Since employees and customers need to travel to the store, the potential for heavy delays and dangerous road conditions hinders their ability to make it to the store as long as it is snowing at a high rate. Higher snowfall rates can also reduce visibility to near white-out conditions. These visibility concerns are considered under the visibility parameter of our index. Snowfall rates will be weighted heavily in the winter for that reason and for the safety of the driver, as well as other motorists. Below is our table for snowfall rates and their correlated point.

Snowfall Rate	0 in/hr	.01-.20 in/hr	.21-.40 in/hr	.41-.60 in/hr	.61-.80 in/hr	.81+ in/hr
Points	0	1	2	3	4	5

One of the most hazardous winter weather phenomena is ice. It is tough to see and even harder to predict, which makes an ice storm very dangerous for drivers when temperatures hover around freezing. We like to use the term ice accretion so as not to get confused with accumulation. When a quarter of an inch of ice is predicted one might not think that is a lot, but when thought of in terms of a quarter of an inch layer of ice it sounds more serious. An ice storm may also be the biggest threat to the distribution center and store operation because of the potential for power outages. Listed below is the amount of ice accretion and its associated point.

Ice Accretion	0 in	.01-.06 in	.07-.12 in	.13-.18 in	.19-.24 in	.25+ in
Points	0	1	2	3	4	5

The final category we consider to be hazardous to truck drivers and would ultimately delay shipments is visibility. Reduced visibility can occur in multiple ways. It can occur via intense precipitation or in the form of fog. Handling this category would take into all other categories except for ice accretion. Wind, precipitation rates and snowfall rates can drastically reduce visibility. Heavier bouts of precipitation reduce visibility. When treating the scoring, if wind gust verifies in any category and precipitation/snow rates verify at 2 points then the visibility would be scored as a 3. If wind gust verifies in any category and precipitation/snow rates verify at 3 or 4 points then visibility would be scored as a 4. Fog forecasts would be handled depending on the severity of the fog. Below are the visibilities and their associated points.

Visibility	5+ miles	4-5 miles	3-4 miles	2-3 miles	1-2 miles	< 1 mile
Points	0	1	2	3	4	5

The equation that these points get added to is based on weights for each category. As stated earlier we will have equations tailored for two parts of the year, meteorological winter and the rest of the months. The first equation is the meteorological winter equation. It is shown here with categories wind (W), precipitation rate (PR), snowfall rate (SR), ice accretion (IA) and visibility (V):  $WDI (winter) = [20(W) + 15(PR) + 20(SR) + 25(IA) + 20(V)] / 20$ . In order to save from eliminating categories when that must be considered in

certain situations we have come up with winter and ice storm criteria. For general purposes we consider a snowstorm to have a snowfall rate of 3 points or higher because this would be enough to coat roads before crews have a chance to catch up. Taking this into consideration we will list precipitation rate at 2 points. Considering it is precipitating we would want to assign a point to that category, but the snow to liquid ratio is never exact and hard to identify until after the storm, which is why we assigned 2 points to this category. We also assign 2 precipitation rate points whenever the ice accretion scale is 3 or greater.

The next equation is our spring, summer and fall equation. This will cover everything except for snow and ice events, which is why we neglect snowfall rates and ice accretion in this equation. It is as follows:  $WDI \text{ (non-winter)} = [35(W) + 30(PR) + 35(V)] / 20$ . The main factor in these months is wind, rain and poor visibility due to high probability of thunderstorms in the warm months. As you can see, there are increased weights on all three categories because they are a major factor in road delays in this period, which have a direct effect on an employee's ability to get to work on time, a trucker's time to ship goods from the distribution center and a customer's willingness to drive under dangerous road conditions.

Using these two equations we have created a points based system that will depend on the weights used by each equation and each forecast's assigned point. We will run forecasts daily at 0Z (7pm EST/8pm EDT) and 12Z (7am EST/8am EDT). Each forecast period runs from days 1-7 and covers four six-hour periods throughout the day. The first periods are the overnight, which is 0-6Z (7pm EST/8pm EDT – 1am EST/2am EDT) and 6-12Z (1am EST/2am EDT – 7am EST/8am EDT). The last periods are morning to afternoon,

which is 12-18Z (7am EST/8am EDT – 1pm EST/2pm EDT) and 18-0Z (1pm EST/2pm EDT – 7pm EST/8pm EDT). The morning and afternoon forecasts are the most important to shipments Weis Markets, Inc. wishes to send out on a daily basis because this is the period when trucks will be on the road. The potential impact for employee absences and delays along with distribution center disruptions is greater overnight for our winter period because of the time snow removal takes.

The points based system has gone through multiple runs with various weather situations and the table below is our best estimate at potential impacts each range of our Weis Decision Indices.

**:: Weis Decisions Index ::**  
*A Trucking Impact and Store Demand Index*

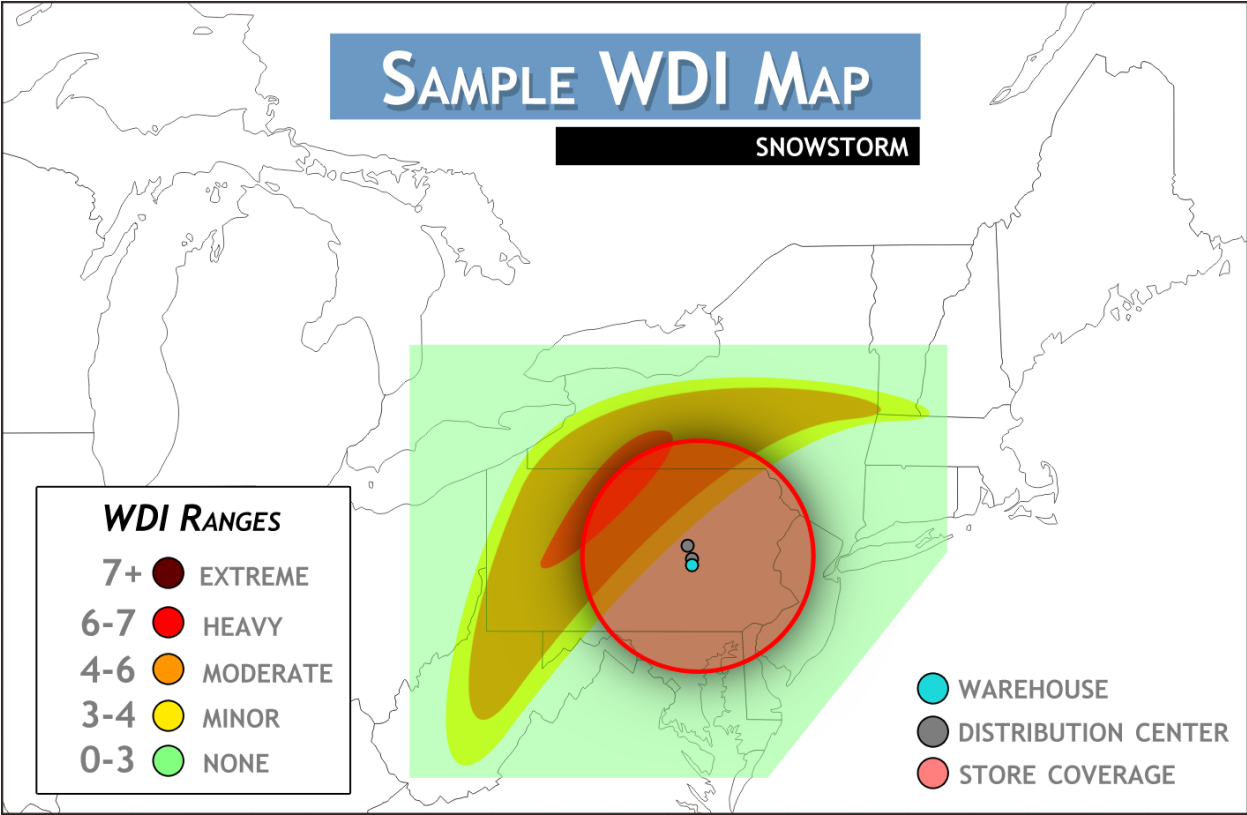
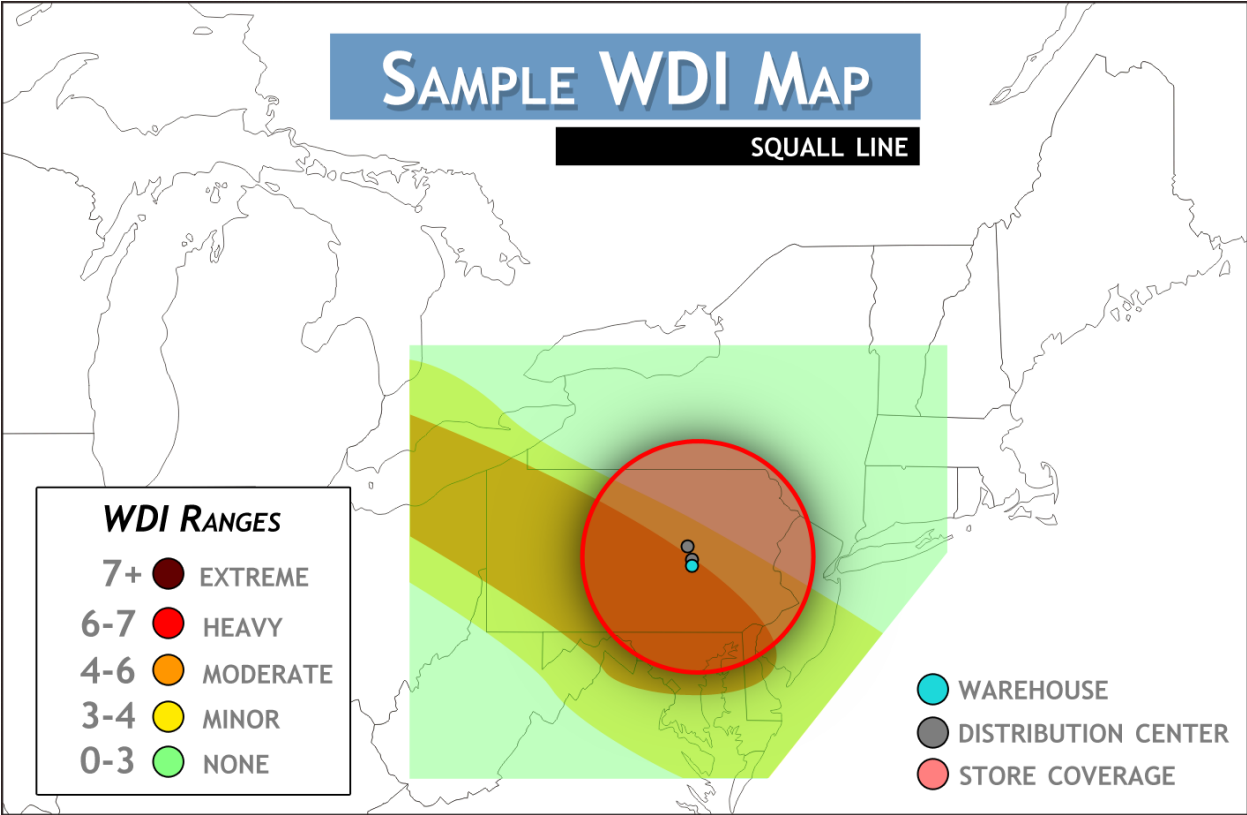
<b>WDI: 0-3</b> <i>None</i> <small>NORMAL STAFF SAFE TRUCKING</small>	<b>WDI: 3-4</b> <i>Minor</i>	<b>WDI: 4-6</b> <i>Moderate</i> <small>TRUCKS USE CAUTION</small>	<b>WDI: 6-7</b> <i>Heavy</i>	<b>WDI: 7+</b> <i>Extreme</i> <small>STAFF ADJUSTMENTS NO TRUCKING</small>
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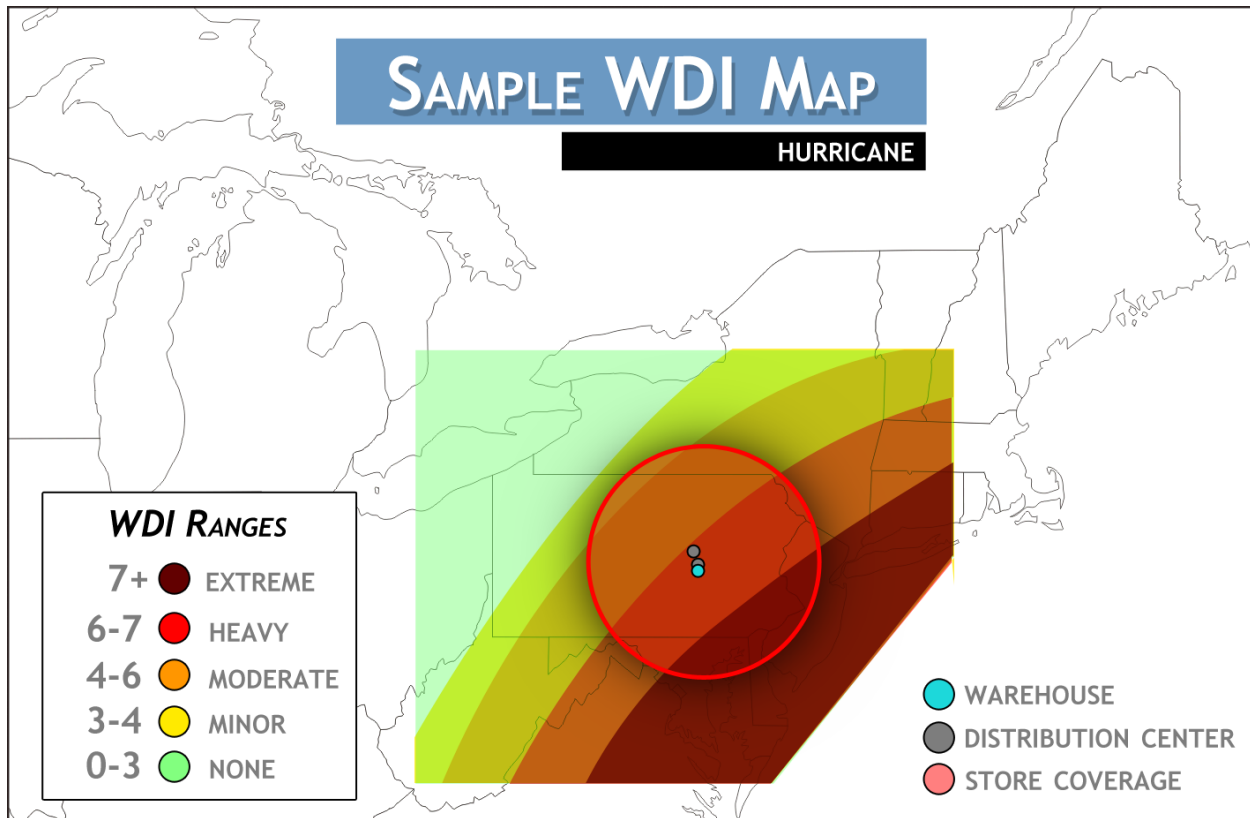
From this index, we are also able to identify when employees may or may not be affected by weather. This will be able to give Weis Markets, Inc. an idea of what staffing might be like on a certain day so they can manage around potential losses due to lack of staffing or late employees. As stated earlier, the major season for weather related employee absences or delays would occur over our winter period. Employees can be affected in a variety of ways from their travel to and from work or ability to leave their house. These are taken into consideration when creating our index table because heavier storms make it more difficult for an employee to safely travel to work. Snow removal takes time and an employee that may not have known about a significant snowfall overnight might wake up to have to shovel multiple inches of snow causing them to be late to work. Power outages

due to an ice or wind storm are also taken into consideration, which can hinder an employee's ability to work or drive.

When a time period is flagged with a moderate, heavy, or extreme WDI value for trucking impact, we suggest increasing staffing 1-2 days before the flagged day. The assumption is that people will go out to stock up on food and supplies in preparation for the storm that will be hampering trucking. Likewise, we suggest ramping up trucking operations 2 days in advance – while the weather is still nice - so that the stores have ample stock for the rush of customers expected to shop 1-2 days out.

Below are some examples of maps that would be provided with every updated forecast for each period. They are region specific because Weis Markets, Inc. operates out of the Northeast, which means employee travel and trucking is limited to this region. Several circles are located in Pennsylvania to identify the distribution centers and warehouse.






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***“Increasing profit margins.”***

— TYLER JANKOSKI, PROJECT MANAGER AND WRITER

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We estimate that we can reduce cost of goods sold by an average of \$5,342,319 per year. Lower shipping costs, less spoilage, and reduced labor costs will result in a healthier end-of-year financial report for Weis – but only with the use of our Weis Decisions Index. Roaring Lions Weather Associates entertains several new requests for weather-based indices from the competition each year. In order to provide a unique advantage for our clients, we only sign with one business in a particular market – for Weis, the grocery industry – and in a specific area. We currently have an opening for a client that is in the grocery industry and is based in Pennsylvania. Weis Markets will obtain an exclusive

benefit from our purchasing our services. We believe that we should be fairly compensated for our services, especially since we don't offer them to the competition in the Weis coverage area.

We can save Weis an estimated \$5,342,319 per year in shipping, spoilage, and labor expenses. TheTruckersReport.com estimates that it costs \$180,000 per year to operate one commercial truck. According to TheTruckersReport.com, 39% of the expense is for diesel fuel alone, while 26% is for the driver's salary. This average cost per truck means Weis should have approximately 336 trucks. However, with only 161 stores, that number is unreasonable. Thus, Weis is spending much more than \$180,000 per year per commercial truck. We can reduce shipping costs by 2%, or \$1,209,989, with accurate forecasts because fewer miles will be traveled. This will not only save fuel, but decrease driver salaries because they are based on miles traveled.

Additionally, using our index can reduce spoilage. Simply put, accurate forecasts will lead to better planning. This means fewer trucks will be stuck in storms. We estimate that we can save Weis 2% on average annual spoilage costs. This accounts for an annual savings of \$403,330.

Most importantly, we can help Weis decrease its high labor expenses. Our index indicates when overall weather will be bad – especially road weather. Thus, important staffing decisions can be made. More staff should be in place the day before a storm, while much less staff should be working during a storm. Without an accurate weather index, it can be almost impossible to master this crucial part of the staffing process. Weis is also a smaller grocery store chain with a high laborer-to-store ratio. With this index, Weis would be able to cut back total staff. This would normally be very risky move for the company, but



our index allows for quick staffing decisions so that stores are always adequately staffed. Therefore, we estimate a 1% yearly savings in labor costs, or approximately \$3,729,000.

<b>Exclusive Weis Decisions Index</b>	
<i>Per Weis Markets, Inc. Fiscal Year</i>	
Shipping Savings	\$1,209,989
Spoilage Savings	\$403,330
Labor Savings	\$3,729,000
Total Savings	\$5,342,319
Compensation For WDI to RLWA	\$1,000,000 <i>(18.7% of savings)</i>

The Weis Decisions Index has been custom built for the company. We are confident it will save the company millions of dollars per year. In return for our services, we ask for 18.7% of the estimated savings, which is \$1,000,000 per year. Please consider opening a new pathway to success by signing a contract with Roaring Lions Weather Associates today!

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