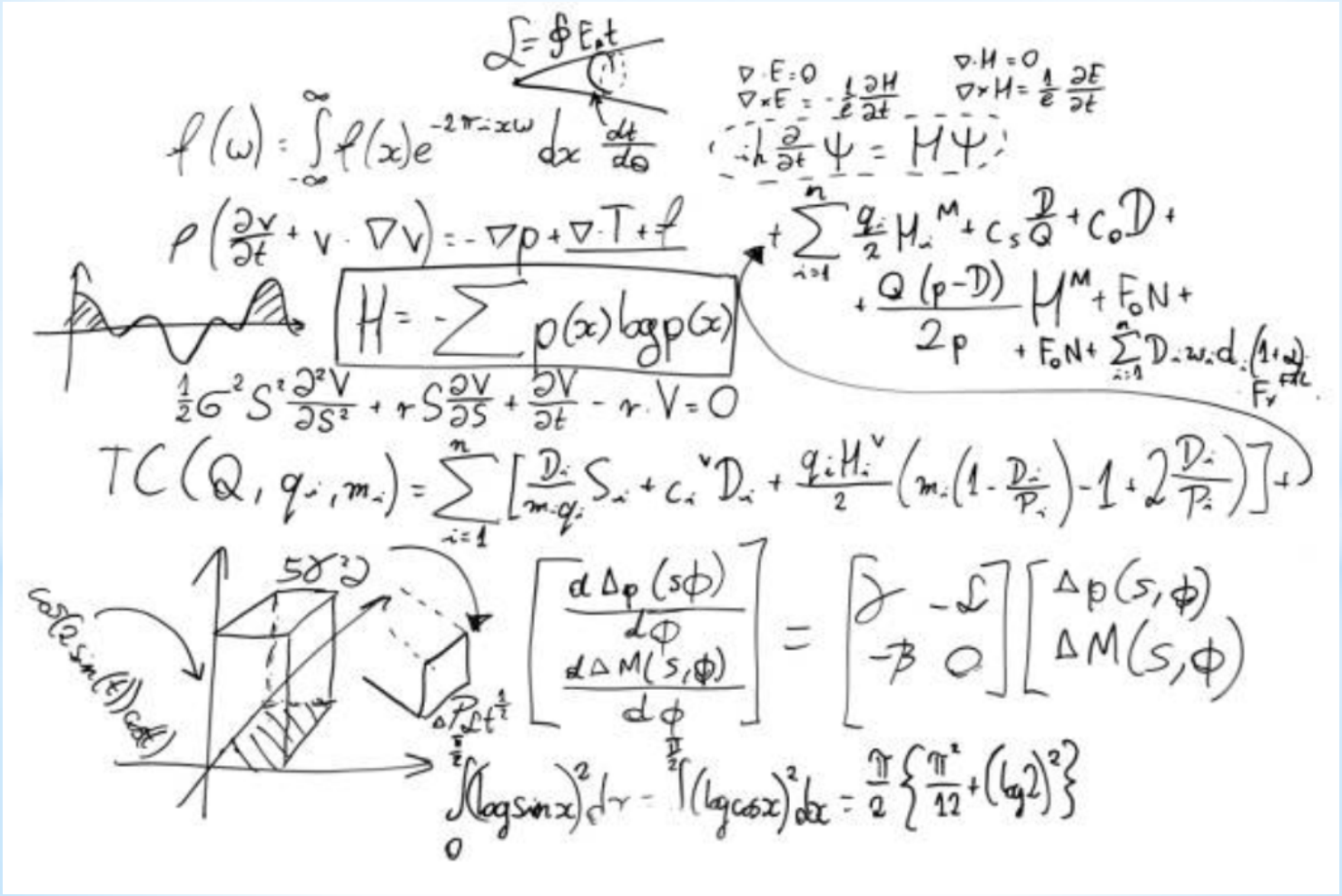

$\mathcal{L} = \oint E_0 t$
$\nabla \cdot E = 0$
$\nabla \times E = -\frac{1}{\epsilon}\frac{\partial H}{\partial t}$
$\nabla \cdot H = 0$
$\nabla \times H = \frac{1}{\epsilon}\frac{\partial E}{\partial t}$
$f(\omega) = \int_{-\infty}^{\infty} f(x) e^{-2\pi i x\omega} dx$
$\frac{dt}{d\Theta}$
$i\hbar \frac{\partial}{\partial t}\Psi = H\Psi$
$\rho\left(\frac{\partial v}{\partial t} + v \cdot \nabla v\right) = -\nabla p + \nabla \cdot T + f$
$H = -\sum p(x) \log p(x)$
$+ \sum_{i=1}^{n} \frac{q_i}{2} M_i^M + c_s \frac{D}{Q} + c_0 D +$
$+ \frac{Q(p-D)}{2p} M^M + F_0 N +$
$+ F_0 N + \sum_{i=1}^{n} D_i w_i d_i \left(\frac{1+\omega}{F_v}\right)^{FDL}$
$\frac{1}{2}\sigma^2 S^2 \frac{\partial^2 V}{\partial S^2} + rS\frac{\partial V}{\partial S} + \frac{\partial V}{\partial t} - rV = 0$
$TC(Q, q_i, m_i) = \sum_{i=1}^{n} \left[\frac{D_i}{m_i q_i} S_i + c_i^v D_i + \frac{q_i H_i^v}{2}\left(m_i\left(1 - \frac{D_i}{P_i}\right) - 1 + 2\frac{D_i}{P_i}\right)\right] +$
$5\gamma^2 2$
$\cos(a \sin(kt)) \cos(kt)$
$\left[\frac{d\Delta p(s\phi)}{d\phi}, \frac{d\Delta M(s,\phi)}{d\phi}\right] = \begin{bmatrix} \gamma & -\mathcal{L} \\ -\beta & 0 \end{bmatrix} \begin{bmatrix} \Delta p(s,\phi) \\ \Delta M(s,\phi) \end{bmatrix}$
$\int_0^{\frac{\pi}{2}} (\log \sin x)^2 dx = \int_0^{\frac{\pi}{2}} (\log \cos x)^2 dx = \frac{\pi}{2}\left\{\frac{\pi^2}{12} + (\log 2)^2\right\}$

What We Will Cover:

1. Attraction, Probability, and Expected Values
2. Using Sister Stores
3. Store Loyalty in SITESPLUS
4. Converting Leakage
5. Correlation
6. Using FIT
7. Rebuilding Stores & Secondary Sales
8. Using AI in Grocery Sales Forecasting

This presentation will be available on our website.

Attraction, Probability, and Expected Values

What Makes a Store Attractive?

- Close -- Convenient
- Large
- Low Prices
- Good Selection
- Good Housekeeping
- Good Parking
- Good Ingress/Egress
- Good Public Relations
- Quality & Service
- Useful Promotions

How can we quantify all of these features?

What total "attraction" does a customer feel?

Attraction, Probability, and Expected Values

Quantifying Attractiveness

An Attraction measure for one customer and Store "*i*"

$$A_i = (Poweri\ x\ \ Size_i)\ x\ \ e^{-\left(\frac{distance\ x\ curve_i}{radius\ x\ 50}\right)^{1.12}}$$

A "typical" attraction at 2 miles might be 13,500,000 units.

All by itself, this figure is pretty useless!

Attraction, Probability, and Expected Values

Quantifying Attractiveness

Let's calculate the total Attraction to all Stores:

$$A_{Total} = \sum_{i=1}^{n} \left[Power_i \; x \; Size_i \; x \; e^{-\left(\frac{Distance_i \; x \; Curve_i}{Radius \; x \; 50}\right)^{1.12}} \right]$$

With 5 Stores the Total might be 100,000,000 units.

This is the Storing Pressure one customer might feel.

Attraction, Probability, and Expected Values

Turning Attractiveness into Probability

Make a Ratio of One Store to all Stores:

$$\frac{A_i = Power_i \; x \; Size_i \; x \; e^{-\left(\frac{distance \; x \; curvei}{radius \; x \; 50}\right)^{1.12}}}{A_{Total} = \sum_{i=1}^{n} \left[Power_i \; x \; Size_i \; x \; e^{-\left(\frac{Distance_i \; x \; Curve_i}{Radius \; x \; 50}\right)^{1.12}} \right]}$$

$$P(i) = \frac{A_i}{A_{Total}} = \frac{35{,}000{,}000}{100{,}000{,}000} = .35$$

Attraction, Probability, and Expected Values

Turning Probability into Expected Values

Available PCW = (PCW - Leakage)

$ 52.50 = ($75.00 - 30%)

Stores	Probability	Expected Value
1	.35	$18.38
2	.17	$8.93
3	.05	$2.62
4	.30	$15.75
5	.13	$6.82
Totals	1.00	$52.50

Attraction, Probability, and Expected Values

For a Trade Area of 5 Stores and 50,000 People:

There will be 250,000 probabilities,

There will be 250,000 expected values,

Totaling to TA Store sales. = Totaling to non-Leakage potential.

Imagine all the calculations for 5,000,000 people and 500 stores!

That's a 2.5 Billion cell matrix!

By using block groups we reduce it to 1 Million cells.

Using Sister Stores

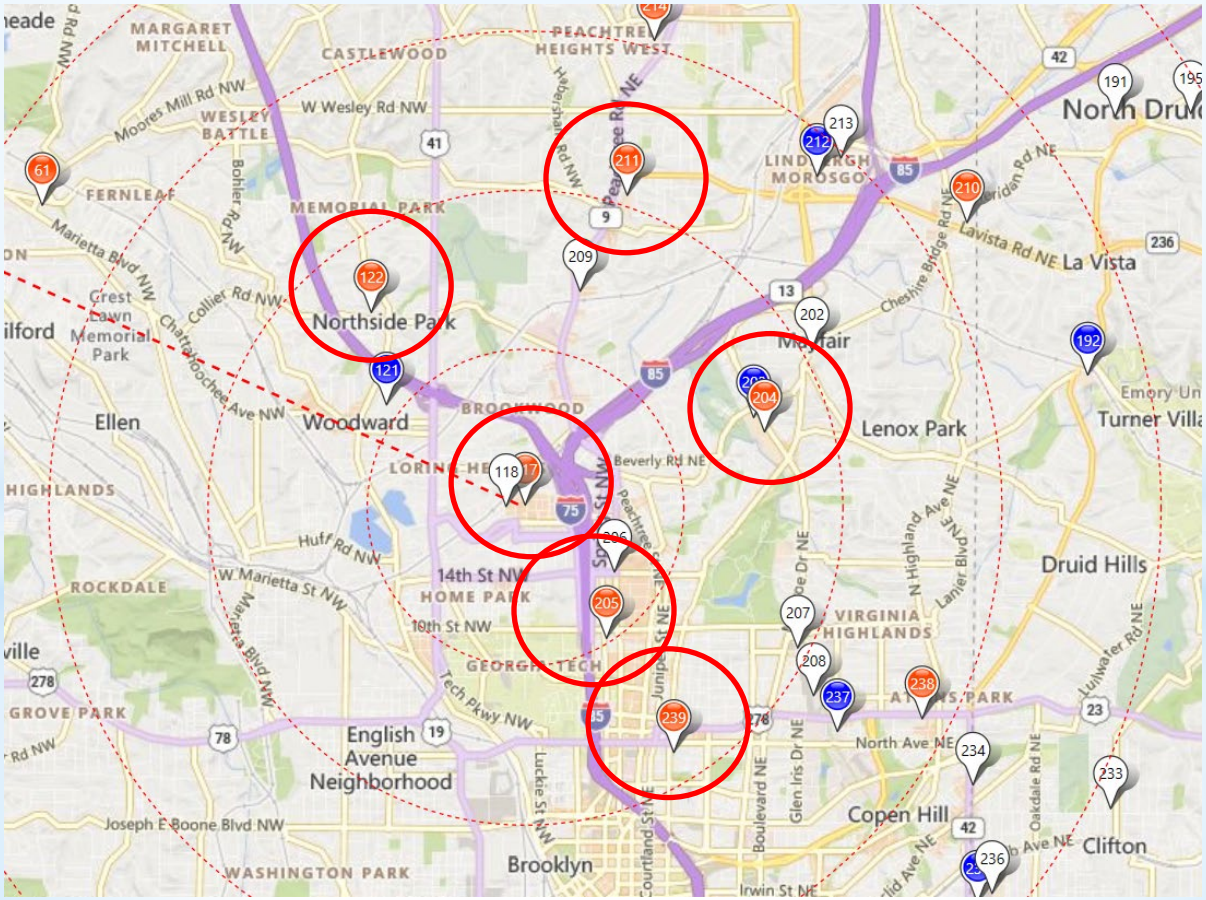
Sister Stores: Two or more Stores so similar in traits that consumers do not perceive them as actual choices resulting in a curtailing of each Store's trade area.

- They must belong to the same chain.
- They must be nearly the same size.
- They must be the same Store Format.
- They must be relatively close to each other.

  (How close depends on Sizes and Curves.)

The two Stores must look like they are not really different choices.

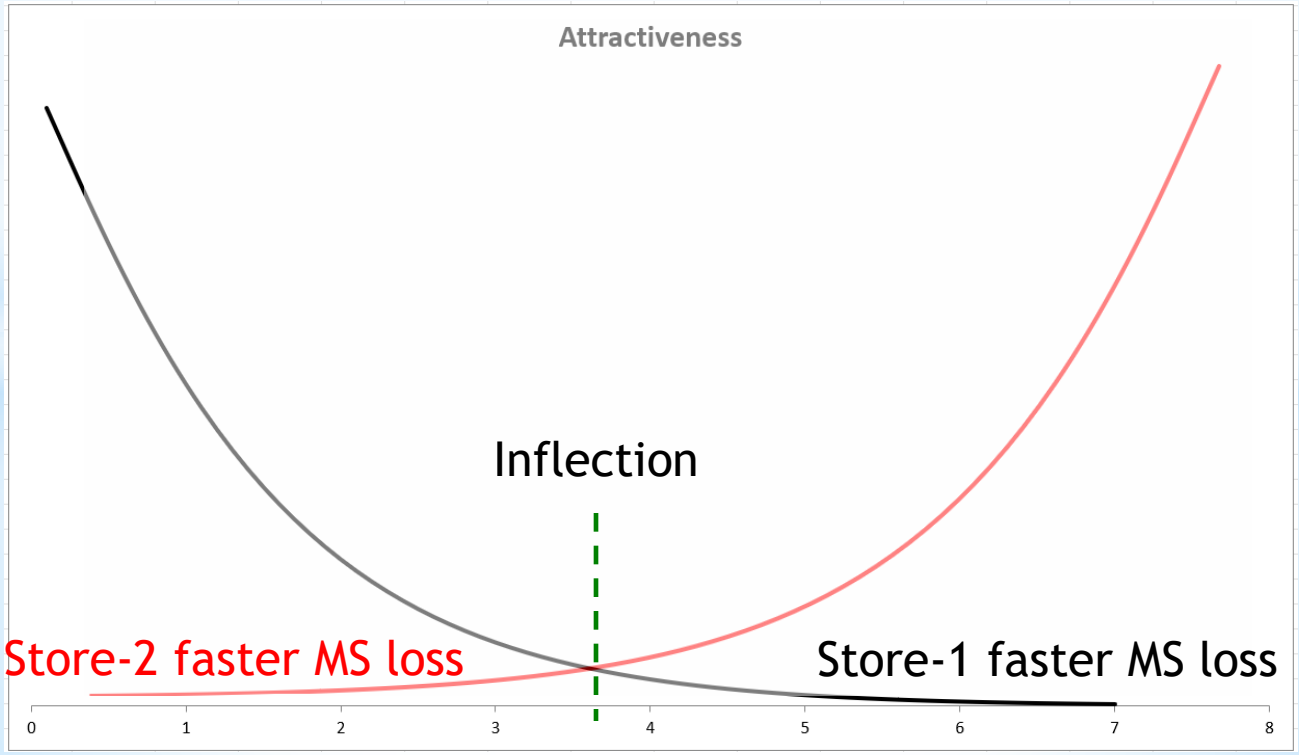
Using Sister Stores



Example: Publix #217 has 5 other Publix Stores within 2 miles.

Using Sister Stores

Visualize Overlapping distance-decay functions.

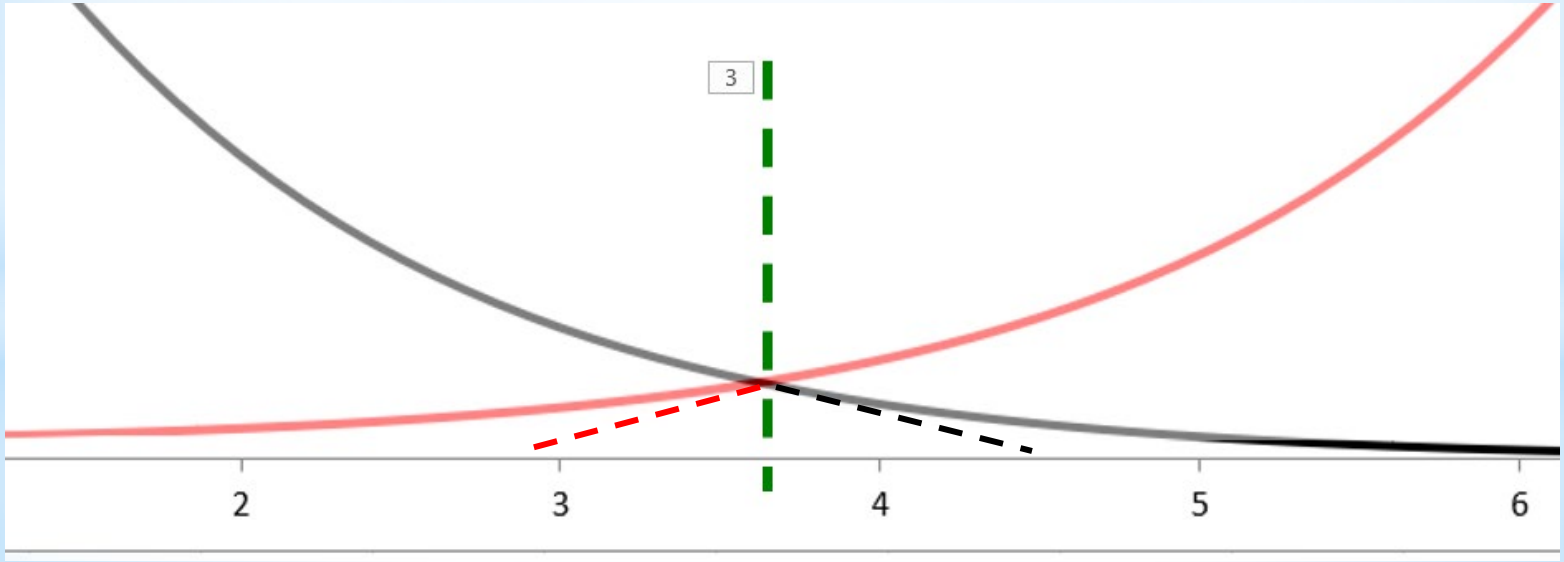


Store-1

Store-2

Using Sister Stores

Overlapping distance-decay functions.



Store-1 Store-2

Market shares are decreased gradually, depending on Strength.

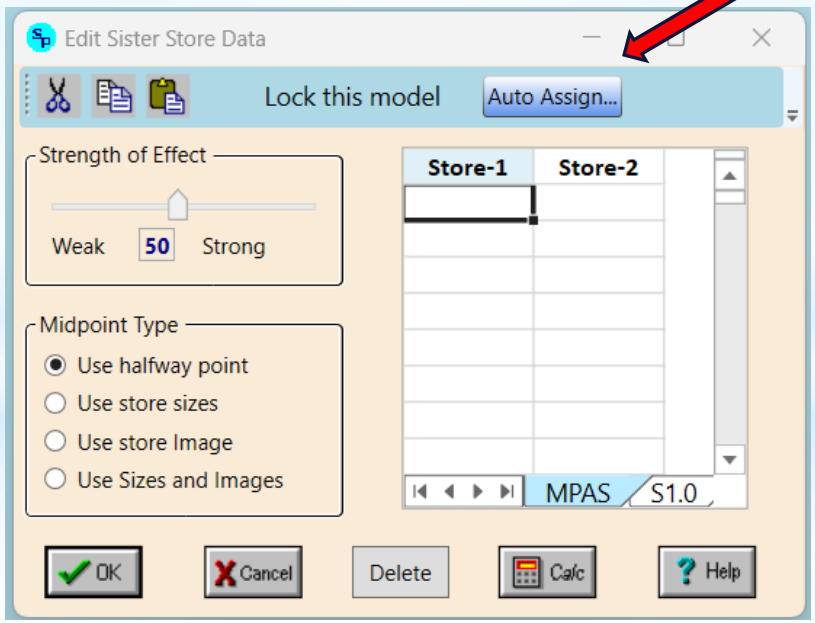
Using Sister Stores

The Sister Store Data Sheet

Or Auto Assign
(SITESPLUS 2025)

❶ Choose a strength

❷ Choose an inflection point

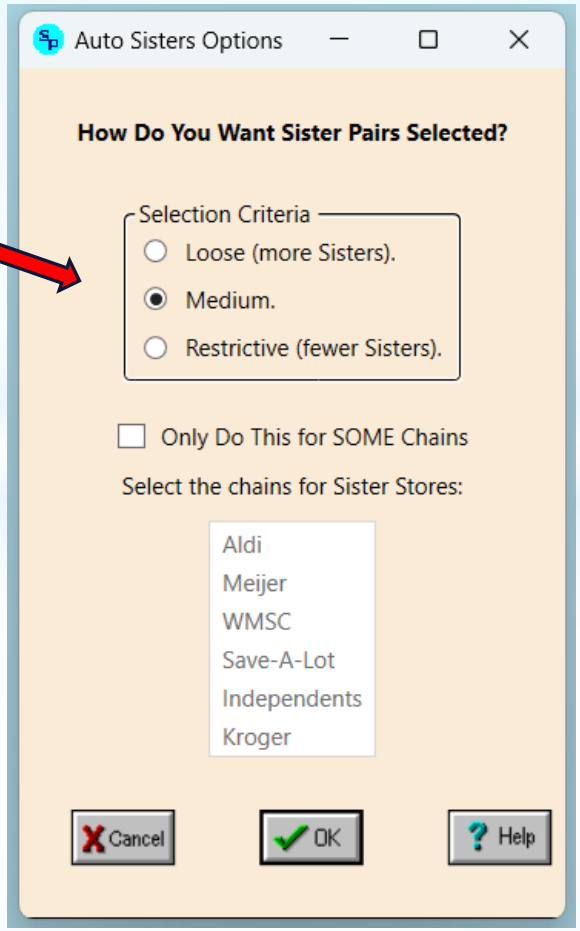


❸ Add Store pairs

Using Sister Stores

The Auto Assign Window

Choose Loose, Medium, or Restrictive Selection



Work with all Chains, or just some

Using Sister Stores

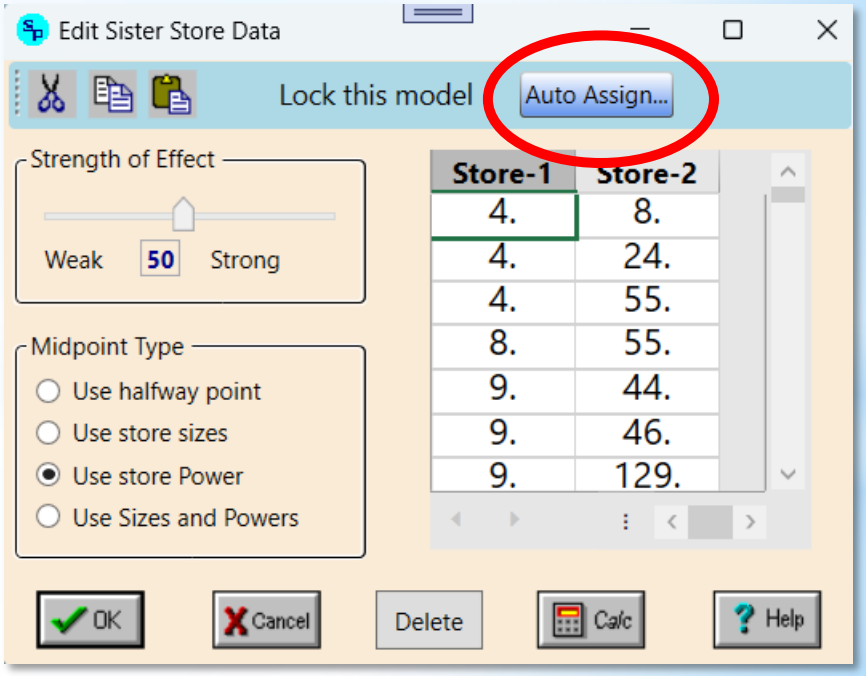
The Auto Assign Window

Example using Metro Atlanta:

Loose: 657 Sister pairs added.

Medium: 286 Sister pairs added.

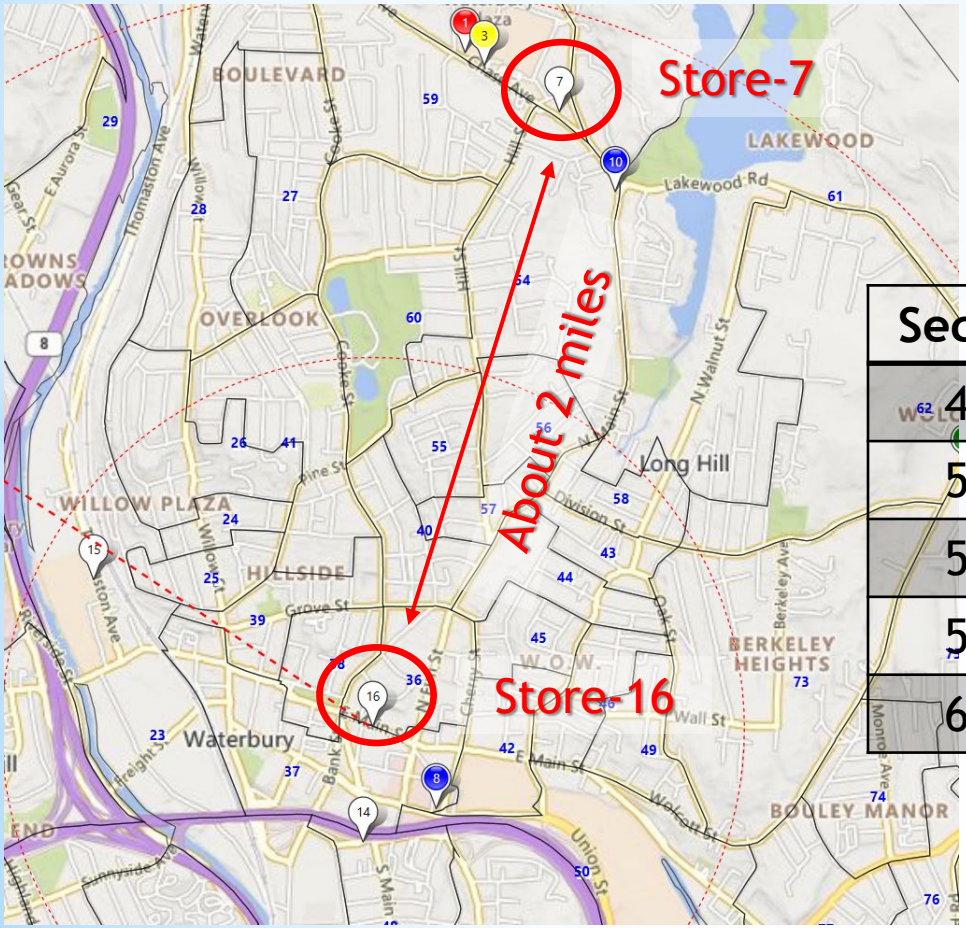
Restrictive: 48 Sister pairs added.



Publix Only (medium): 140 Sister pairs added.

Using Sister Stores

Small Example



Market shares for Store-16 before and after making Sister Store with Store-7.

Sector	Before MS	After MS	Diff.
43	1.45	1.47	+.02
54	.95	.77	-.18
55	1.60	1.62	+.02
56	1.30	1.13	-.17
60	1.19	1.00	-.19

Pretty small changes.
… in both directions.

Using Sister Stores

Cautions!

- Be conservative! Don't overdo it!
- Small differences in Stores can mean you shouldn't add them as a Sister Store pair. Example: Housekeeping.
- Follow your company and department policy.
- If you use Auto Assign, review the results!
- We could use more discrimination research!

Store Loyalty

Store Loyalty: The proportion of customers of a specific Chain that will not change Stores no matter what happens with other chains.

Values range from 100 (normal) to 200 (no customer will switch).

Example: Loyalty of 140 means 40% of customers will not switch.

Loyalty is especially helpful in limiting the impacts on Stores with typically loyal customers, such as Trader Joe's, Aldi, etc.

Store Loyalty

Customers from Store-1

Without Loyalty

Store Loyalty

Customers from Store-1

40% **60%**

With 140 Loyalty

Store Loyalty

Example of Sales Impacts

Aldi: No Loyalty

SITE Forecast: $385,000

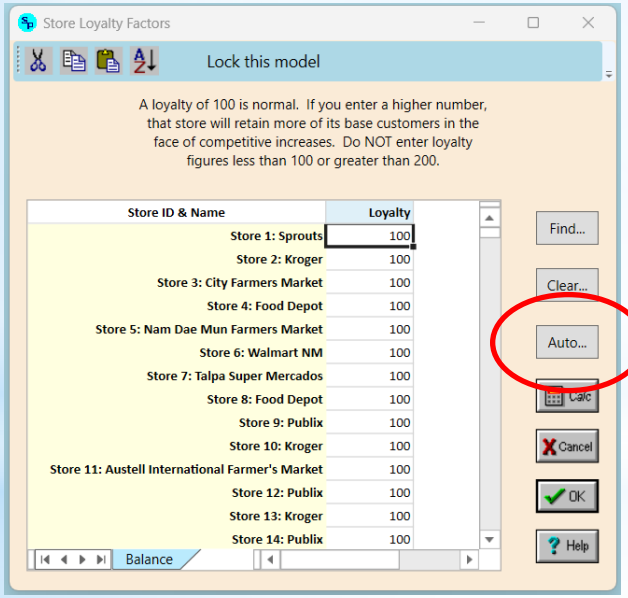
Aldi Loses: $90,000

Aldi With 150 Loyalty

SITE Forecast: $340,000

Aldi Loses: $45,000

Store Loyalty



The [Auto] button will assign Loyalty based on your Store Type definitions.
SITESPLUS 2025 only.

You must enter Loyalty values in the Balanced Model, but they are not used until projection models.

Loyalty does not influence the balance.

Store Loyalty

Cautions:

Loyalty is not constant between trade areas.

Loyalty is not constant between competitors.

Loyalty is not constant over time.

Converting Leakage

After balancing a model, the Leakage in the projection models does NOT normally change.

Sometimes building a new Store or remodeling an existing Store causes the Leakage to reduce.

“Converting Leakage”

Why would this happen? How much would it change?

Converting Leakage

Let's consider the Sources of Leakage

A little	*Small Stores inside the TA not in our Models*
✗	*Non-supermarkets, e.g. Drug Stores, Building Centers, etc.*
A little	*Bakeries, Meat Shops, Produce stands, etc.*
✗	*Convenience Stores*
✓	*Stores outside the TA* *Maybe 20-50% "Migration Factor"*
✗	*Bad PCW values or incorrect Store sales*

Which ones can we influence with a nice new Store?

Converting Leakage

Step-1: Let's consider the Change in Total Attraction

Total Attraction Before Building the New Store:

$$Attraction_{Before} = \sum_{i=1}^{n} (Power_i \ x \ Size_i)$$

Total Attraction After Building the New Store:

$$Attraction_{After} = Attraction_{Before} + (Power_{SITE} \ x \ Size_{SITE})$$

Change in Leakage (MAX):

$$\Delta \, Leakage = Leakage_{Before} - \left(\frac{Attraction_{Before}}{Attraction_{After}} \ x \ Leakage_{Before} \right)$$

Converting Leakage

Step-1: Let's consider the Change in Total Attraction: Example

Total Attraction Before Building the New Store:

$$Attraction_{Before} = 15{,}000{,}000$$

Total Attraction After Building the New Store:

$$Attraction_{After} = 15{,}000{,}000 + (120 \ x \ 35{,}000) = 19{,}200{,}000$$

Change in Leakage (MAX):

$$\Delta\, Leakage = 35\% - \left(\frac{15{,}000{,}000}{19{,}200{,}000} \ x \ 35\%\right) = \ 7.6\%$$

Converting Leakage

Step-2: Apply Our "Migration" Factor (20-50%)

Actual Conversion:

$$\Delta\ Leakage_{Actual} = \Delta\ Leakage\ \ x\ MigrationFactor$$

Migration Factor	Δ Leakage	Δ $Leakage_{Actual}$
.20	-7.6%	-1.52%
.30	-7.6%	-2.28%
.40	-7.6%	-3.04%
.50	-7.6%	-3.80%

Converting Leakage: Some Cautions

The formulas shown make it obvious that most times Leakage conversion is very small.

It's really hard to estimate the Migration Factor.

When converting Leakage, ALWAYS convert to ONE Store.

Really think your way through the process.

Correlation

In SITESPLUS Correlation measures the strength of relationship between:

Market shares indicated by your Spotting data.

and

Market shares indicated by your Balanced Model.

A strong correlation for one Store indicates your Balanced Model may be well-balanced for that Store.

Correlation

The formula for Pearson's Correlation coefficient:

$$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2}\sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2}}$$

where:
X_i *is the first list of numbers*
$\bar{X}$ *is the mean of the X list*
Y_i *is the second list of numbers*
$\bar{Y}$ *is the mean of the Y list*

Correlation

Correlation is a number from -1 to +1 that indicates the degree and direction of relationship between two sets of numbers.

+1 means perfectly related. As List-1 goes up, List-2 goes up.

Example: As income goes up, so does the value of your home.

-1 means perfectly inversely related. List-1 goes up, List-2 goes down.

Example: As family size increases, PCW decreases.

0 means completely unrelated.

Example: The inflation rate and the rainfall amounts in June.

Correlation

Example of good correlation for Store-1:

Sector	Spotting MS	Balance MS	Difference
1	12.1	10.5	1.6
2	6.0	5.7	.3
3	21.4	23.1	-1.7
4	1.5	.5	1.0
5	32.8	35.1	-2.3

Mean Squared Difference (MSD) = 2.4

Root Mean Squared Difference (RMSD) = 1.5

Correlation

Example of poor correlation for Store-1:

Sector	Spotting MS	Balance MS	Difference
1	12.1	1.5	10.6
2	6.0	12.4	-6.4
3	21.4	2.4	19.0
4	1.5	13.0	-11.5
5	32.8	15.7	16.1

Mean Squared Difference (MSD) = 181.2

Root Mean Squared Difference (RMSD) = 13.5

Correlation

Sources of Spotting Data:

❶ Customer Intercept Studies

Interviewers observe customer sales tickets and ask for home location (approximately).

Very good technique, used for decades.

Not cheap. 500-3,000 intercepts needed per Store.

Interviewers must be trained and monitored.

Extremely accurate results: few bad addresses.

Correlation

Sources of Spotting Data:

❶ Customer Intercept Studies

❷ Customer Loyalty Data

Easy to get LOTS of data cheaply.

Accuracy depends on update frequency.

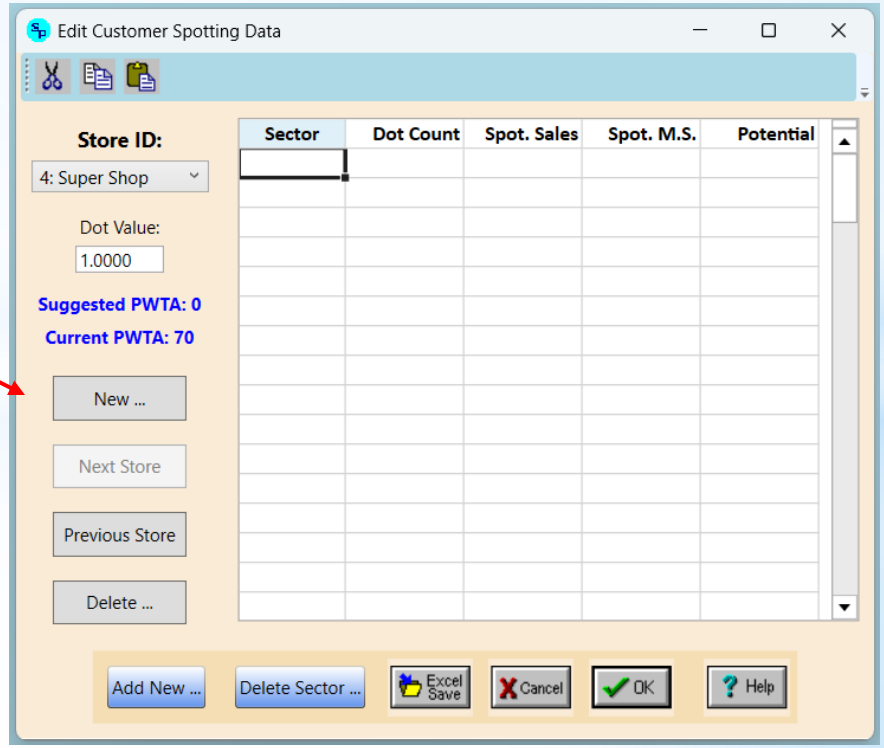
Always some old addresses.

Only shows “Loyal” customers.

Correlation

Entering the Data Into SITESPLUS

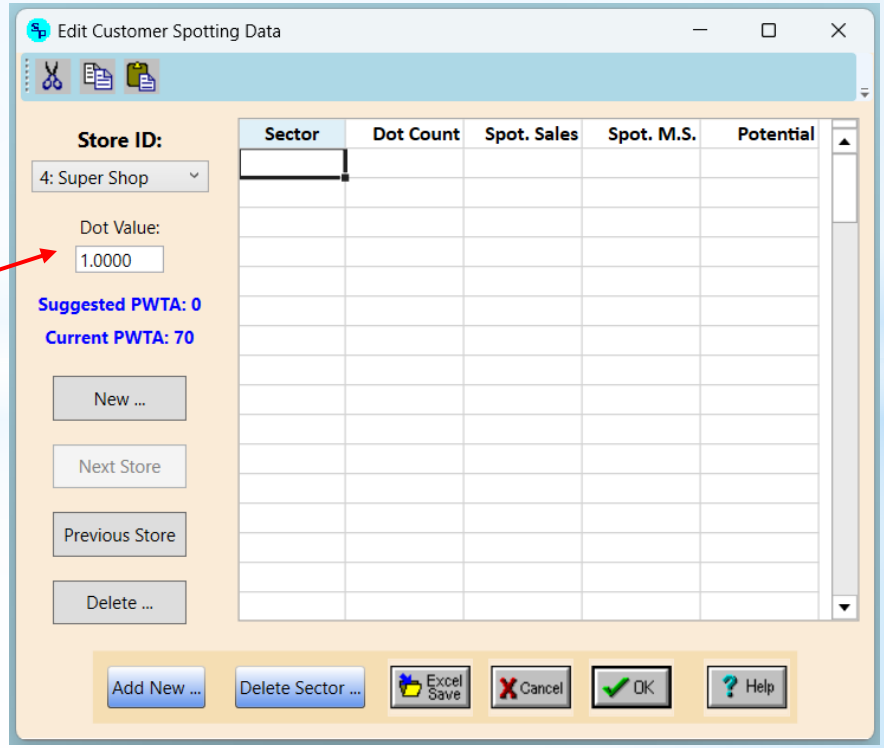
❶ Start the data for a new Store.



Correlation

Entering the Data Into SITESPLUS

❷ Enter the dot value.



Correlation

Entering the Data Into SITESPLUS

If you are collecting Spotting with Customer counts:

$$Dot\ Value = \frac{Total\ Store\ Sales}{Total\ Spotting\ Count}$$

If you are collecting Spotting with Observed sales tickets:

$$Dot\ Value = \frac{Total\ Store\ Sales}{Total\ Sales\ Tickets}$$

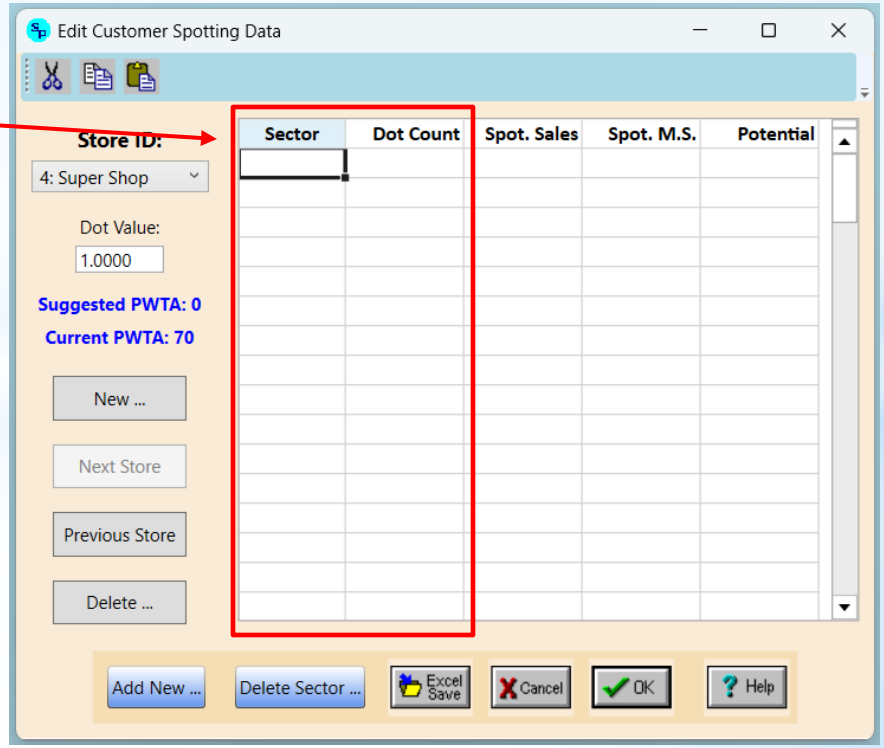
If you are using Loyalty data for one full week:

$$Dot\ Value = \frac{Total\ Store\ Sales}{Total\ Loyalty\ Sales}$$

Correlation

Entering the Data Into SITESPLUS

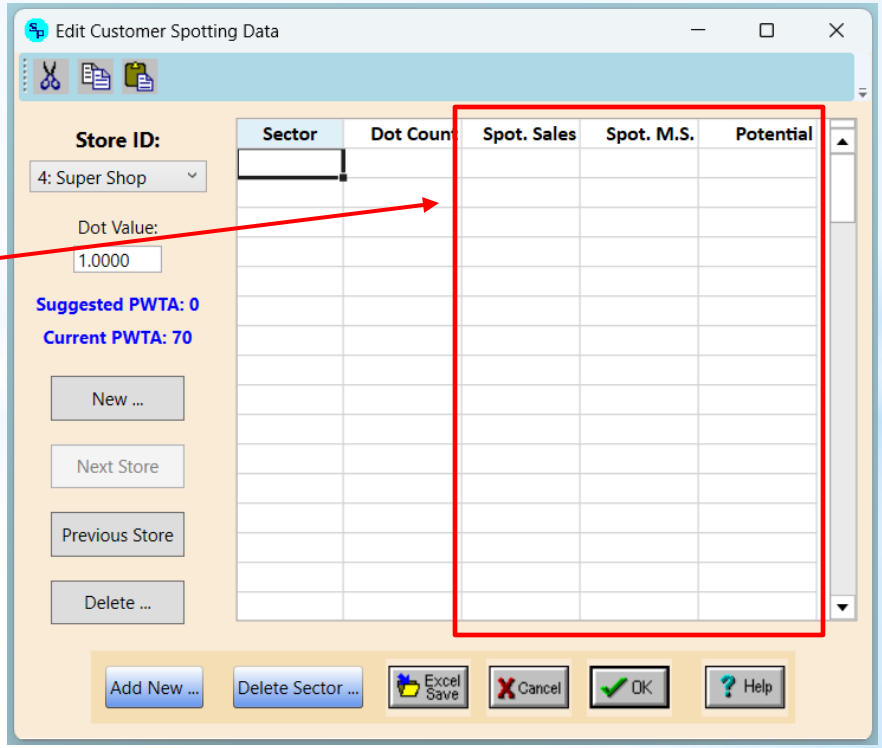
❸ Enter the Sector IDs and dot counts.



Correlation

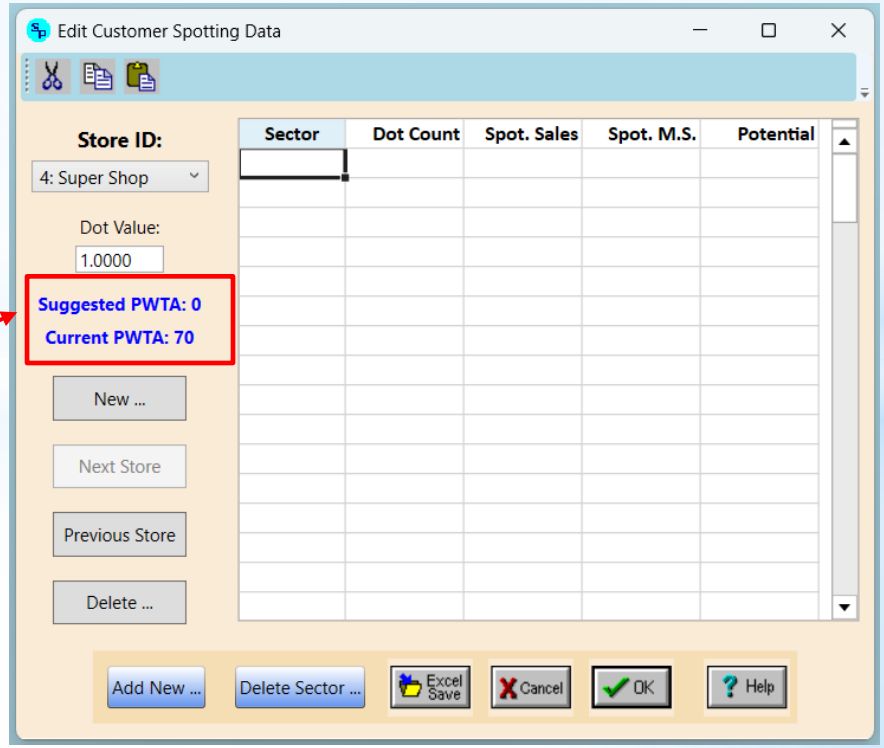
Entering the Data Into SITESPLUS

SITESPLUS will fill these columns in as you go.



Correlation

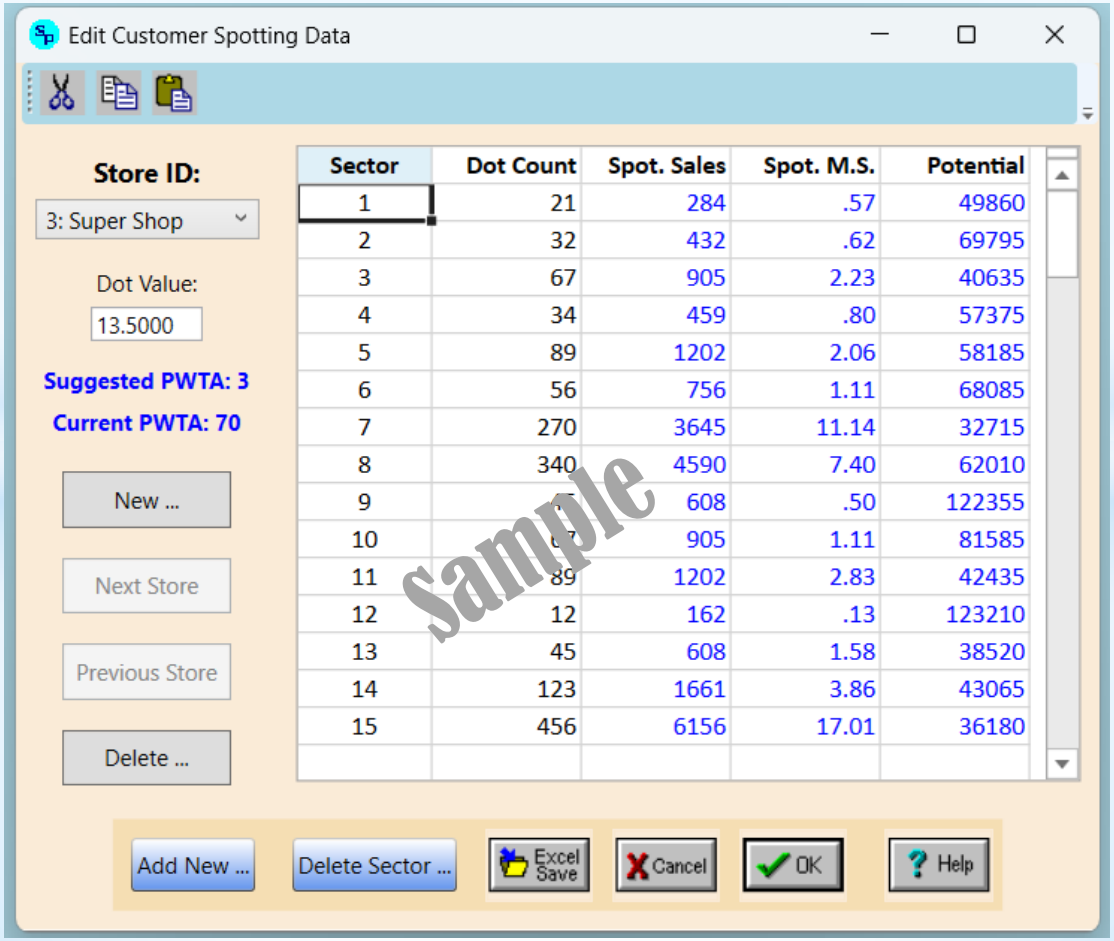
Entering the Data Into SITESPLUS



Watch this estimate of correct PWTA to use for this Store.

Correlation

Entering the Data Into SITESPLUS



Sector	Dot Count	Spot. Sales	Spot. M.S.	Potential
1	21	284	.57	49860
2	32	432	.62	69795
3	67	905	2.23	40635
4	34	459	.80	57375
5	89	1202	2.06	58185
6	56	756	1.11	68085
7	270	3645	11.14	32715
8	340	4590	7.40	62010
9	[illegible]	608	.50	122355
10	[illegible]	905	1.11	81585
11	89	1202	2.83	42435
12	12	162	.13	123210
13	45	608	1.58	38520
14	123	1661	3.86	43065
15	456	6156	17.01	36180

Correlation

SITESPLUS Correlation Report

Store 3: Super Shop							
		Sales			Market Share		
Sector	Dist.	Spotting	Model	Diff.	Spotting	Model	Diff.
1	2.59	284	12,724	-12,441	0.57	25.52	-24.95
2	5.16	432	2,845	-2,413	0.62	4.08	-3.46
3	5.51	905	1,423	-518	2.23	3.50	-1.28
4	3.73	459	5,993	-5,534	0.80	10.45	-9.65
5	3.15	1,202	7,538	-6,337	2.06	12.96	-10.89
6	2.86	756	10,719	-9,963	1.11	15.74	-14.63
7	1.85	3,645	7,746	-4,101	11.14	23.68	-12.54
8	1.92	4,590	12,667	-8,077	7.40	20.43	-13.03
9	2.59	608	25,830	-25,223	0.50	21.11	-20.61
10	2.14	905	21,809	-20,904	1.11	26.73	-25.62
11	2.15	1,202	10,597	-9,395	2.83	24.97	-22.14
12	1.70	162	33,984	-33,822	0.13	27.58	-27.45
13	2.50	608	4,078	-3,470	1.58	10.59	-9.01
14	2.60	1,661	4,791	-3,131	3.86	11.13	-7.27
15	2.98	6,156	3,068	3,088	17.01	8.48	8.53
Totals		**23,571**	**165,813**	**-142,242**	**2.55**	**17.91**	**-15.36**
Correlations:				**-0.2796**			**-0.1092**
Mean Squared Diff.:				**183,313,162**			**261.39**

This is terrible!

Correlation

SITESPLUS Spotting Analysis Report

Store 3: Super Shop

Correlation by Distance Rings

… by Distance Rings

Distance Range	Number Sectors	Sales Spotting	Sales Model	Sales Diff.	Market Share Spotting	Market Share Model	Market Share Diff.
0.00-0.99	0	0	0	0	0.00	0.00	0.00
1.00-1.99	3	8,397	54,397	-46,000	3.85	24.96	-21.11
2.00-2.99	8	12,177	93,617	-81,440	2.53	19.42	-16.89
3.00-3.99	2	1,661	13,531	-11,871	1.44	11.71	-10.27
4.00-4.99	0	0	0	0	0.00	0.00	0.00
5.00+	2	1,337	4,268	-2,931	1.21	3.86	-2.65
Totals	15	23,571	165,813	-142,242	2.55	17.91	-15.36
	Correlations:		0.9937			0.9734	

Distance	Error	Error
1.00-1.99	**9**	**Low**
2.00-2.99	-8	Low
3.00-3.99	-14	Low
5	120	High

This is very good!

… by Direction

Correlation by Direction

Direction	Number Sectors	Sales Spotting	Sales Model	Sales Diff.	Market Share Spotting	Market Share Model	Market Share Diff.
North	0	0	0	0	0.00	0.00	0.00
East	0	0	0	0	0.00	0.00	0.00
South	6	10,220	22,198	-11,979	3.58	7.77	-4.19
West	9	13,352	143,615	-130,263	2.08	22.42	-20.34
Totals	15	23,571	165,813	-142,242	2.27	16.00	-13.72
	Correlations:		0.8156			0.5748	

Direction	Error Factor	Error Level
South	224	High
West	-35	Moderate

… by Worst Sectors

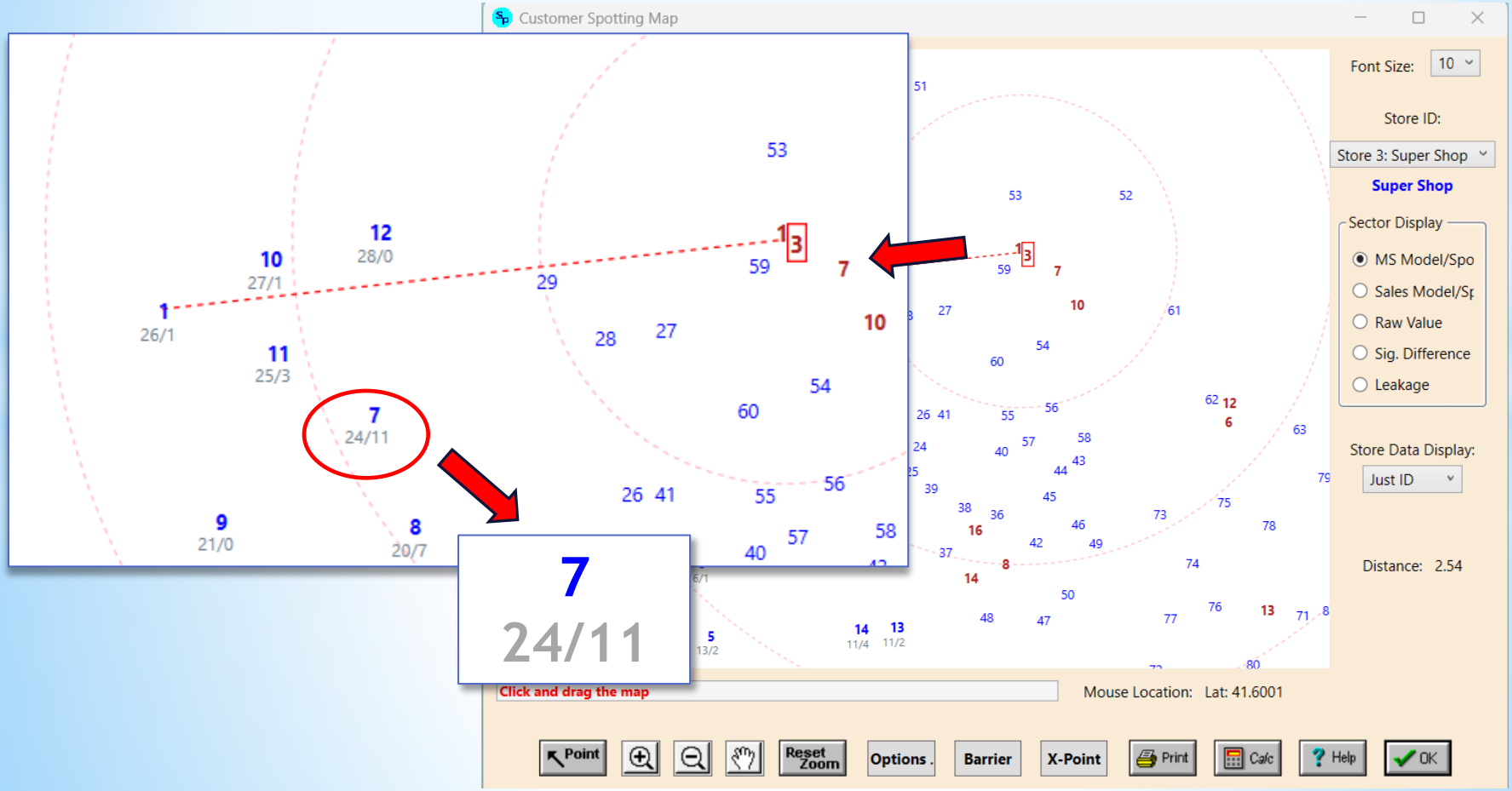
Sectors With Highest Error Factors

Sector Number	Sales Spotting	Sales Model	Sales Diff.	Error Factor	Distance	Direction
1	284	12,724	-12,441	-97.77	2.59	West
2	432	2,845	-2,413	-84.82	5.16	South
3	905	1,423	-518	-36.42	5.51	South
4	459	2,993	-5,534	-92.34	3.73	South
5	1,202	7,538	-6,337	-84.06	3.15	West
6	756	10,719	-9,963	-92.95	2.86	West
7	3645	7,746	-4,101	-52.94	1.85	West
8	4,590	12,667	-8,077	-63.76	1.92	West
9	608	25,830	-25,223	-97.65	2.59	West
10	905	21,809	-20,904	-95.85	2.14	West
11	1,202	10,597	-9,395	-88.66	2.15	West
12	162	33,984	-33,822	-99.52	1.70	West
13	608	4,078	-3,470	-85.10	2.50	South
14	1,661	4,791	-3,131	-65.34	2.60	South
15	6,156	3,068	3,088	100.62	2.98	South

This is terrible!

Correlation

SITESPLUS Correlation Map



Using the FIT System

FIT is an Excel-based program that calculates a Power (or Image) factor for each Sector and Store Format combination in your Balanced Model based on the demographics of the Sector.

FIT Recognizes these Store Formats:

Conventional	Discount	Hispanic
Save-A-Lot	Natural/Organic	Quality/Service
Supercenter	Warehouse	Club
Trader Joe's	Whole Foods	Sprouts
Aldi	Asian	*Custom*

Every Sector has a calculated FIT value for every Store Format.

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Using the FIT System

Example of Sector FIT by Store Format:

Sectors	Conventional	Discount	Hispanic	Lmt. Assort.	Natural/Organic	Quality/Service	Supercenter	Warehouse	Club	Tr. Joe's	Whole Fds	Sprouts
1	109	105	47	94	55	90	102	96	82	58	48	63
2	100	111	55	103	47	79	93	96	58	53	42	54
3	84	129	77	133	46	63	113	125	70	51	40	46
4	85	129	67	129	49	65	112	119	66	56	44	49
5	106	102	51	91	65	103	106	95	89	67	61	70
T.A. FIT	**113**	**95**	**44**	**83**	**74**	**113**	**101**	**88**	**96**	**78**	**73**	**83**

The best Store Formats for each Sector.

** FIT is a product of DSR Marketing Systems, Inc. (847) 927-1936*

Using the FIT System

Example of Trade Area FIT by Store Format:

The best Store Formats for this trade area.

Store Format	FIT Code	T.A. FIT	Number Stores
Unassigned	0	100	0
Conventional	1	113	4
Discount	2	95	0
Hispanic	3	44	0
Lmt. Assort.	4	83	2
Natural/Organic	5	74	0
Quality/Service	6	113	0
Supercenter	7	101	3
Warehouse	8	88	0
Club	9	96	0
Tr. Joe's	10	78	0
Whole Fds	11	73	0
Sprouts	12	83	0

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Using the FIT System

Example of specific Store by Store Format:

Store 2: M-Port Huron		
Format 7: Supercenter		
Format	**Name**	**Site FIT**
1	Conventional	115
2	Discount	93
3	Hispanic	43
4	Lmt. Assort.	81
5	Natural/Organic	74
6	Quality/Service	114
7	Supercenter	97
8	Warehouse	85
9	Club	91
10	Tr. Joe's	77
11	Whole Fds	72
12	Sprouts	83
T.A. FIT		**101**

The best Store Formats for surrounding Sectors.

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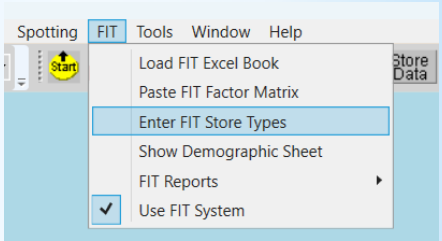
Using the FIT System

Step-1: Assign all of your Stores to a Store Type:



FIT Store Type Assignments

Click in any cell to reassign that store ID to that store type.

	Unassigned	Conventional	Discount	Hispanic	Lmt. Assort.	Natural/Organic	Quality/Service	Supercenter	W
1					Store 1: A-Port Huron				
2								Store 2: M-Port Huron	
3								Store 3: M-Marysville	
4								Store 4: WMSC-Port Huron	
5					Store 6: SAL-Port Huron				
6		Store 7: Vinckier-Kimball							
7		Store 9: Wallys-Marysville							
8		Store 515: K-Krafft							
9		Store 715: K-24th St							

Clear All . | Assign by Chain ... | Calc | OK | Cancel

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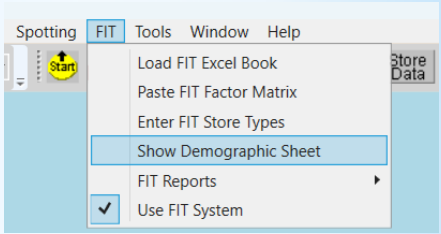
Using the FIT System



Step-2: Gather your Sector demographics:

FIT Sector Demographics

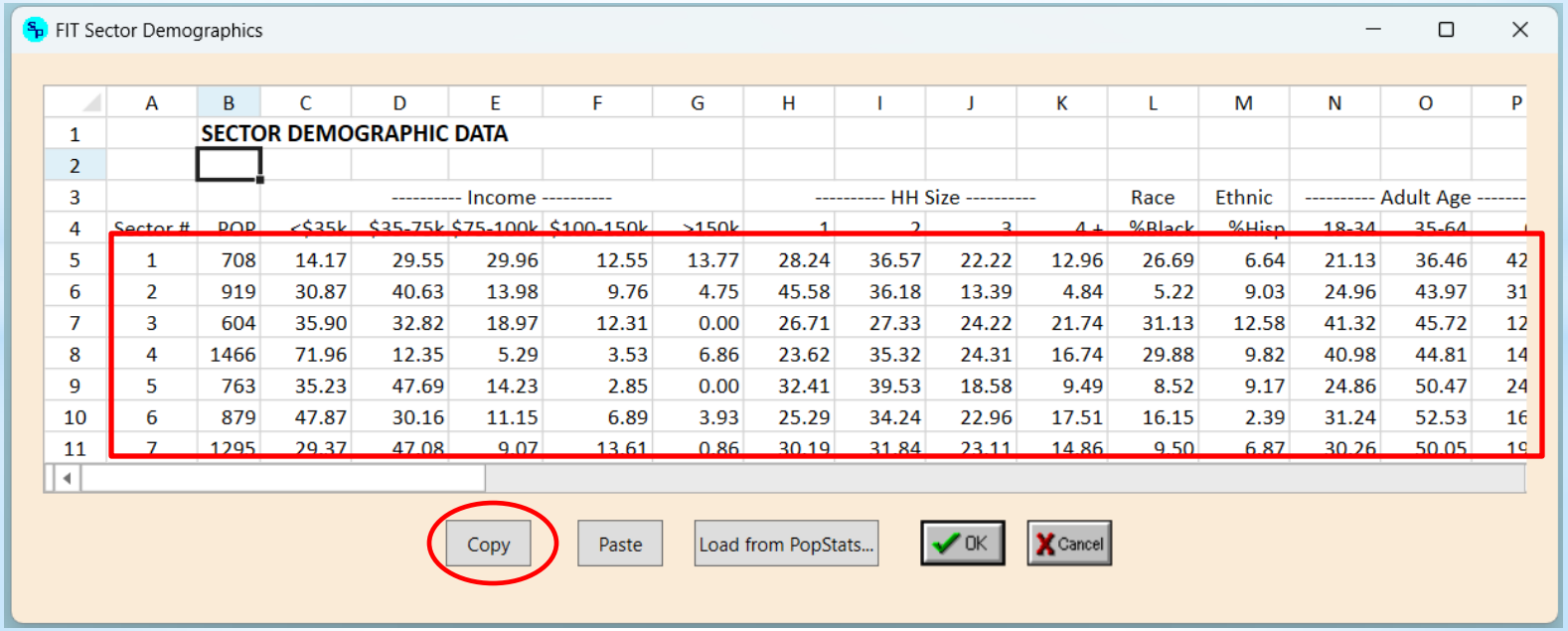
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1		SECTOR DEMOGRAPHIC DATA														
2																
3			---------- Income ----------					---------- HH Size ----------				Race	Ethnic	---------- Adult Age -------		
4	Sector #	POP	<$35k	$35-75k	$75-100k	$100-150k	>150k	1	2	3	4 +	%Black	%Hisp	18-34	35-64	
5	1	708	14.17	29.55	29.96	12.55	13.77	28.24	36.57	22.22	12.96	26.69	6.64	21.13	36.46	42
6	2	919	30.87	40.63	13.98	9.76	4.75	45.58	36.18	13.39	4.84	5.22	9.03	24.96	43.97	31
7	3	604	35.90	32.82	18.97	12.31	0.00	26.71	27.33	24.22	21.74	31.13	12.58	41.32	45.72	12
8	4	1466	71.96	12.35	5.29	3.53	6.86	23.62	35.32	24.31	16.74	29.88	9.82	40.98	44.81	14
9	5	763	35.23	47.69	14.23	2.85	0.00	32.41	39.53	18.58	9.49	8.52	9.17	24.86	50.47	24
10	6	879	47.87	30.16	11.15	6.89	3.93	25.29	34.24	22.96	17.51	16.15	2.39	31.24	52.53	16
11	7	1295	29.37	47.08	9.07	13.61	0.86	30.19	31.84	23.11	14.86	9.50	6.87	30.26	50.05	19

Copy | Paste | Load from PopStats... | OK | Cancel

** FIT is a product of DSR Marketing Systems, Inc. (847) 927-1936*

Using the FIT System

Step-3: Copy the demographics into the clipboard:



Sector #	POP	<$35k	$35-75k	$75-100k	$100-150k	>150k	1	2	3	4 +	%Black	%Hisp	18-34	35-64	
		---------- Income ----------					---------- HH Size ----------				Race	Ethnic	---------- Adult Age -------		
1	708	14.17	29.55	29.96	12.55	13.77	28.24	36.57	22.22	12.96	26.69	6.64	21.13	36.46	42
2	919	30.87	40.63	13.98	9.76	4.75	45.58	36.18	13.39	4.84	5.22	9.03	24.96	43.97	31
3	604	35.90	32.82	18.97	12.31	0.00	26.71	27.33	24.22	21.74	31.13	12.58	41.32	45.72	12
4	1466	71.96	12.35	5.29	3.53	6.86	23.62	35.32	24.31	16.74	29.88	9.82	40.98	44.81	14
5	763	35.23	47.69	14.23	2.85	0.00	32.41	39.53	18.58	9.49	8.52	9.17	24.86	50.47	24
6	879	47.87	30.16	11.15	6.89	3.93	25.29	34.24	22.96	17.51	16.15	2.39	31.24	52.53	16
7	1295	29.37	47.08	9.07	13.61	0.86	30.19	31.84	23.11	14.86	9.50	6.87	30.26	50.05	19

** FIT is a product of DSR Marketing Systems, Inc. (847) 927-1936*

Step-4: Open the FIT program and paste the demographics into place:

SECTOR DEMOGRAPHIC DATA

Area: U.S. Average

		INCOME					HH Size				Race	Ethnic	Adult Age			Education				%
Sector #	POP	<$35k	$35-75	$75-100k	$100-150k	>$150k	1	2	3	4 +	%Black	%Hisp	18-34	35-64	65+	H.S.	Some Coll.	Coll. Grad	Post Grad	Asian
1	708	14	30	30	13	14	28	37	22	13	27	7	21	36	42	39	31	26	4	1
2	919	31	41	14	10	5	46	36	13	5	5	9	25	44	31	45	26	16	14	0
3	604	36	33	19	12	0	27	27	24	22	31	13	41	46	13	59	18	23	0	0
4	1466	72	12	5	4	7	24	35	24	17	30	10	41	45	14	48	27	24	1	2
5	763	35	48	14	3	0	32	40	19	9	9	9	25	50	25	53	19	24	3	0
6	879	48	30	11	7	4	25	34	23	18	16	2	31	53	16	40	31	22	6	0
7	1295	29	47	9	14	1	30	32	23	15	10	7	30	50	20	46	37	12	5	1
8	1508	29	52	14	3	1	37	31	16	17	5	5	31	52	17	51	26	17	6	6
9	1083	47	39	8	6	0	29	30	22	19	12	8	32	50	17	38	27	32	2	0
10	1393	61	26	6	5	2	29	36	20	14	7	7	32	51	16	41	28	31	0	0
11	1515	31	43	19	6	1	28	34	23	14	6	5	30	51	19	47	25	27	1	0
12	961	50	40	3	6	1	34	34	21	11	3	8	33	50	17	59	27	14	0	0
13	898	68	20	4	7	1	30	29	22	19	7	4	33	52	15	62	22	16	0	0
14	1301	40	29	13	17	0	27	31	23	19	3	4	32	54	15	35	39	26	0	0
15	489	87	7	2	0	3	37	36	17	10	4	4	29	47	24	49	36	12	3	0
16	952	71	26	2	0	0	48	24	13	15	12	3	29	54	17	52	28	17	2	0

The “Sectors” sheet is sheet-3.

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Using the FIT System

Step-5: Press the [F9] key to perform the FIT calculations, then copy the resulting FIT factors from sheet-4.

Vers. 11	FIT OF FORMATS BY SECTOR											
T.A. FIT ->	101	101	101	101	101	101	101	101	101	101	101	101
Formats->	Conventional	Discount	Hispanic	Save-A-Lot	Natural/Organic	Quality/Service	Supercenter	Warehouse	Club	Tr. Joe's	Whole Fds	Sprouts
Sectors	1	2	3	4	5	6	7	8	9	10	11	12
1	109	105	47	94	55	90	102	96	82	58	48	63
2	100	111	55	103	47	79	93	96	58	53	42	54
3	84	129	77	133	46	63	113	125	70	51	40	46
4	85	129	67	129	49	65	112	119	66	56	44	49
5	106	102	51	91	65	103	106	95	89	67	61	70
6	95	116	62	113	57	81	109	110	78	65	54	61
7	103	107	54	97	61	91	112	100	85	67	57	67
8	103	106	55	96	61	94	109	99	86	65	57	67
9	102	106	56	97	64	93	113	102	90	69	60	69
10	106	98	49	87	69	104	111	93	92	74	66	77
11	106	101	51	92	65	97	108	96	90	71	62	73
12	100	109	56	100	54	86	112	101	76	60	50	61
13	100	105	57	99	66	90	107	101	84	75	65	71
14	95	110	67	107	52	79	113	108	76	62	50	61
15	104	97	49	88	67	94	94	87	70	75	65	72
16	95	112	60	107	49	74	100	100	60	58	45	56
0	103	109	51	97	42	75	72	85	42	48	37	49
0	92	121	66	114	40	67	90	103	46	48	36	44
0	98	110	59	104	55	80	106	103	71	65	53	62
0	104	107	56	99	60	97	105	100	83	66	57	66
0	109	101	48	90	59	95	99	91	77	64	55	68
0	101	110	61	103	55	87	108	105	77	62	52	61
0	120	81	36	70	92	130	92	77	106	95	92	102
0	103	101	53	94	61	91	99	93	74	70	59	69
0	113	94	44	82	73	116	102	87	99	75	71	82
0	116	89	41	76	76	115	96	82	95	79	73	87
0	114	92	41	78	74	108	97	83	89	76	70	82
0	95	109	64	105	50	76	108	104	69	59	47	58
0	103	106	51	95	65	92	104	97	81	69	61	68
0	132	74	26	56	110	157	87	65	118	105	110	119
0	112	99	45	86	55	97	86	84	65	58	50	64
0	112	99	45	87	58	98	89	85	68	62	53	66
0	123	79	34	66	112	143	96	76	127	116	117	118
0	115	92	41	80	74	117	101	85	96	77	71	84
0	117	90	40	78	79	120	102	85	108	83	78	90
0	115	90	42	78	87	126	109	87	115	92	88	95
0	122	86	38	74	84	129	91	80	100	87	83	92

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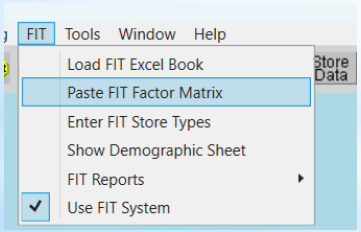
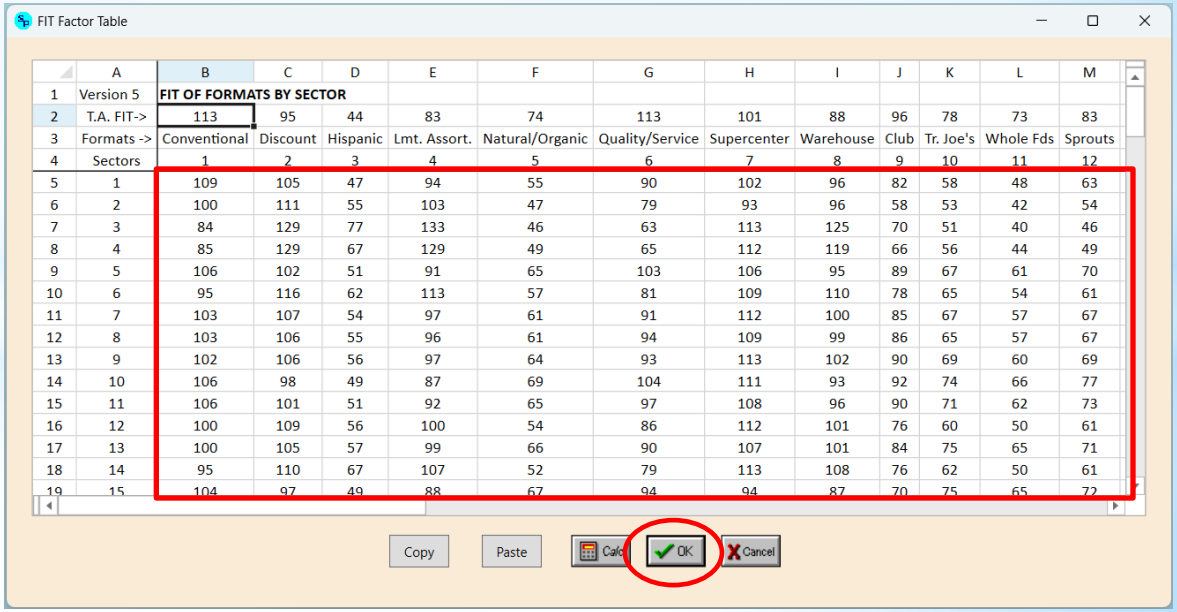
Using the FIT System

Step-6: In SITESPLUS, paste the copied FIT factors into place:





	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Version 5	FIT OF FORMATS BY SECTOR											
2	T.A. FIT->	113	95	44	83	74	113	101	88	96	78	73	83
3	Formats ->	Conventional	Discount	Hispanic	Lmt. Assort.	Natural/Organic	Quality/Service	Supercenter	Warehouse	Club	Tr. Joe's	Whole Fds	Sprouts
4	Sectors	1	2	3	4	5	6	7	8	9	10	11	12
5	1	109	105	47	94	55	90	102	96	82	58	48	63
6	2	100	111	55	103	47	79	93	96	58	53	42	54
7	3	84	129	77	133	46	63	113	125	70	51	40	46
8	4	85	129	67	129	49	65	112	119	66	56	44	49
9	5	106	102	51	91	65	103	106	95	89	67	61	70
10	6	95	116	62	113	57	81	109	110	78	65	54	61
11	7	103	107	54	97	61	91	112	100	85	67	57	67
12	8	103	106	55	96	61	94	109	99	86	65	57	67
13	9	102	106	56	97	64	93	113	102	90	69	60	69
14	10	106	98	49	87	69	104	111	93	92	74	66	77
15	11	106	101	51	92	65	97	108	96	90	71	62	73
16	12	100	109	56	100	54	86	112	101	76	60	50	61
17	13	100	105	57	99	66	90	107	101	84	75	65	71
18	14	95	110	67	107	52	79	113	108	76	62	50	61
19	15	104	97	49	88	67	94	94	87	70	75	65	72

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Using the FIT System

From this point onward, all calculations are handled automatically.

DO NOT use Manual Powers now.

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Using the FIT System

Example: Store-1 is an Hispanic Format

Sector	Conventional FIT	Hispanic FIT	Conv. MS	Hispanic. MS
1	113	97	17.4	16.0
2	100	100	9.7	9.7
3	85	120	4.2	8.8
4	109	85	15.8	10.2
5	78	135	23.6	35.0

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Rebuilding Stores and Secondary Sales

All Stores in the Balanced Model Have Primary and Secondary Sales

Primary Sales: Inside the Trade Area, Part of the TA Potential

Secondary Sales: Outside the Trade Area, Not Part of the TA Potential

Example: Store-1 has Sales of $400,000 and PWTA = 75:

Primary Sales = $300,000

Secondary Sales = $100,000

For Existing Stores: Secondary Sales Are NOT Impacted by Projection Changes

Rebuilding Stores and Secondary Sales

Example: A Projection Model

A new site is added and hits our Store-1 (existing) hard.

Store-1 experiences a loss of $40,000.

Primary Sales = $300,000 - $40,000 = $260,000

Secondary Sales = $100,000

New Total Sales = $360,000

For Existing Stores: Secondary Sales Are NOT Impacted by Projection Changes

Rebuilding Stores and Secondary Sales

Example: A Different Projection Model

Store Name	Map Key	Sales Area	Current Sales	'Feb 18 Sales	Sales /Sq.Ft.	PWTA	Effec. Power	T.A. Change	T.A. Change %
Billy's	1	115,000	650,000	508,182	4.42	80	11	-141,818	-27.27
Wholesale Club	2	115,000	1,100,000	857,178	7.45	87	12	-242,822	-25.37
SITE	100	40,000	0	1,536,669	38.42	80	130	1,229,335	N/A
Totals		**270,000**	**1,750,000**	**2,902,029**				**844,695**	
Averages		**90,000**	**583,333**	**967,343**	**10.75**		**51**		

Store-1 Sales Breakdown:

Existing Store

	Sales	PWTA	Change	Primary	Secondary
Balance	650,000	80	0	520,000	130,000
Projection	508,182	80	-141,818	378,182	130,000

Rebuilding Stores and Secondary Sales

Example: A Different Projection Model

Store Name	Map Key	Sales Area	Current Sales	'Feb 18 Sales	Sales /Sq.Ft.	PWTA	Effec. Power	T.A. Change	T.A. Change %
Billy's	1	115,000	650,000	508,182	4.42	80	11	-141,818	-27.27
Wholesale Club	2	115,000	1,100,000	857,178	7.45	87	12	-242,822	-25.37
SITE	100	40,000	0	1,536,669	38.42	80	130	1,229,335	N/A
Totals		**270,000**	**1,750,000**	**2,902,029**				**844,695**	
Averages		**90,000**	**583,333**	**967,343**	**10.75**		**51**		

Store-2 Sales Breakdown:

Existing Store

	Sales	PWTA	Change	Primary	Secondary
Balance	1,100,000	87	0	957,000	143,000
Projection	857,178	87	-242,822	714,178	143,000

Rebuilding Stores and Secondary Sales

Example: A Different Projection Model

Store Name	Map Key	Sales Area	Current Sales	'Feb 18 Sales	Sales /Sq.Ft.	PWTA	Effec. Power	T.A. Change	T.A. Change %
Billy's	1	115,000	650,000	508,182	4.42	80	11	-141,818	-27.27
Wholesale Club	2	115,000	1,100,000	857,178	7.45	87	12	-242,822	-25.37
SITE	100	40,000	0	1,536,669	38.42	80	130	1,229,335	N/A
Totals		**270,000**	**1,750,000**	**2,902,029**				**844,695**	
Averages		**90,000**	**583,333**	**967,343**	**10.75**		**51**		

SITE 100 Sales Breakdown:

New Store (no existing sales)

	Sales	PWTA	Change	Primary	Secondary
Balance	N/A	N/A	N/A	N/A	N/A
Projection	1,536,669	80	N/A	1,229,335	307,334

SITE 100 Secondary Sales Are NOT Frozen

Rebuilding Stores and Secondary Sales

Example: A Different Projection Model

Store Name	Map Key	Sales Area	Current Sales	'Feb 18 Sales	Sales /Sq.Ft.	PWTA	Effec. Power	T.A. Change	T.A. Change %
SITE	1	Closed	650,000	N/A	N/A	80	11	-520,000	-100.00
SITE	1.1	123,000	0	3,700,529	30.09	75	120	2,775,397	N/A
Wholesale Club	2	115,000	1,100,000	572,859	4.98	87	12	-527,141	-55.08
Save a Bunch	10	9,000	250,000	125,574	13.95	84	198	-124,426	-59.25
Totals		**247,000**	**2,000,000**	**4,398,962**				**1,603,829**	
Averages		**82,333**	**500,000**	**1,466,321**	**17.81**		**110**		

SITE 1 Rebuild:

Existing Store (but will be a new Store 1.1)

	Sales	PWTA	Change	Primary	Secondary
~~SITE 1~~	650,000	80	0	520,000	130,000
Rebuild 1.1	3,700,529	75	N/A	2,775,397	925,132

Frozen

Not Frozen

Rebuilding Stores and Secondary Sales

So, Why Do We Freeze Secondary Sales?

Projection Example Where Secondary Sales is Not Frozen

(This is an option in the Forecasting Settings)

	Sales	PWTA	Primary	Sec. Loss	New Sales
Store-5	1,100,000	80	-50,000	-12,500	1,037,500
Store-6	350,000	60	-50,000	-33,333	267,667
Store-7	675,000	10	-50,000	-450,000	175,000

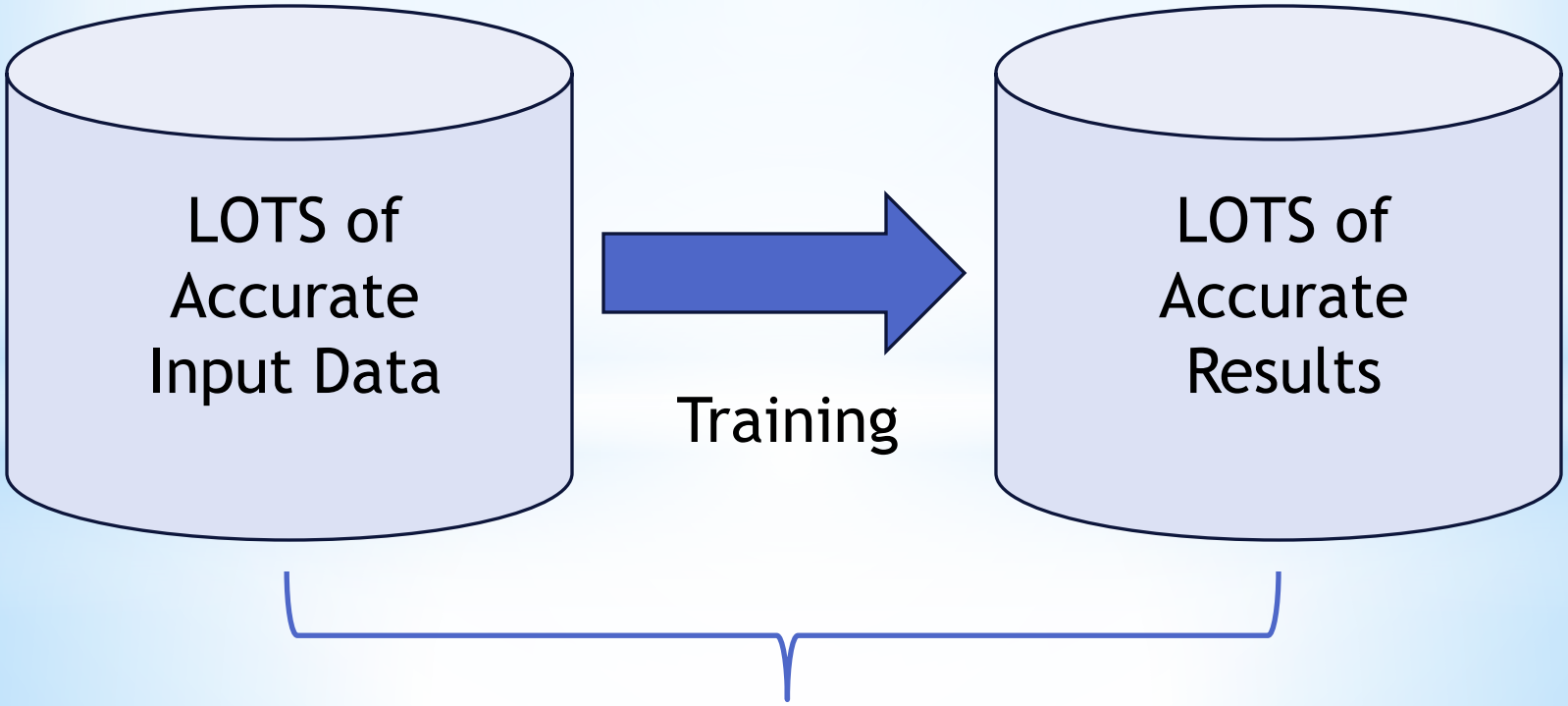
Total Secondary Losses: 495,833

The SITE did not get those sales.

Nobody got those sales!

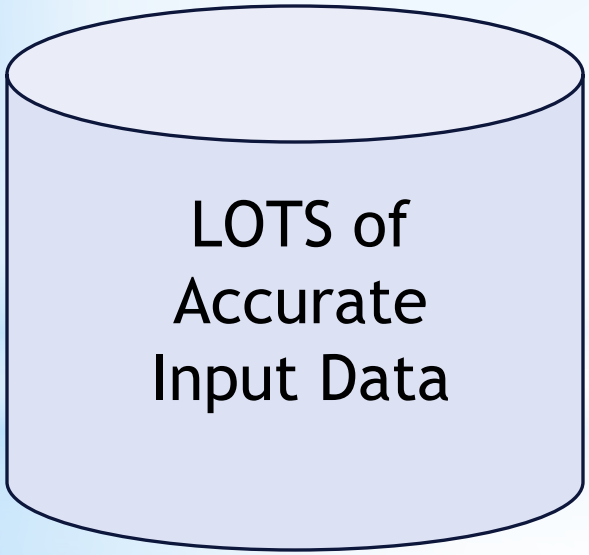
Using AI in Grocery Sales Forecasting

How Does AI Work?



Result: AI Predictive Model

Using AI in Grocery Sales Forecasting



Store Sales and Market Shares

Store Sizes

Store Formats

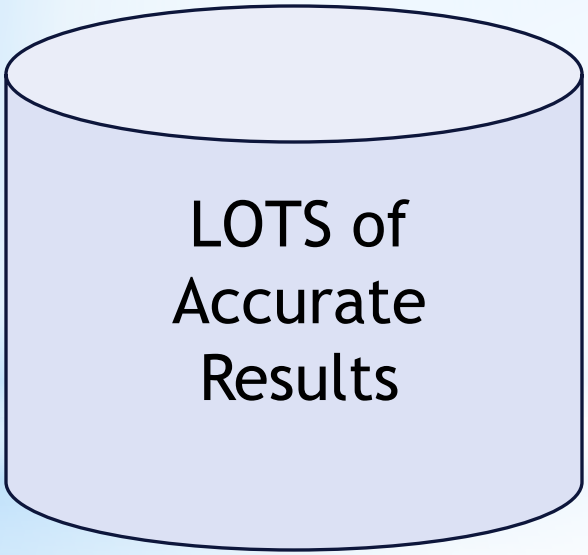
Population Counts

Demographics

PCW Values

We can get a LOT of this.

Using AI in Grocery Sales Forecasting



New Store Actual Sales

New Store Actual MS

Existing Store Impacts

We don't have anywhere near enough of this data.

Using AI in Grocery Sales Forecasting

How Much Result Data Do We Need to Train an AI Model?

Let's Assume 100 Results for Each Condition:

16 Store Formats

competing with

15 Different Store Formats

assume only

12 Different Demographic Groups

That's 16 X 15 X 12 X 100 = 288,000 Accurate Forecasts

Using AI in Grocery Sales Forecasting

Here's What We Can Do With AI:

Help to Estimate Competitive Store Sales

Define Trade Areas

Calculate PCW Values

Estimate Store PWTAs

Estimate Store Curves

Do Pre-Balance Calculations

Comparison of New Site Sales (analogs)

In other words, add AI to the process pipeline.

SITESPLUS Advanced Topics