

MindGenomics and Horizontal Segmentation

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and
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MindGenomics in the NutShell

Compile-time effort:
e.g., Bringing people to a restaurant

MindGenomics in the NutShell

4. Generation of a Marketing Slogan
3. Analysis
2. Market Polling
1. Building the MicroScience

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7. Profit Analysis
6. Targeted Action
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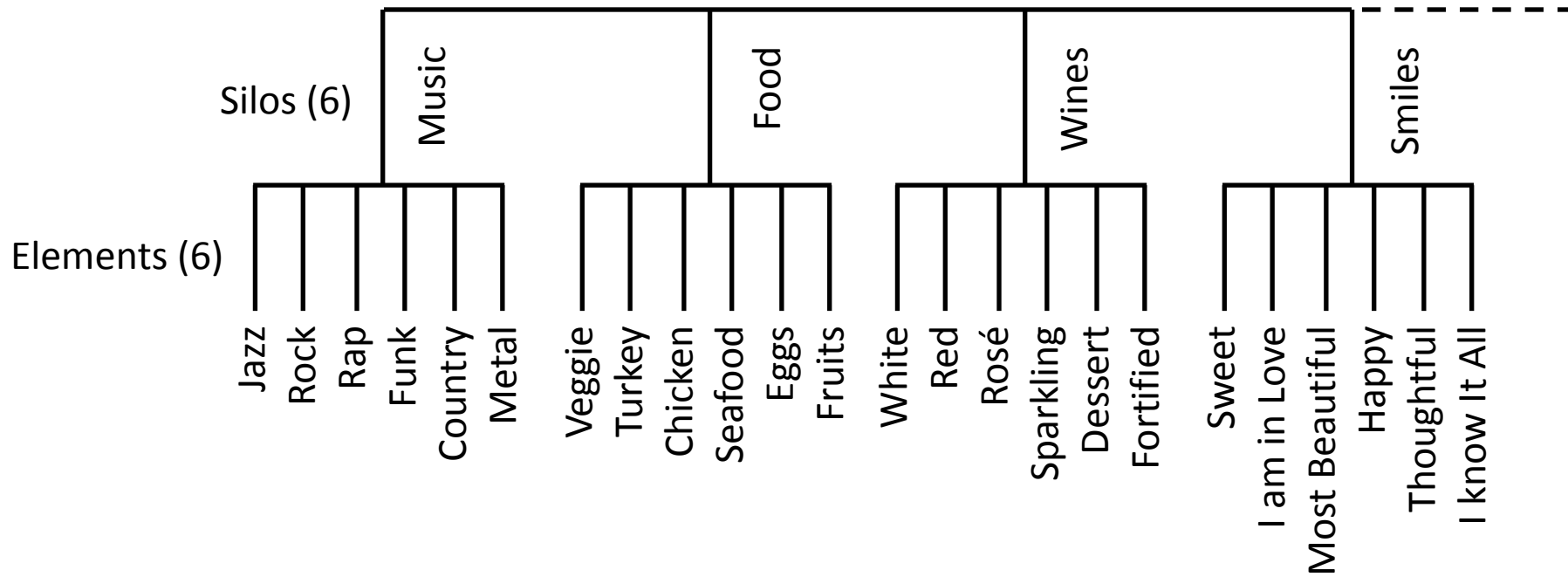


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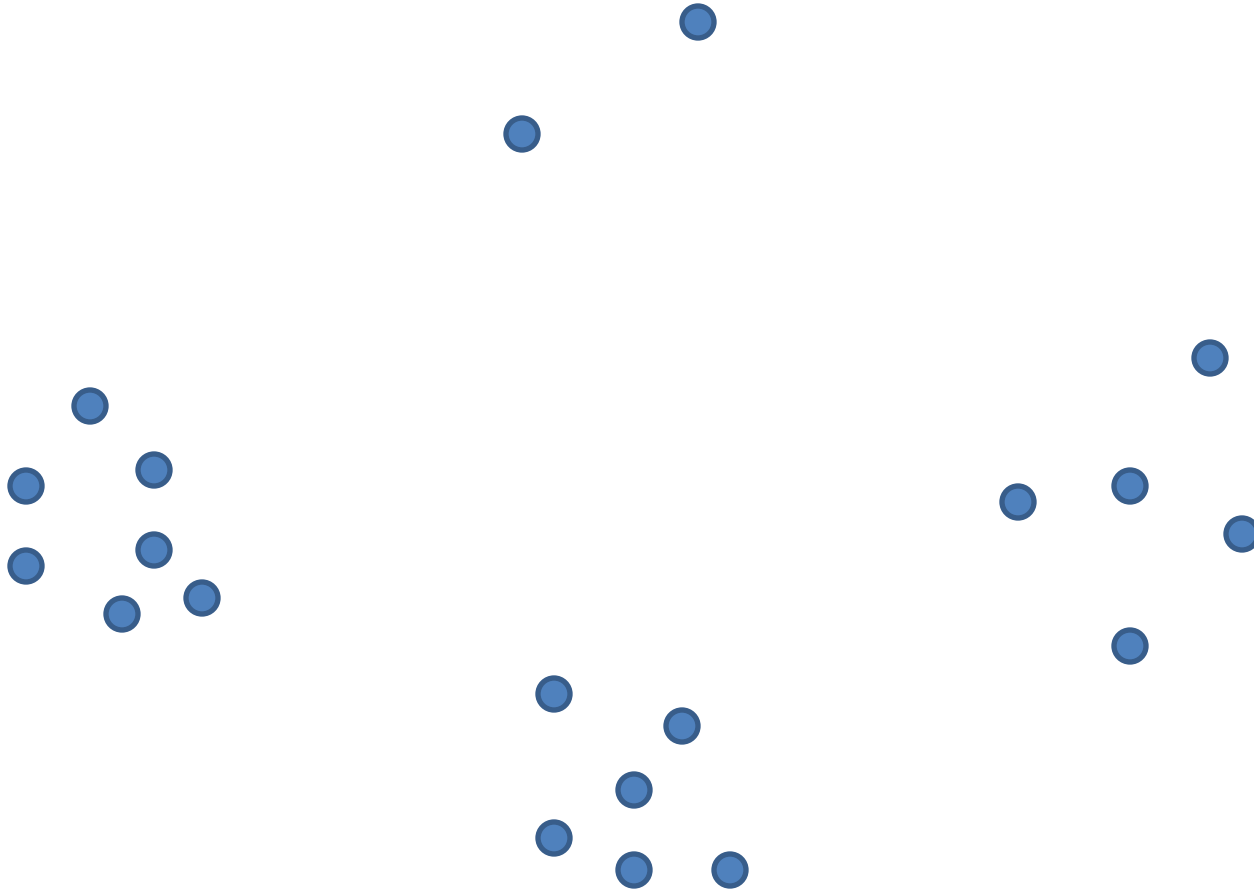
1. Building the MicroScience



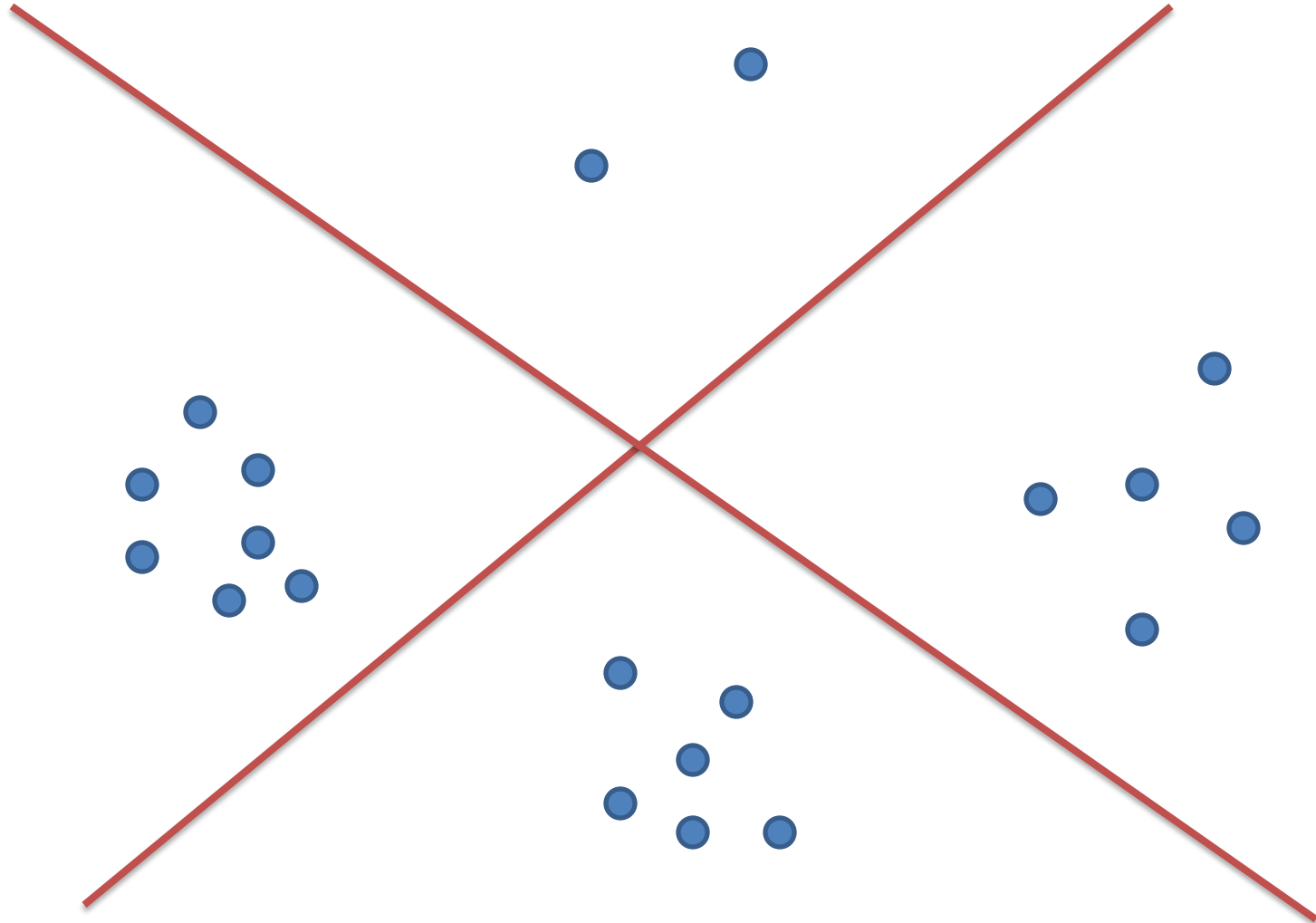
2. Market Polling

- a. Internet: \$2 -> \$5
- b. NanoEconomy: Prelec Helmet
- c. Text/MediaMining: Future!

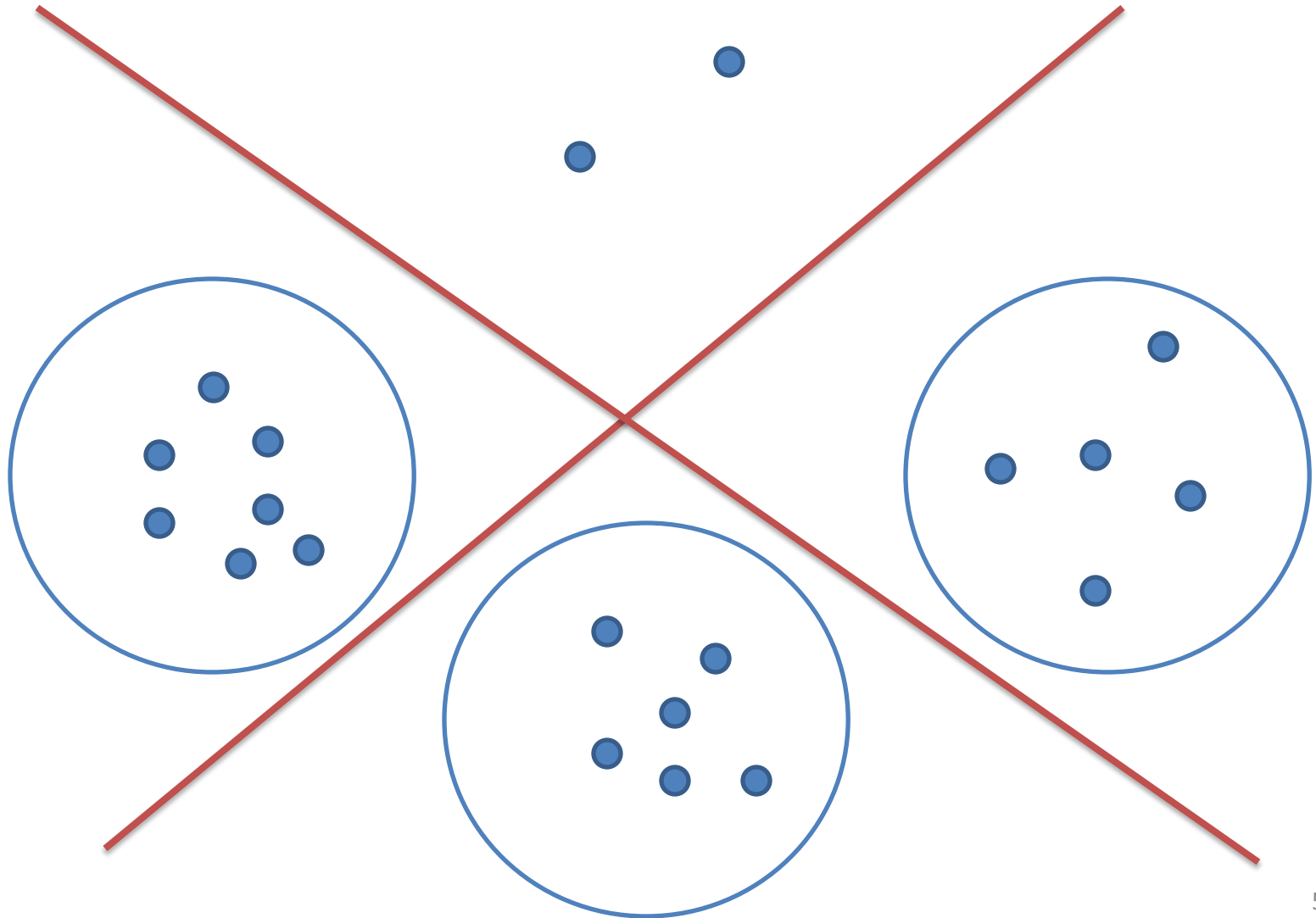
3. Analysis: Regression



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3. Analysis: Regression



4. Slogans



4. Slogans

Slogan #1

Blackened
Louisiana
Shrimps

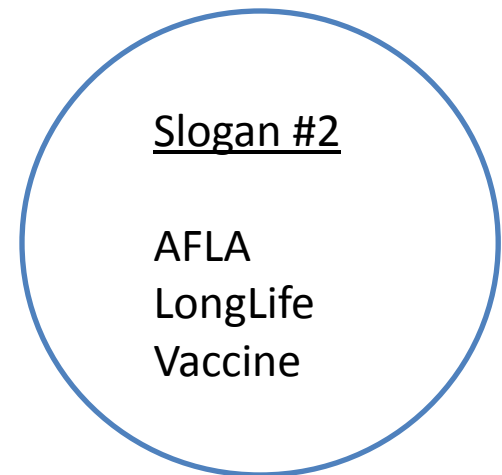
Slogan #2

AFLA
LongLife
Vaccine

Slogan #3

Special
Music
Wish

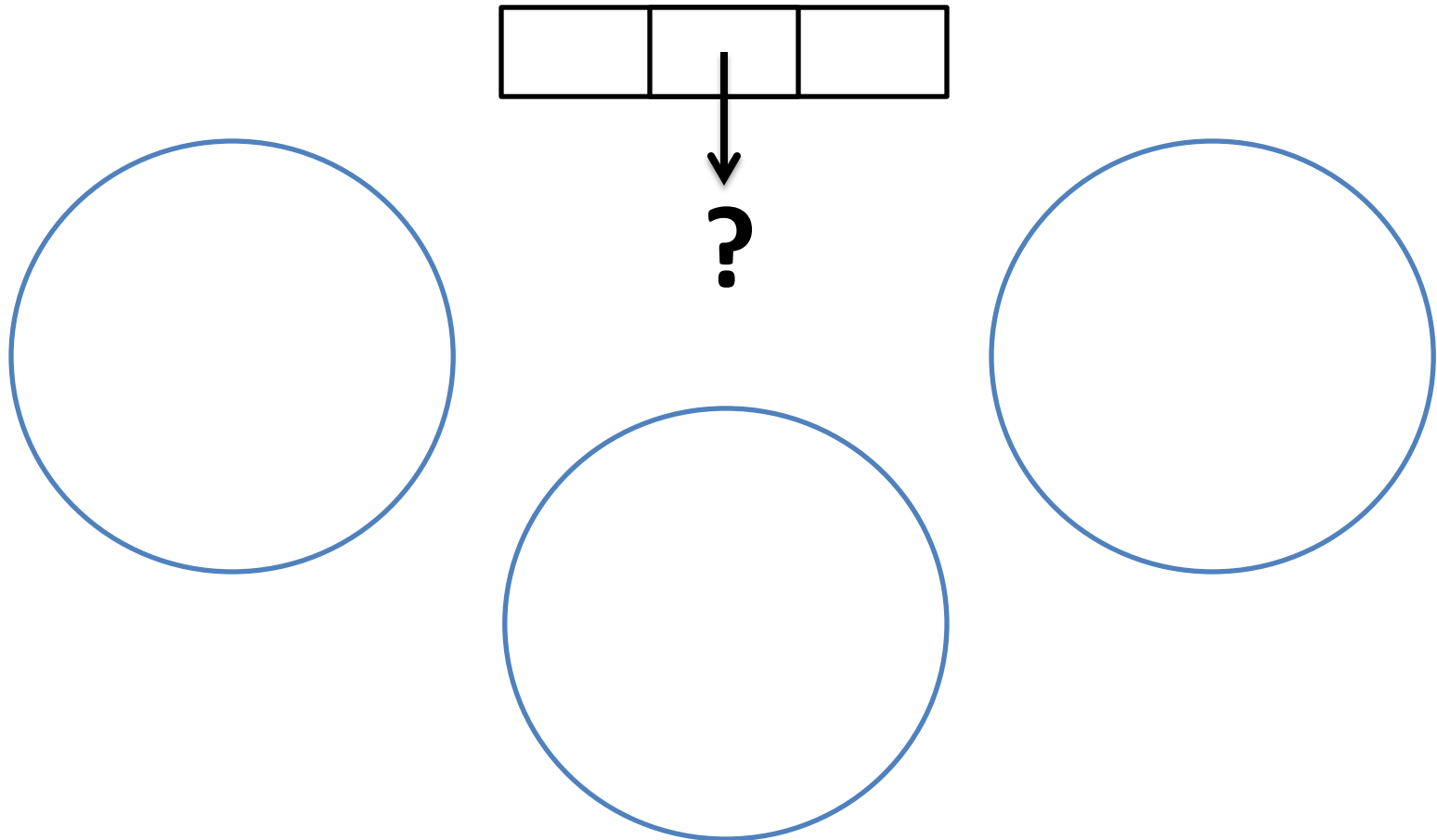
4. Slogans



The slogans will bring people to the restaurant!

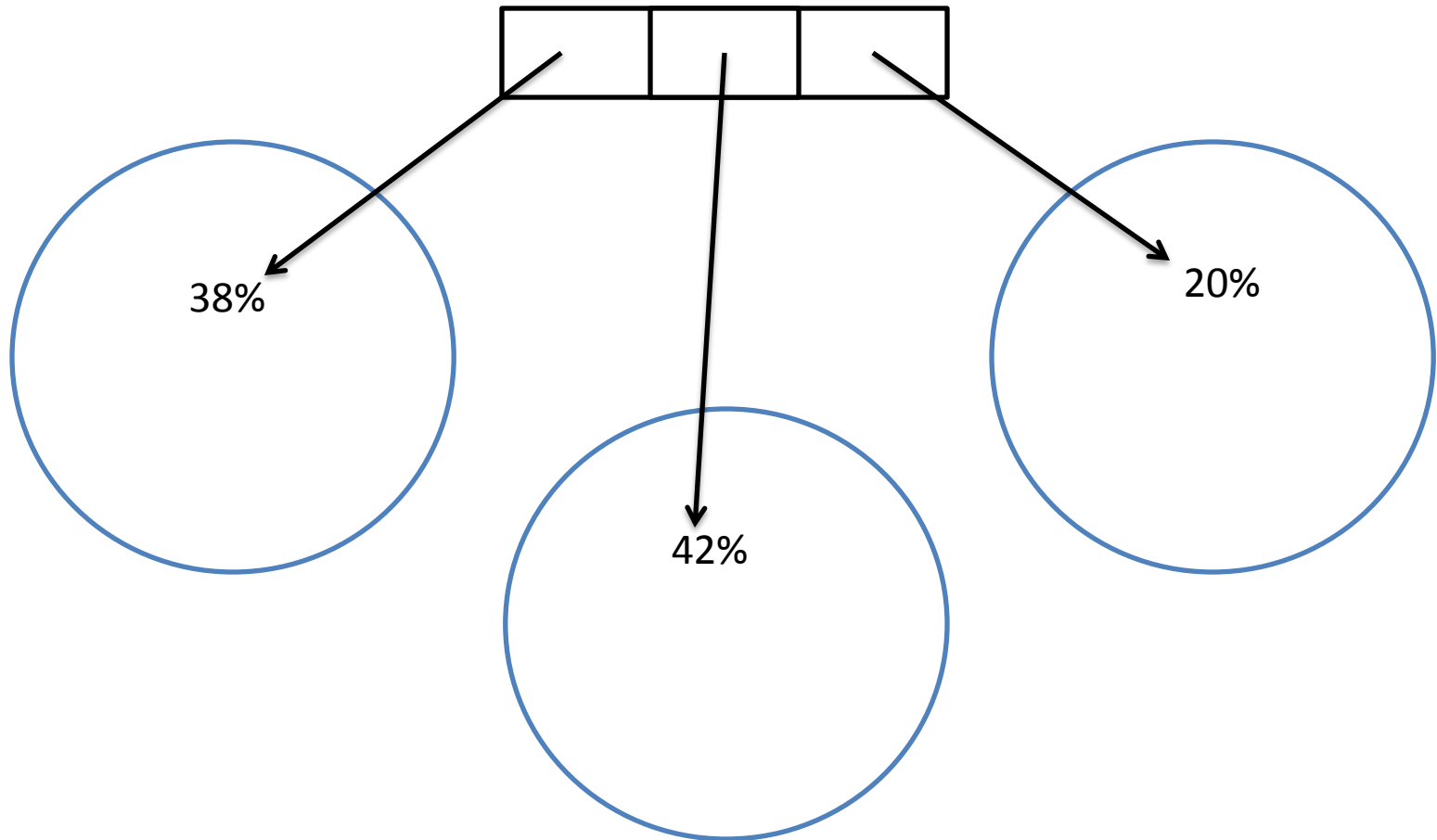
5. Customer Typing

Classifying each customer to a cluster!



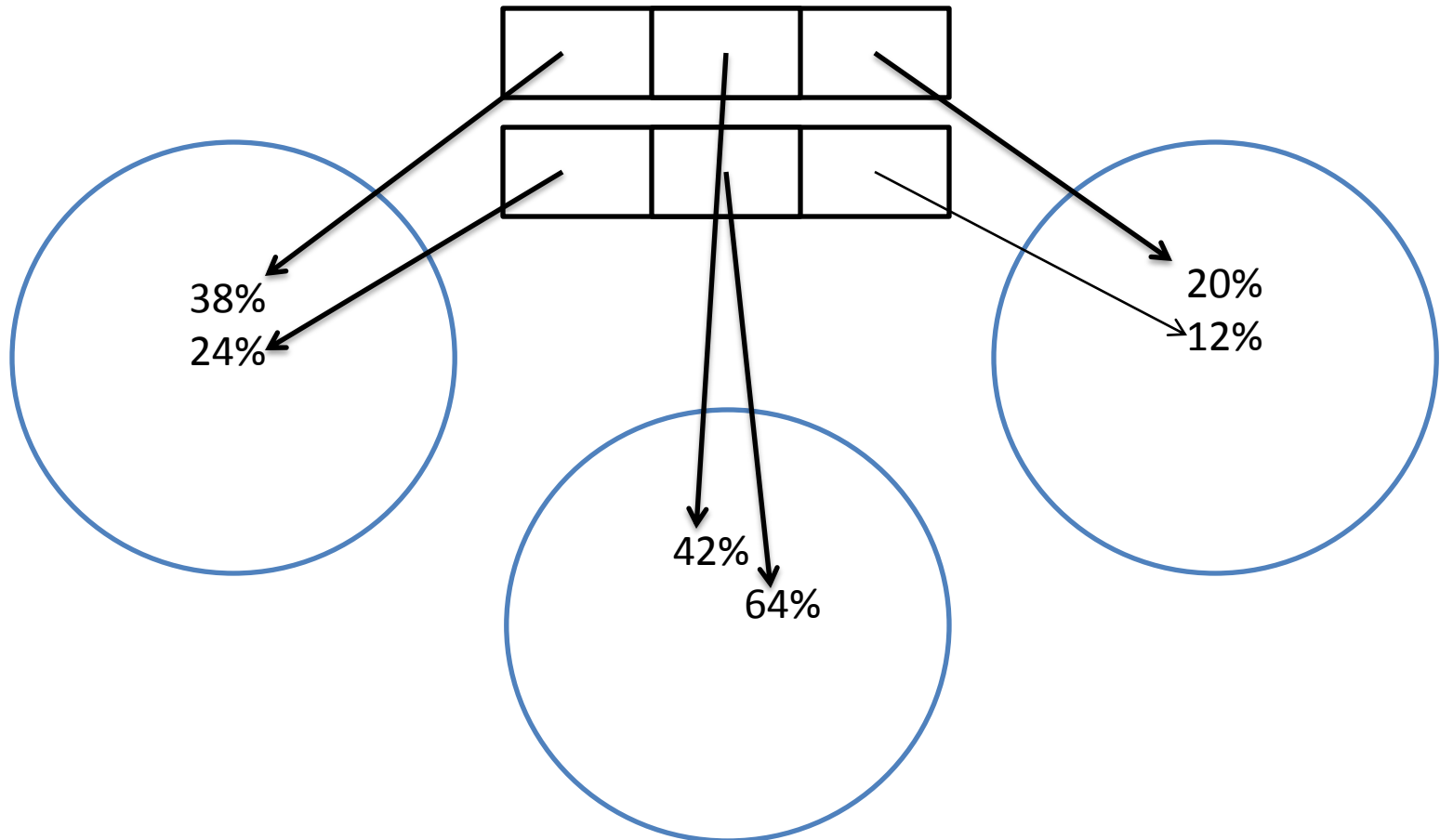
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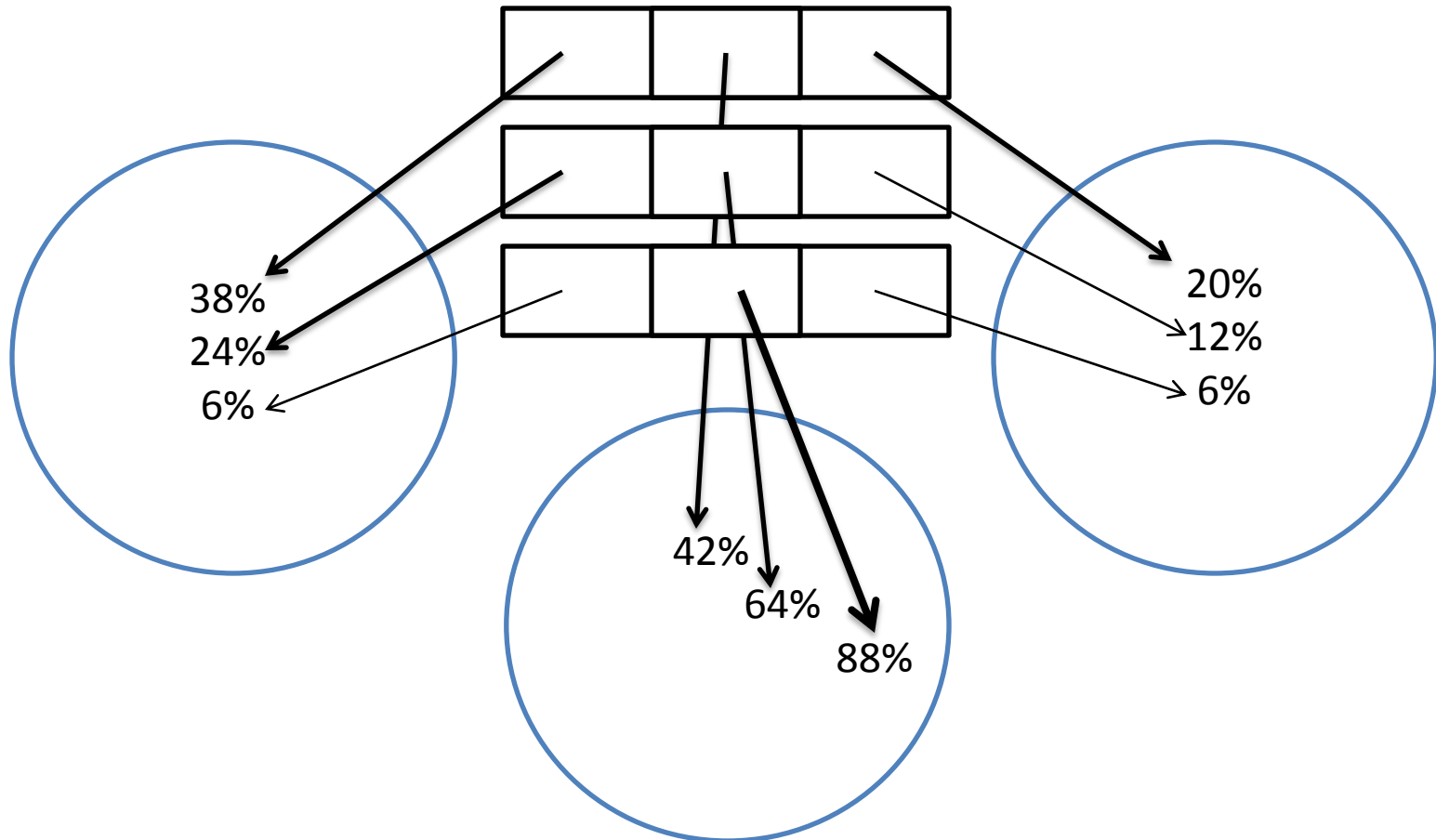
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The Major Tradeoff: Likelihood Maximization versus Cluster Count

5. Customer Typing

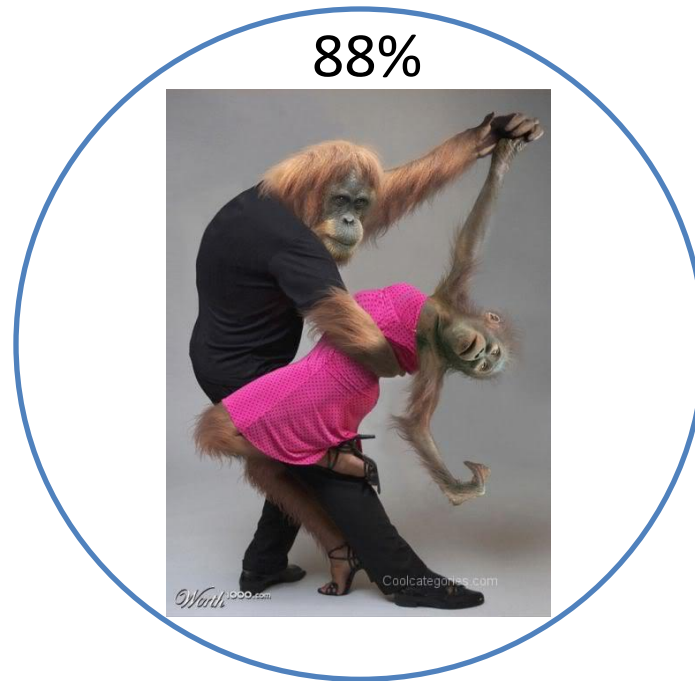
Classifying each customer to a cluster!



The Major Tradeoff: Likelihood Maximization versus Cluster Count

6. Targeted Actions

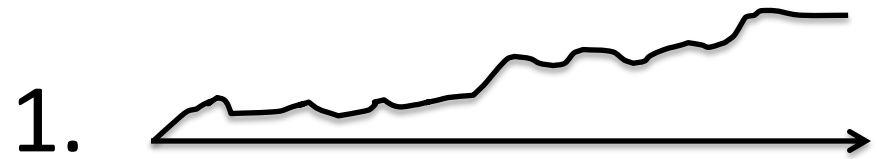
What is your music wish?



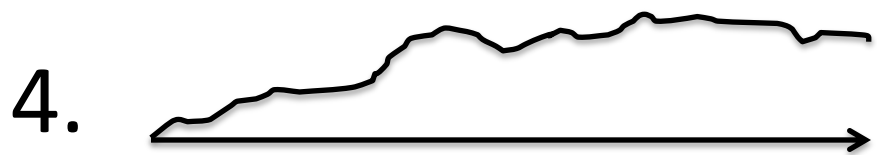
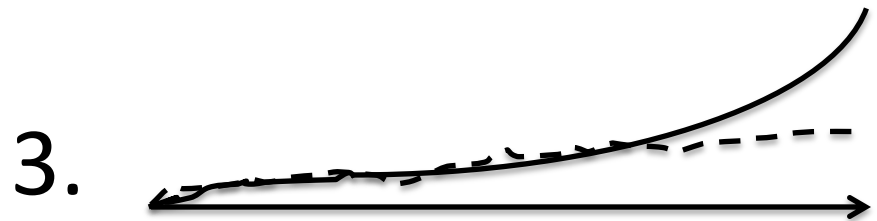
Music with the smell of garlic 😊 ?



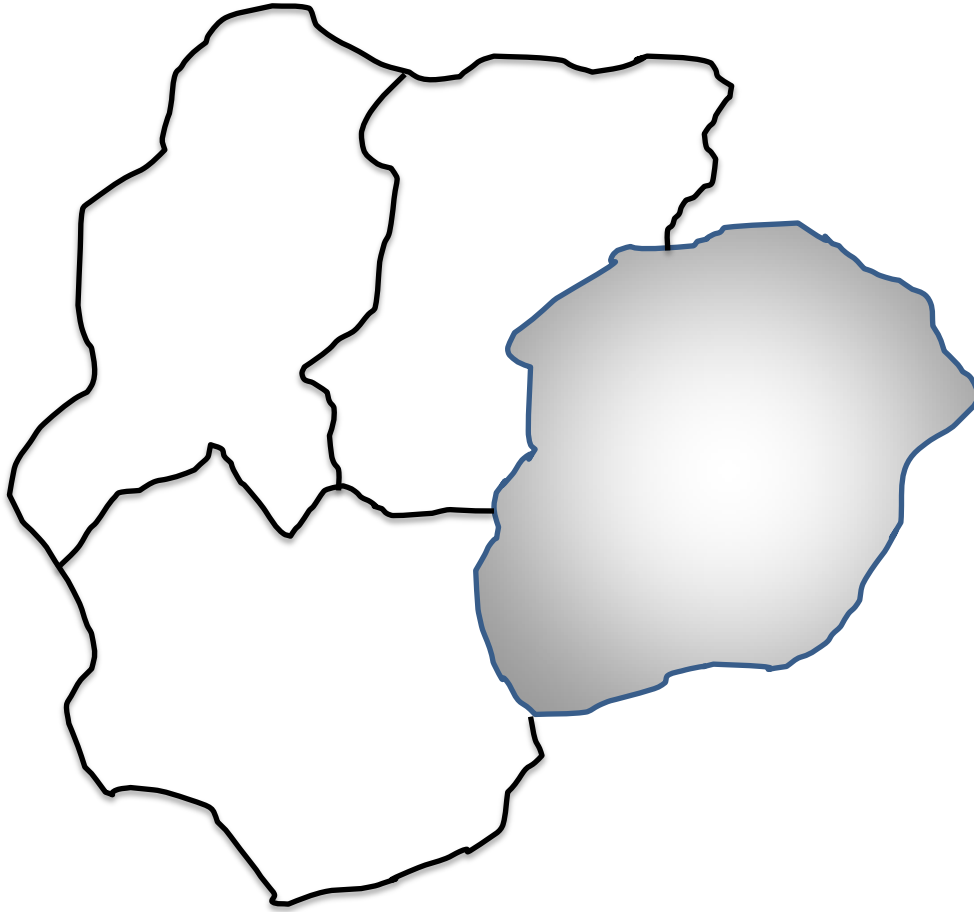
7. Profit Analysis



e.g., LittleBay@London



8. Machine Learning



Finding
missing
puzzle
elements

Horizontal Segmentation


So far: $N_S = 1$

How about: $N_S > 1$


One cluster \Leftrightarrow One Segment!



Horizontal Segmentation: Example


Before:  Yogurt - 1000pcs@\$1


Horizontal Segmentation: Example


Before:  Yogurt - 1000pcs@\$1

After:


 Cherry - 1000pcs@\$2


 Bicycle - 1000pcs@\$2


 AFLA - 1000pcs@\$2


 ? - 1000pcs@\$2 **Typing?**


Horizontal Segmentation: Example

Before:  Yogurt - 1000pcs@\$1

After:
 Cherry - 1000pcs@\$2

 Bicycle - 1000pcs@\$2

 AFLA - 1000pcs@\$2

 ? - 1000pcs@\$2 *Typing? Self-typing while the customer is at shelves!*

MindGenomics: Revisited

What is MindGenomics? (1)

Why?

A method based on industrial psychology,
mathematics, and DataMining,
which can be used to promote
products, services, ideas, opinions ...

What is the essence?

If one likes to sell,
one has to listen to the needs of the prospect!

What is MindGenomics? (2)

Company assessment!

1. A company with potentials is approached, and their capabilities are estimated, using methods from company auditing and financial engineering.
2. A product is selected with potentials for horizontal segmentation; the question is, how to figure out what the market needs!

What is MindGenomics? (3)

Data gathering!

3. Based on the principles of industrial psychology, a set of N questions is generated, which penetrate deep into the needs of the target group of individuals.
4. A polling partner is engaged to approach the target audience, and to bring back the form filled in, which assumes the existing of a small motivation item.

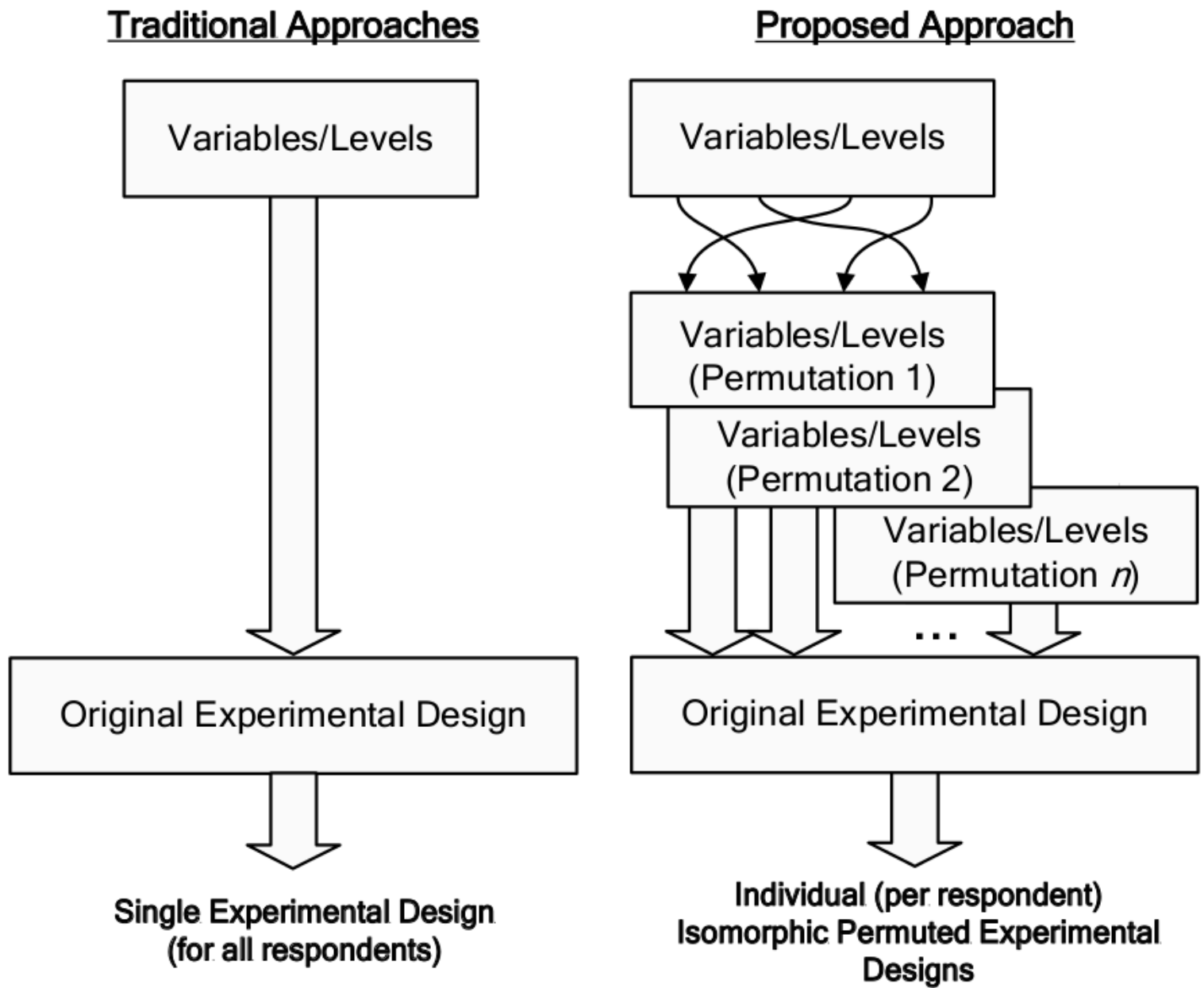


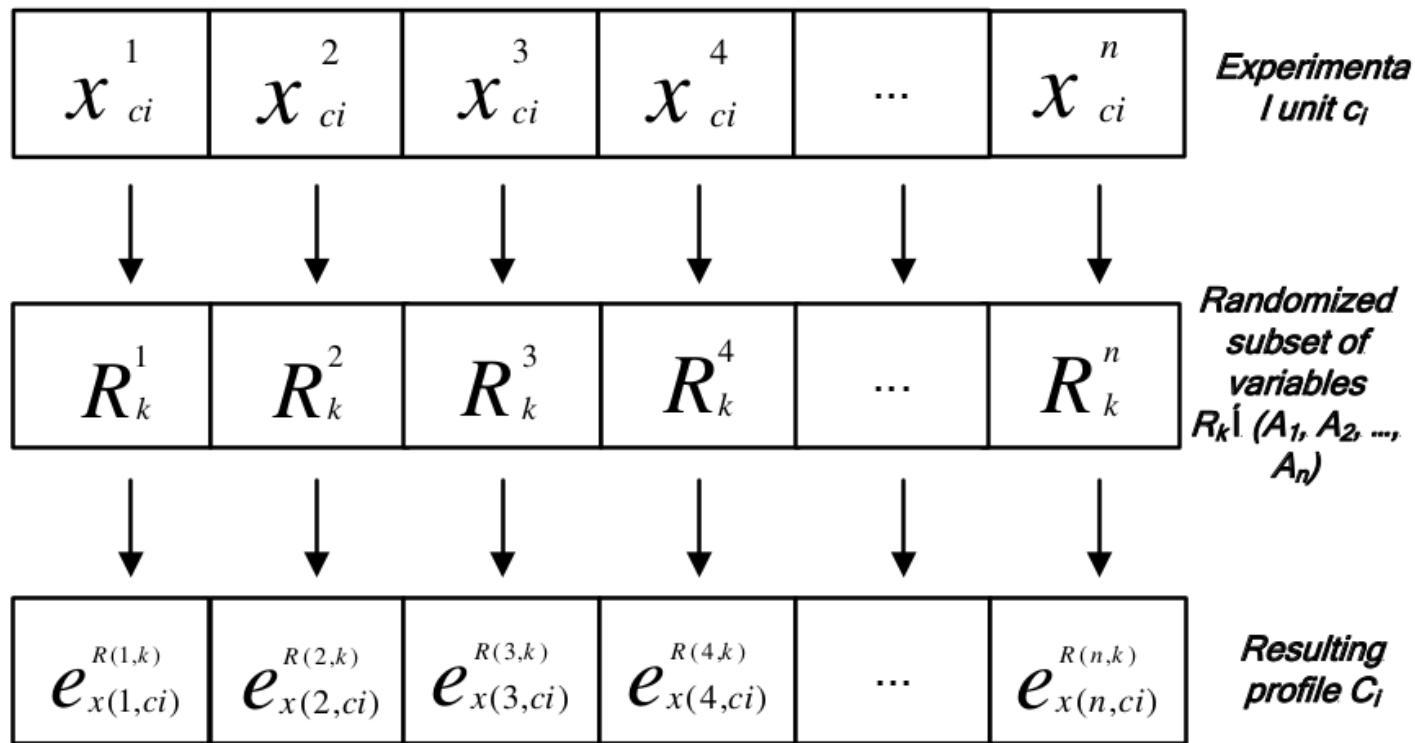
Figure 1. Conceptual model of traditional experimental designs approaches (on the left) and proposed individual isomorphic permuted experimental designs (IPED) (on the right).

What is MindGenomics? (4)

Data analysis!

5. The results of the poll are analyzed, using a proprietary datamining software, based on sophisticated math, and recommendations are made (for the essence and the form)

6. Crucial Step: Analysis!



- x_{ci}^l is the experimental unit c_i for variable l .
- R_k^j is a variable placeholder j in randomization k
- $e_{x(n,ci)}^{R(n,k)}$ is a level in the profile C_i , where $R(h,k)$ is the actual variable assigned to the placeholder h during randomization k
- $x(h,ci)$ is the level number in the variable $R(h,k)$ corresponding to the experimental unit c_i

Figure 2. Creation of isomorphic permuted experimental designs. x_{ci}^l is the experimental unit c_i for variable l . With a set of variables (A_1, A_2, \dots, A_n) , the experimental units are applied to an individually randomized

An Introduction to Linear Regression

Given a [data](#) set $\{y_i, x_{i1}, \dots, x_{ip}\}_{i=1}^n$ of n [statistical units](#), a linear regression model assumes that the relationship between the dependent variable y_i and the p -vector of regressors x_i is [linear](#). This relationship is modelled through a *disturbance term* or *error variable* ε_i — an unobserved [random variable](#) that adds noise to the linear relationship between the dependent variable and regressors. Thus the model takes the form:

$$y_i = \beta_1 x_{i1} + \dots + \beta_p x_{ip} + \varepsilon_i = \mathbf{x}_i^T \boldsymbol{\beta} + \varepsilon_i, \quad i = 1, \dots, n,$$

where T denotes the [transpose](#), so that $\mathbf{x}_i^T \boldsymbol{\beta}$ is the [inner product](#) between [vectors](#) \mathbf{x}_i and $\boldsymbol{\beta}$. Often these n equations are stacked together and written in vector form:

$$\mathbf{y} = \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\varepsilon},$$

where:

$$\mathbf{y} = \begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{pmatrix}, \quad \mathbf{X} = \begin{pmatrix} \mathbf{x}_1^T \\ \mathbf{x}_2^T \\ \vdots \\ \mathbf{x}_n^T \end{pmatrix} = \begin{pmatrix} x_{11} & \cdots & x_{1p} \\ x_{21} & \cdots & x_{2p} \\ \vdots & \ddots & \vdots \\ x_{n1} & \cdots & x_{np} \end{pmatrix}, \quad \boldsymbol{\beta} = \begin{pmatrix} \beta_1 \\ \vdots \\ \beta_p \end{pmatrix}, \quad \boldsymbol{\varepsilon} = \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_n \end{pmatrix}.$$

Example

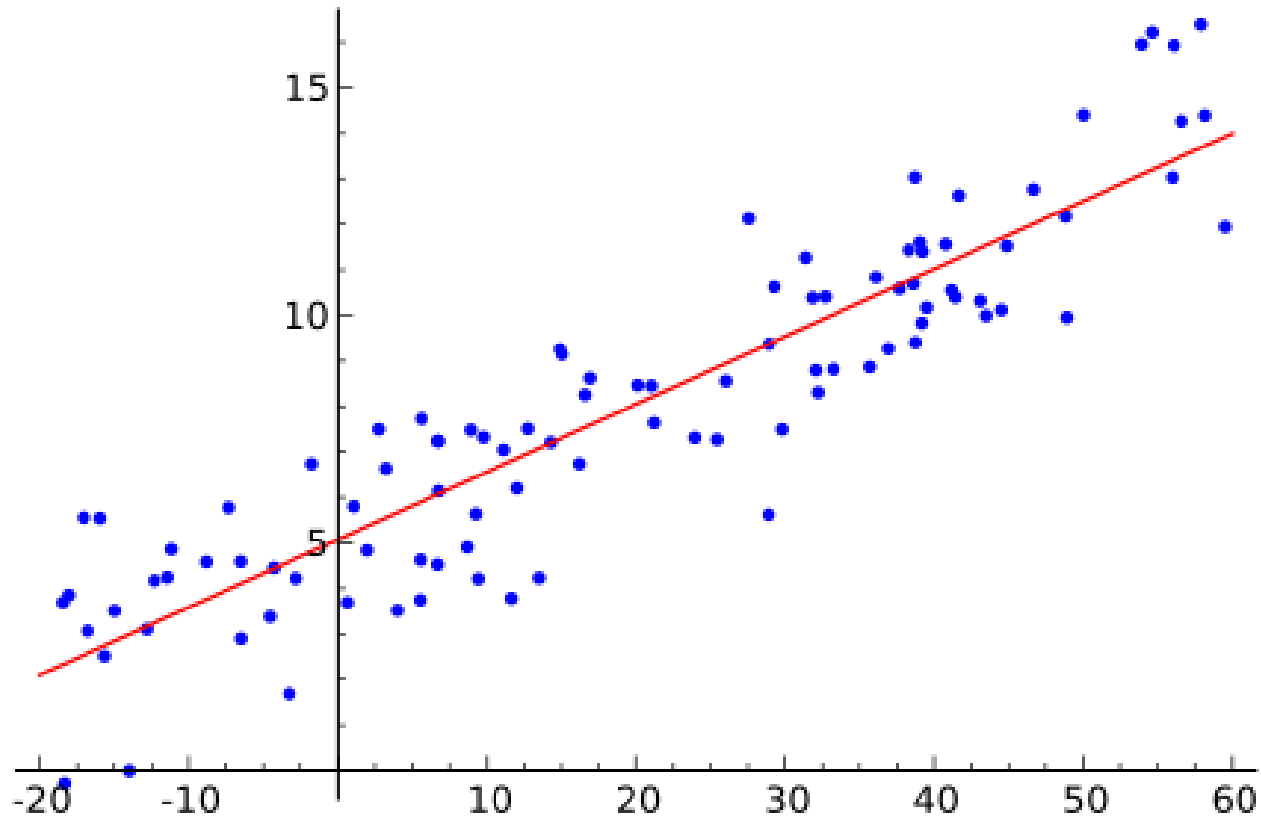


Figure 3: Example of [simple linear regression](#), which has one independent variable!

What is MindGenomics? (5)

Process analysis!

7. The life time monitoring of the process is absolutely mandatory.
8. Applications span from science and engineering to humanities and arts!

What are the alternatives to polling?

9. SocialNetworksDataMining
10. NeuroEconomyMindGenomics



Goran Photography

The best ideas are coming from nature!

H2020: ICEs of Europe

MindMining = MediaMining + AlgorithmicPlethora



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