The Importance of Sample Source in Making Nutrient Comparisons of Foods

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Background

• FDA, USDA, EPA Databases
  – 1st Milk
  – Potato
  – Produce Fresh
  – Snack foods
  – Confections
  – Frozen Produce
  – Chocolate

• Germany, UK, Egypt, Kenya, Mexico
Creating a Database

Three Main Steps

1. Sample Collection
2. Chemistry – Methodology
3. Math to Summarize Data
Sampling

• Plays a critical role in a valid food composition study, yet it is often the least documented and most problematic phase
Why Sampling?

• Comparative Claims Substantiation
  – Fresh vs. Frozen
  – In-Home vs. Fast Food
  – School Lunch
  – Organic
  – GMO requirements

• Trend analysis
  – Then vs. now
Creating a Database

Variables

- Seasonal
- Regional
- Varietal
- Shelf life
- Processing
- Handling
- Distribution
- Market share
How to determine Variables

• Modeling a seasonal time table
  – Start Date or Harvest Date

• By region

• By variety

• Standardization practices
Harvest Date

• Region
  – Avocado by county
    • San Diego to Ventura
  – Kiwifruit by country
    • Eleven countries
Harvest Date

• Standardization
  – Nuts - moisture
  – Avocados – moisture / fat
  – Kiwi – brix
  – Orange – sugar
  – Strawberry - brix
Sampling Design

Pre-sampling Surveys:

• When is the product available?
• Where is it available?
• What is the best point of sampling?
• How should it be handled to minimize nutrient losses?
Complete Harvest Timeline

• Follow through Mid season to End season
• Nutrient by nutrient
  – Potato example
  – Vitamin C peaks early season
  – B6 peaks in storage
Sampling Design

• Point of Sampling:
  • Market-basket
  • Production line
  • Warehouse
Removal of Outliers

• Never remove outliers when
  They are representative of a large variation

They are almost always representative of a large variation

If you cannot say why it is an error keep it.
Comparative Claims

• Missing detail in sampling
  – 2 days a year
  – representative of what
  – market basket

• Unreported origin

• Unreported Methodology

Results – No basis for Comparison
Set Regulatory Standards

• Comparative Claims

• FTC side by side comparison requirements

• Database not adequate for comparisons
Science is such a wonderful thing.

Nowhere else can you get such wholesale conjecture from such a trifling investment of fact.

Mark Twain