

Evaluation of Market Size



Russell Tronstad, Ph.D.
Professor and Extension Specialist
University of Arizona



Overview

- Consumption considerations
- Calculating market size
- Price elasticity
- Demographic factors
- Destination consumers



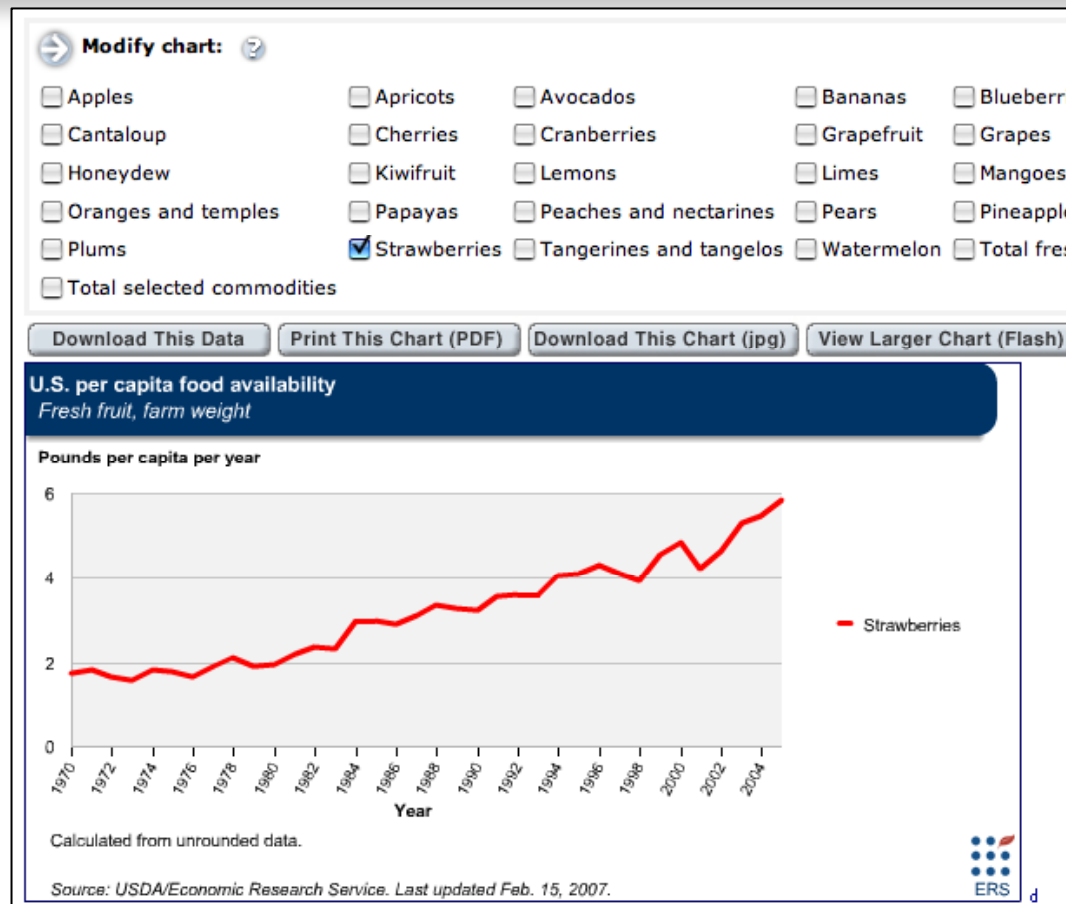
Consumption Considerations

- One of the most important factors in evaluating the economic viability of a niche market is market size
 - Too small: not enough sales to cover startup, capital, and operating costs
 - Too large: not a niche market, direct competition from commodity markets will likely prevail
- Examining current and historical consumption patterns can be helpful
- Average annual consumption levels for hundreds of foods in the US can be found on USDA's Economic Research Service (USDA-ERS) website



Consumption Data from ERS

- At right is an example of consumption data for “fresh fruit by farm weight” for strawberries
- <http://www.ers.usda.gov/Data/FoodConsumption/>



Estimating Market Size

- Consider the example of a strawberry producer thinking about turning 3 acres of his operation into a U-pick field
- Estimates that each acre will yield 10,000 berries
- ERS data shows that for the most recent year, the average annual consumption of strawberries per person was 6 pounds
- Can use the following equation to determine the appropriate market size:

$$\frac{(\text{Acres in operation}) * (\text{Output per acre})}{(\text{Average consumption per person/year}) / (52 \text{ weeks/year})} = \text{Market size required}$$

- This means the producer will need a market size of 260,000 consumers to make the project economically viable



Using Estimated Market Size

- When performing this calculation, consider that the product may be sold at a discount (relative to supermarket price level)
 - Therefore consumers might buy more than their average consumption levels
 - Selling at a discount allows consumers to purchase more of the product for the same amount of money
- Imperative to consider whether or not enough consumers can be found to meet the market size requirement
- Also important to note that ERS data is for standard, conventional products
 - Market for a differentiated product will likely be different



Price Elasticity

- USDA-ERS has a website where elasticity estimates in the literature can be obtained through customized pull-down menus
- The average own-price elasticity estimate of strawberries in the literature is $-.928$.
- Indicates that U.S. consumers may not be very responsive to bargain strawberry prices
 - Each 1% drop in price would increase purchases by 0.9% or less than 1%.
 - For example, if consumers purchase 10 pounds of strawberries for \$1 per pound, decreasing the price to \$0.99 per pound (a discount of 1%) would result in purchases of 10.09 pounds
 - Increase of less than 1% of a pound, revenue obtained from the discounted price would be only \$9.99,
 - compared to the full \$10 in revenue that would be collected with the initial price of \$1 per pound
 - Other attractions, activities, and information may be needed to persuade consumers to purchase more strawberries at the U-pick operation in this example.



Price Elasticity, cont.

- Price elasticities can be found at at <http://www.ers.usda.gov/Data/Elasticities/>
- Figure at right shows the menu for elasticities
- A primary goal of niche marketing is trying to make demand more inelastic
 - Less sensitive to price, meaning consumers will buy the same amount regardless of price

Commodity and Food Elasticities: Demand Elasticities from Literature

Overview and Start

For the demand studies included in this database, information is provided on authors, full citation, source table title, publication date, data period, model type, demand type, and demand properties. Studies included are from working papers, dissertations, and peer-reviewed journals and as presented at professional conferences in the United States. For a complete list of studies in the database, see the [Citation List](#).

Note: This application functions best in Internet Explorer (version 6.0 or later).

Make your Selections

step 1 Choose country or commodity

Country

United States

Commodity

Strawberry

Tip: After initially choosing country or commodity, the database will dynamically generate a corresponding list of available commodities or countries. Choose a commodity or country from the newly generated list.

step 2 Choose cross commodity

Cross Commodity

Apple
Banana
Cherry
Cherry sweet
Citrus
Grape
Grapefruit

Tip: To select more than one commodity, hold down the [Ctrl] key and click on multiple commodities. To select a block of consecutive commodities, hold down the [Shift] key while you click. If the box remains blank, no cross-price elasticities are available for the country-commodity combination you have chosen.

Submit

Reset



Demographic Factors

- Consumer demographics are a crucial component of market size
- If planning to sell items directly from your farm or ranch, consider how far you can expect customers to travel
- The USDA Forest Service's National Survey on Recreation and the Environment found the average distance U.S. individuals drove to visit a farm in 2000 was 80 miles
 - But this also included family members visiting farms that were in their family from several hundred miles away
 - Most paying consumers will be drawn within a 50 miles radius unless no other farm visiting alternatives are available to them
- Some areas in the West find the majority of their consumers traveling over 75 miles to participate in U-picks, farm festivals, and related farm activities
 - Because no other closer alternatives exist for their metro area



Demographic Factors, cont.


- Demographic characteristics a key aspect in assessing a niche market
- In the U-pick strawberry example, the producer may be interested in targeting families
 - Would be helpful to know if the farm area has families enough to make up a generous portion of the 260,000 consumers needed to make the U-pick operation feasible
- Demographics from the most recent U.S. Census can be searched online by state and by zip code
 - Ages of people in the area, household and family size, income, ethnicity, etc.
 - All of which can provide information as to the characteristics of potential customers in the local and surrounding area



U.S. Fact Finder at census.gov

- <http://factfinder.census.gov/home/saff/main.html>
- Info for Window Rock, AZ (zip code 86505)
- Can click on the “maps” to see this information shown on a map (next slide)

FACT SHEET



[United States](#) | 86505

Zip Code Tabulation Area 86505

city/ town, county, or zip
86505

state
Arizona

GO

[search by address »](#)

Census 2000 Demographic Profile Highlights: [Reference Map](#)

General Characteristics - [show more >>](#)

	Number	Percent	U.S.		
Total population	9,508			map	brief
Male	4,728	49.7	49.1%	map	brief
Female	4,780	50.3	50.9%	map	brief
Median age (years)	25.8	(X)	35.3	map	brief
Under 5 years	871	9.2	6.8%	map	
18 years and over	5,731	60.3	74.3%		
65 years and over	794	8.4	12.4%	map	brief
One race	9,471	99.6	97.6%		
White	284	3.0	75.1%	map	brief
Black or African American	4	0.0	12.3%	map	brief
American Indian and Alaska Native	9,146	96.2	0.9%	map	brief
Asian	4	0.0	3.6%	map	brief
Native Hawaiian and Other Pacific Islander	1	0.0	0.1%	map	brief
Some other race	32	0.3	5.5%	map	
Two or more races	37	0.4	2.4%	map	brief
Hispanic or Latino (of any race)	99	1.0	12.5%	map	brief
Household population	9,343	98.3	97.2%	map	brief
Group quarters population	165	1.7	2.8%	map	
Average household size	3.60	(X)	2.59	map	brief
Average family size	4.30	(X)	3.14	map	
Total housing units	4,162			map	
Occupied housing units	2,598	62.4	91.0%		brief
Owner-occupied housing units	1,991	76.6	66.2%	map	
Renter-occupied housing units	607	23.4	33.8%	map	brief
Vacant housing units	1,564	37.6	9.0%	map	

U.S. Fact Finder Maps

- Clicking on "maps" on the previous screen:

Change...

- Data Classes
- Boundaries and features

Reposition on...

- A street address or ZIP code
- A latitude and longitude
- The selected geography

[Quick tips](#)

Legend

Data Classes

Persons

664 - 865
1275 - 2083
2350 - 3453
4130 - 5256
9146 - 10745

Features

- Major Road
- Street
- Stream/Waterbody
- Stream/Waterbody

Items in gray text are not visible at this zoom level

TM-P001C. Persons Who are American Indian and Alaska Native Alone: 2000 ?

Universe: Total population
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data
865 3-Digit ZCTA by 5-Digit ZIP Code Tabulation Area

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf1u.htm>.

Identify - geo name and data value

Click map to: 65 miles across

Zoom: U.S. Street

Display map by: 5-Digit ZIP Code Tabulation Area

Approx. 65 miles across.

Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrix P7.

Change...

- Data Classes
- Boundaries and features

Reposition on...

- A street address or ZIP code
- A latitude and longitude
- The selected geography

[Quick tips](#)

Legend

Data Classes

Persons

0 - 0
1 - 2
4 - 7
9 - 10
13 - 13

Features

- Major Road
- Street
- Stream/Waterbody
- Stream/Waterbody

Items in gray text are not visible at this zoom level

TM-P001B. Persons Who are Black or African American Alone: 2000 ?

Universe: Total population
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data
865 3-Digit ZCTA by 5-Digit ZIP Code Tabulation Area

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see <http://factfinder.census.gov/home/en/datanotes/expsf1u.htm>.

Identify - geo name and data value

Click map to: 65 miles across

Zoom: U.S. S

Display map by: 5-Digit ZIP Code Tabulation Area

Approx. 65 miles across.

Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrix P7.

Destination Consumers

- For rural areas, local consumer base may not be large enough to support the needed sales
- However, many rural areas in the West are located between a major urban center and a national or state park
 - Vacation destinations for many foreign and out-of-state visitors
- Estimating the potential size of these markets requires information on:
 - Where visitors are coming from
 - Where visitors are returning to



Destination Consumers: Grand Canyon National Park Example

- Consider Grand Canyon National Park (GCNP)
 - Attracts around 4.4 million visitors annually
- Seasonal visitation is another important item to consider:
 - Cothran et al. (2005) report that annual visits to the GCNP by season for 2004 were
 - Winter: 11% of total visits
 - Spring: 27% of total visits
 - Summer: 39% of total visits
 - Fall: 23% of total visits



Grand Canyon National Park Example

- This table shows where visitors to Grand Canyon National Park stayed before and after visiting the park in 2004

Destination	Before	After	Destination	Before	After
Flagstaff, AZ	17.5%	10.6%	St. George, UT	1.5%	1.4%
Williams, AZ	12.6%	7.3%	Scottsdale, AZ	1.4%	1.5%
Las Vegas, NV	9.4%	12.7%	Zion National Park, UT	1.4%	1.7%
Sedona, AZ	6.0%	6.7%	Jacob Lake, AZ	1.4%	<1%
Phoenix, AZ	5.3%	8.0%	Kingman, AZ	1.3%	2.1%
Tusayan, AZ	4.3%	2.4%	Tucson, AZ	1.2%	<1%
Page, AZ	3.4%	4.0%	Holbrook, AZ	1.1%	1.1%
Kanab, UT	1.9%	1.4%	Albuquerque, NM	1.0%	1.2%
Bryce Canyon National Park, UT	1.7%	2.1%	Cameron, AZ	1.0%	<1%

Data from Cothran, C.C., T. F. Combrink, and M. Bradford (2005). "Grand Canyon National Park Northern Arizona Tourism Study."



Grand Canyon National Park Example

- Consider a business located between Page, AZ and GCNP
 - 3.4% of visitors stayed in Page prior to visiting GCNP
 - 4.0% of visitors stayed in Page after visiting GCNP
- The average number of visitors who would pass by this business location can be found with the following equation:

$$\frac{(\text{Total annual visitors}) * (\text{Average percentage of visitors})}{12} = \text{Average monthly visits}$$

$$\frac{(4.4 \text{ million visitors}) * (.034 + .040 / 2)}{12} = 13,567 \text{ visitors}$$

- The number of GCNP visitors that would pass by the business location each month would average 13,567
 - With a low of around 5,970 visitors during the winter months (11% of total)
 - And a high of 21,164 during the summer months (39% of total)



Grand Canyon National Park Example

- Imagine that this business in Page, AZ is an agritourism venture
 - Assume venture needs to earn an average of \$10,000 in sales each month to be viable
 - Expects average visitor purchases of \$25/person
- Can calculate the percentage of total visitors to GCNP the venture needs to attract to be viable:

$$\frac{\text{Monthly sales needed/Expected sales per visitor}}{\text{Estimated monthly visitors}} = \text{Percentage of total visitors needed}$$

$$\frac{\$10,000/\$25}{13,567} = 2.9\%$$



Grand Canyon National Park Example

- The venture would need to attract 2.9%, on average, of the monthly GCNP visitors
 - 6.7% of winter visits
 - 1.9% of summer visits
- This is a fairly high percentage of total visits
- For the business plan to work, the venture may try
 - Starting the venture on a smaller scale
 - Attracting more of the heavy summer traffic



Agritourism

- The USDA Forest Service's National Survey on Recreation and the Environment found that 62 million Americans visited farms one or more times in 2000
 - Almost 30% of the population
 - Study also found agritourists were spending an average of \$45 per person during each farm visit
 - Number one reason given for their trip to the farm was to enjoy the rural scenery
 - Other studies have found that the number one reason for visiting farm outlets was the farm or rural experience
- As an industry, agritourism has been growing at a rate of around 6% annually in North America
- Tourism tends to be relatively more important for rural and urban counties in the West (relative to other regions of the U.S.)
 - In Arizona it accounts for 7% to 17% of the employment in rural counties
 - But only 5.3% of total employment for the state as a whole



Conclusion

- Evaluating the market size of a niche agricultural product and/or farm experience is fundamental to the financial success and growth of the business
 - If market size is too small → it will be unable to cover costs investments, and will not be economically viable
 - If market size is too large → will likely meet competition from other competitors
 - Unless the product is differentiated or truly targeted at a niche market segment
- Starting relatively small with new products and variations in products can be a good way to test the waters and verify consumer response and feedback



Conclusion, cont.

- Finding products and activities that compliment each other is often key to identifying a successful market niche
 - For example, home cooked “apple burgers” are not likely to be a successful draw by themselves
 - But, combined with a U-pick experience and festival atmosphere filled with fun family activities...
 - farm experience may provide an edge over alternatives such as the zoo, a national monument, or a museum.
- Determine whether the market base will be primarily made of local or destination consumers
 - If market is destination customers, activities will need to cater to shorter time periods
 - Unless overnight lodging facilities are nearby



More Information

- USDA's Economic Research Service (USDA-ERS) is a source of economic information for the USDA in the areas of food economics, information services, market and trade economics, and resource and rural economics. ERS and the majority of its services can be found online at <http://www.ers.usda.gov/>
 - Data on average annual consumption levels for hundreds of foods in the United States can be found online at <http://www.ers.usda.gov/Data/FoodConsumption/>
 - Price elasticities for hundreds of food products can be accessed from ERS at <http://www.ers.usda.gov/Data/Elasticities/>
- The U.S. Census Bureau data related to population estimates, demographic factors, income, economic indicators, and more can be found online at <http://www.census.gov/>
 - To find a demographic fact sheet on a specific zip code or a given state, the American Fact Finder can be accessed online at <http://factfinder.census.gov/home/saff/main.html>



Thank you!

