Lessons learned from Internet dissemination of confidential farm survey results: USDA's Agricultural Resource Management Survey

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Presentation Objectives

- Describe the Agricultural Resource Management Survey (ARMS)
- Initial System Development
- Peer Review and Prototype Validation
- System Performance
- Future Enhancements

What is the Agricultural Resource Management Survey?

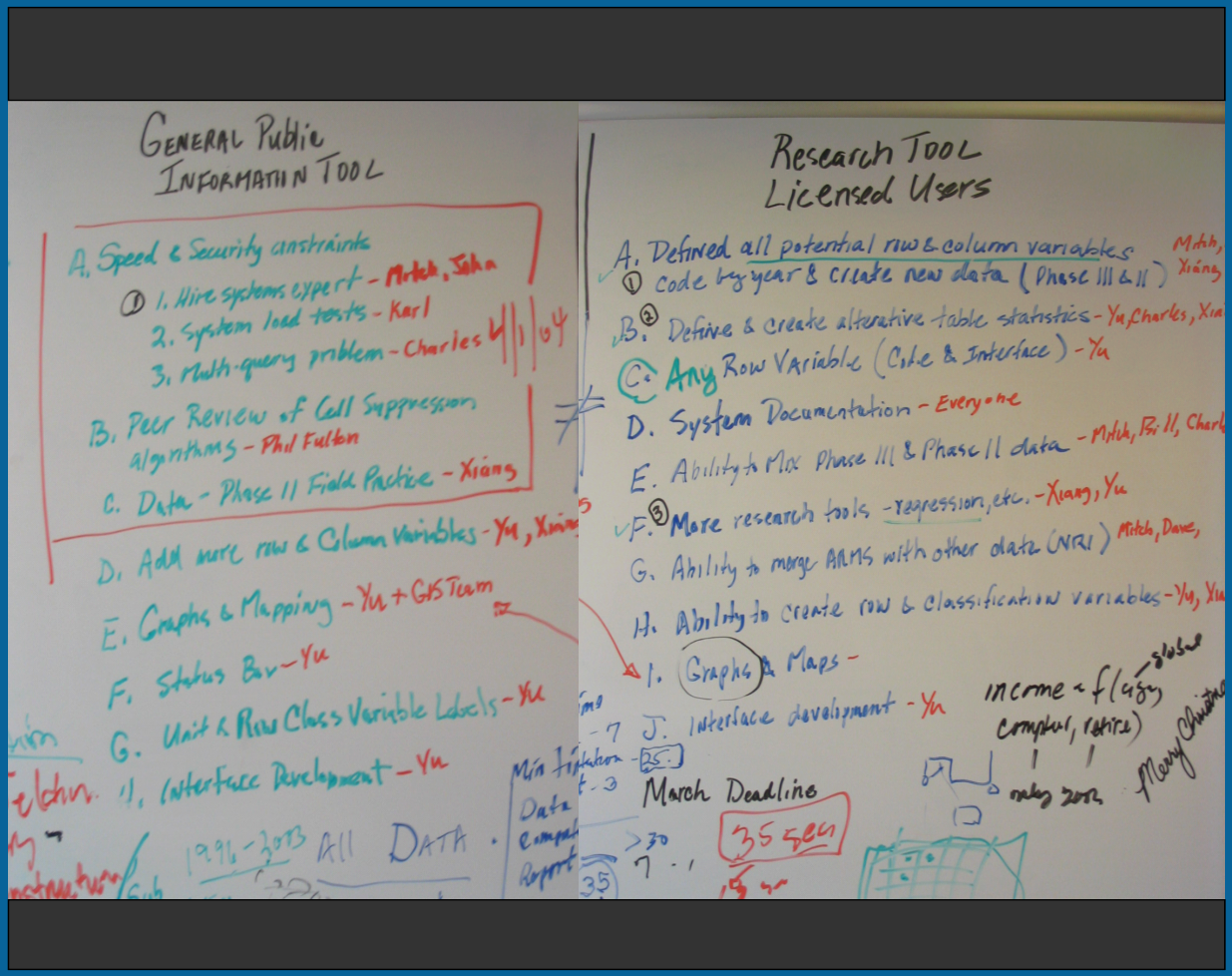
ARMS is USDAs primary survey for the annual collection of data from farm operators about their:

- Farm ownership, governance, management, and performance
- Choice of practices, inputs, and expenditures to produce crop and livestock commodities
- Household demographic attributes, economic and financial activities

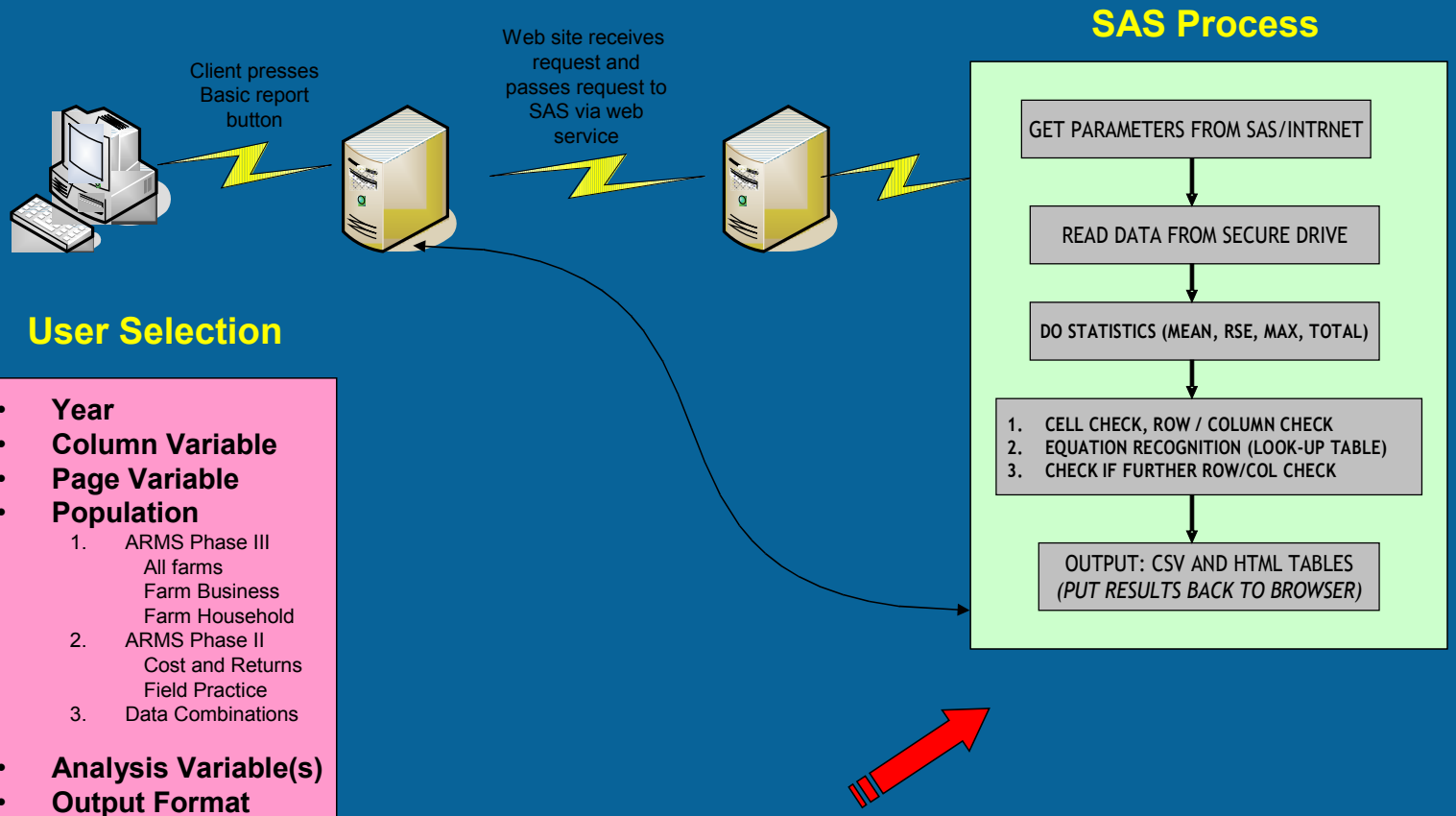
Program Activities Supported by ARMS

- Responding to Mandates: Income for farms, Costs for Commodities, Status of Family Farms
- Support for U.S. National Economic Accounts (GDP, Personal Income)
- Providing Data to Respond to USDA Policies and Programs
- Enabling Research to Inform Decision Makers on a Variety of Issues

Developing a two-tiered data dissemination system



Initial system architecture



User Selection

- **Year**
- **Column Variable**
- **Page Variable**
- **Population**
  1. ARMS Phase III
     - All farms
     - Farm Business
     - Farm Household
  2. ARMS Phase II
     - Cost and Returns
     - Field Practice
  3. Data Combinations
- **Analysis Variable(s)**
- **Output Format**

This is being done for every request

Illustration of cell suppression algorithm

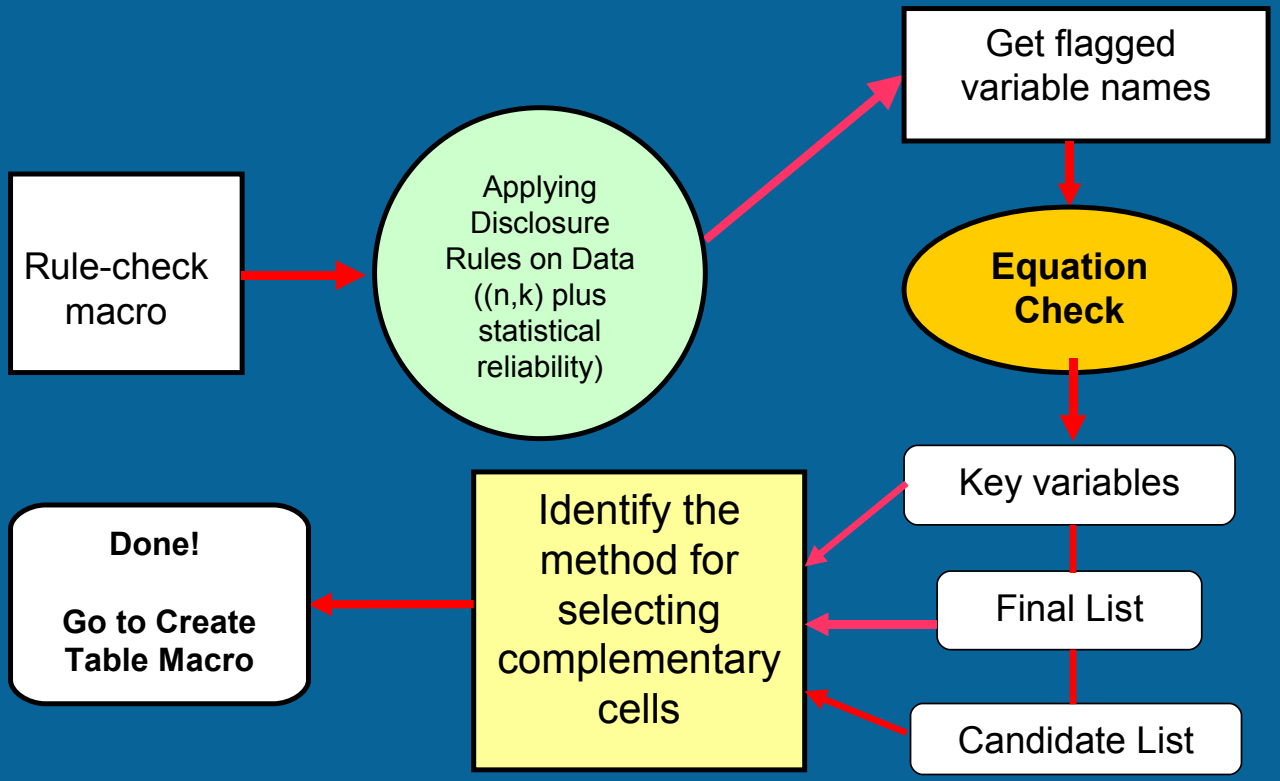


Table after primary and secondary cell suppression

Farm structural characteristics, for Farm Operator Households, by Operator Age, for 1997

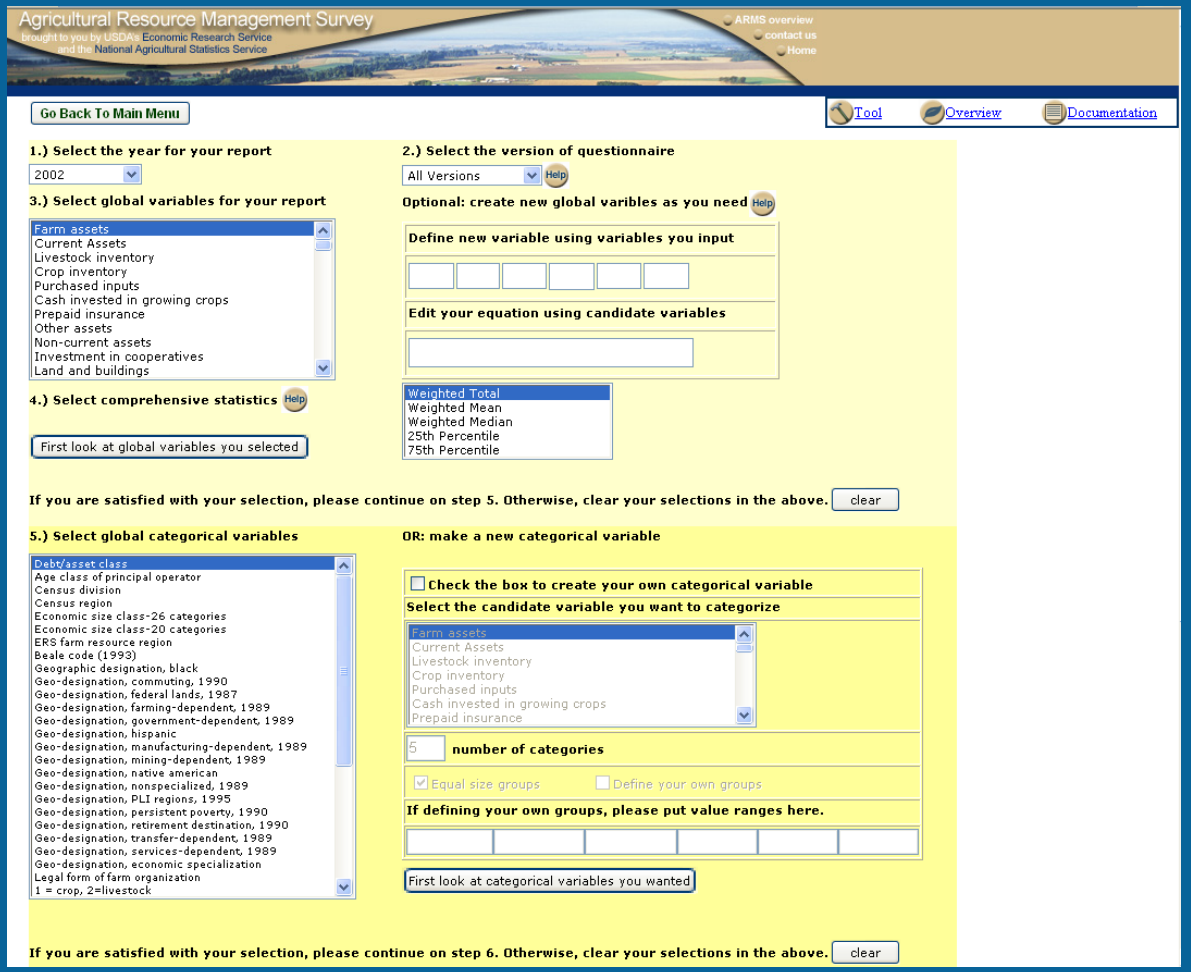
Collapsed Farm Typology=Commercial farms

Item	Operators 34 years or younger		Operators 35 to 44 years old		Operators 45 to 54 years old		Operators 55 to 64 years old		Operators 65 years or older		All farms	
	Estimate	RSE	Estimate	RSE	Estimate	RSE	Estimate	RSE	Estimate	RSE	Estimate	RSE
Number of farms	8,814	13.4	36,412	4.8	40,827	5.8	25,322	11.5	13,669	11.5	125,044	2.8
Share of farms (%)	7.0	13.3	29.1	3.4	32.7	6.8	20.3	10.0	10.9	10.4	100.0	NA
Share of value of production (%)	**	NA	**	NA	32.2	6.3	21.2	9.7	12.6	13.5	100.0	NA
Share of acres operated (%)	5.7	24.6	25.6	4.0	31.3	6.9	19.0	10.4	18.4	10.6	100.0	NA
Acres operated per farm	1,328	27.7	1,454	5.5	1,588	8.9	1,557	10.8	2,795	12.2	1,656	5.5
Full owner	**	NA	14.0	15.6	18.7	9.5	18.7	14.1	**	NA	18.0	6.9
Part owner	**	NA	66.1	4.2	66.3	3.0	70.0	5.6	**	NA	66.2	2.1
Full tenant	22.0	19.7	19.9	8.4	15.1	11.9	11.3	18.2	10.9	15.3	15.7	6.5
Average operator age	31	1.1	40	0.2	49	0.4	59	0.7	70	0.7	50	0.7
Farming	98.4	1.0	93.6	2.2	89.0	2.9	92.8	2.2	85.8	4.2	91.4	1.4
Something else	**	NA	**	NA	**	NA	**	NA	**	NA	6.7	16.9
Retired	**	NA	**	NA	**	NA	**	NA	**	NA	1.9	29.0
Less than high school	**	NA	3.2	43.6	4.8	17.1	9.7	20.8	**	NA	6.9	8.9
Completed high school	**	NA	43.5	6.4	33.7	8.1	45.1	10.6	**	NA	40.9	4.6
Some college	31.4	19.0	33.9	6.4	28.8	10.8	24.4	13.1	20.4	15.0	28.6	5.7
years college or more	22.6	17.2	19.4	10.8	32.8	6.9	20.7	30.6	13.7	27.1	23.6	5.2
Less than 500	**	NA	**	NA	**	NA	**	NA	**	NA	2.0	18.5
500 to 999	**	NA	**	NA	**	NA	**	NA	**	NA	2.3	15.4
1,000 to 1,999	**	NA	**	NA	13.0	24.5	9.6	18.9	16.4	11.4	10.3	11.2
2000 or more	96.8	1.1	89.4	2.6	83.5	3.8	83.7	2.9	76.6	3.6	85.5	1.5

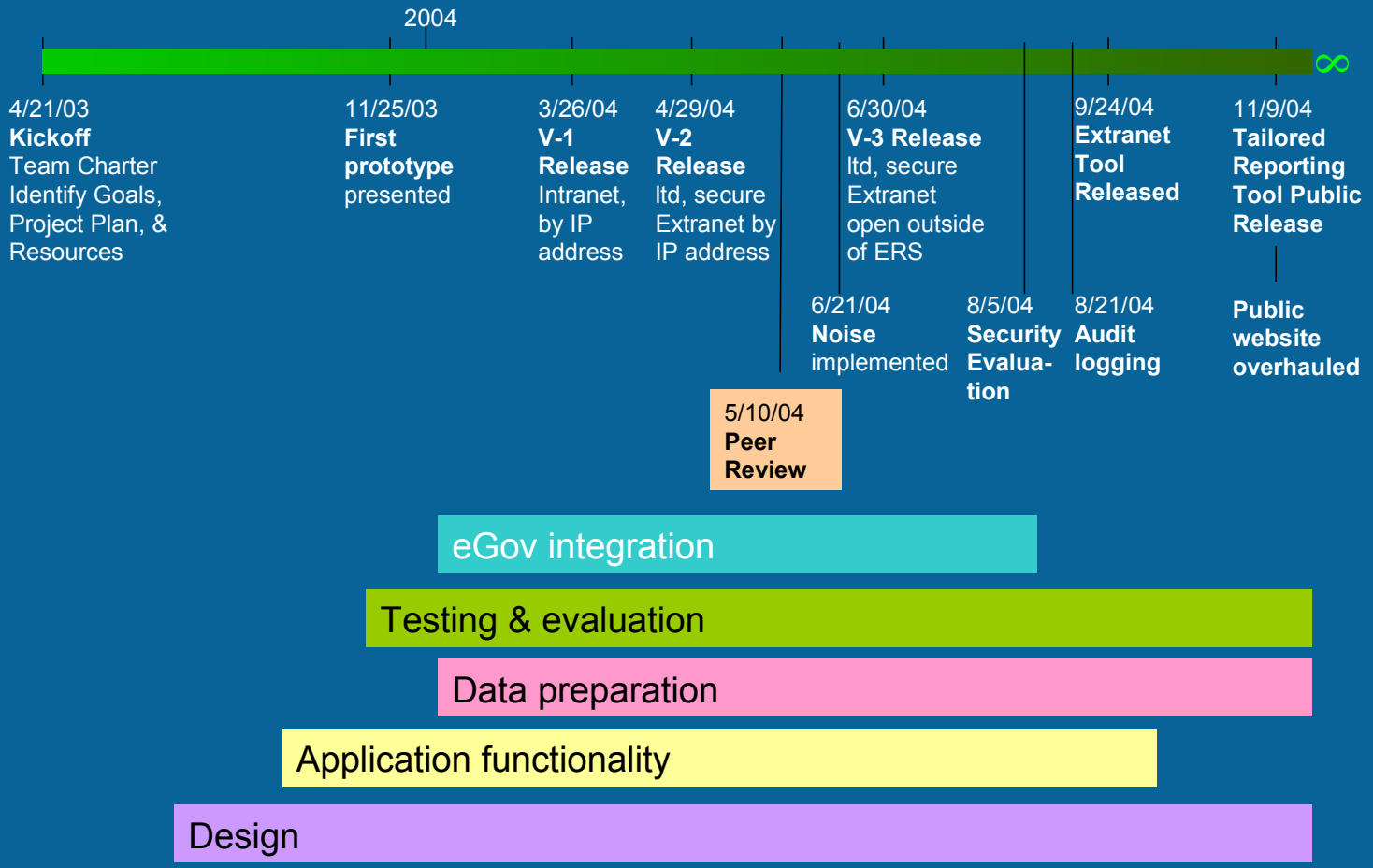
** Estimate does not comply with ERS disclosure limitation practices, or is not available.

The Relative Standard Error (RSE) is the standard error of the estimate expressed as a percent of the estimate. The larger the RSE, the less reliable the estimate.
Source: Agricultural Resource Management Survey, USDA.

Extranet for advanced analysis used same system architecture but different menu



Project time line and milestones: Peer Review



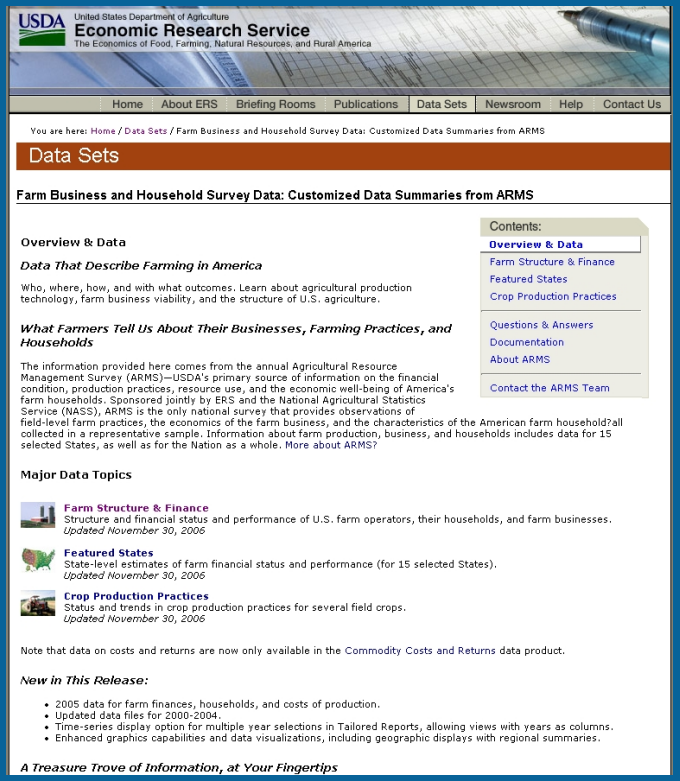
Peer review outcome

Peer review made an invaluable contribution that identified strengths and weakness of the working prototypes and established the major improvements necessary prior to implementation. There were three primary areas of concern:

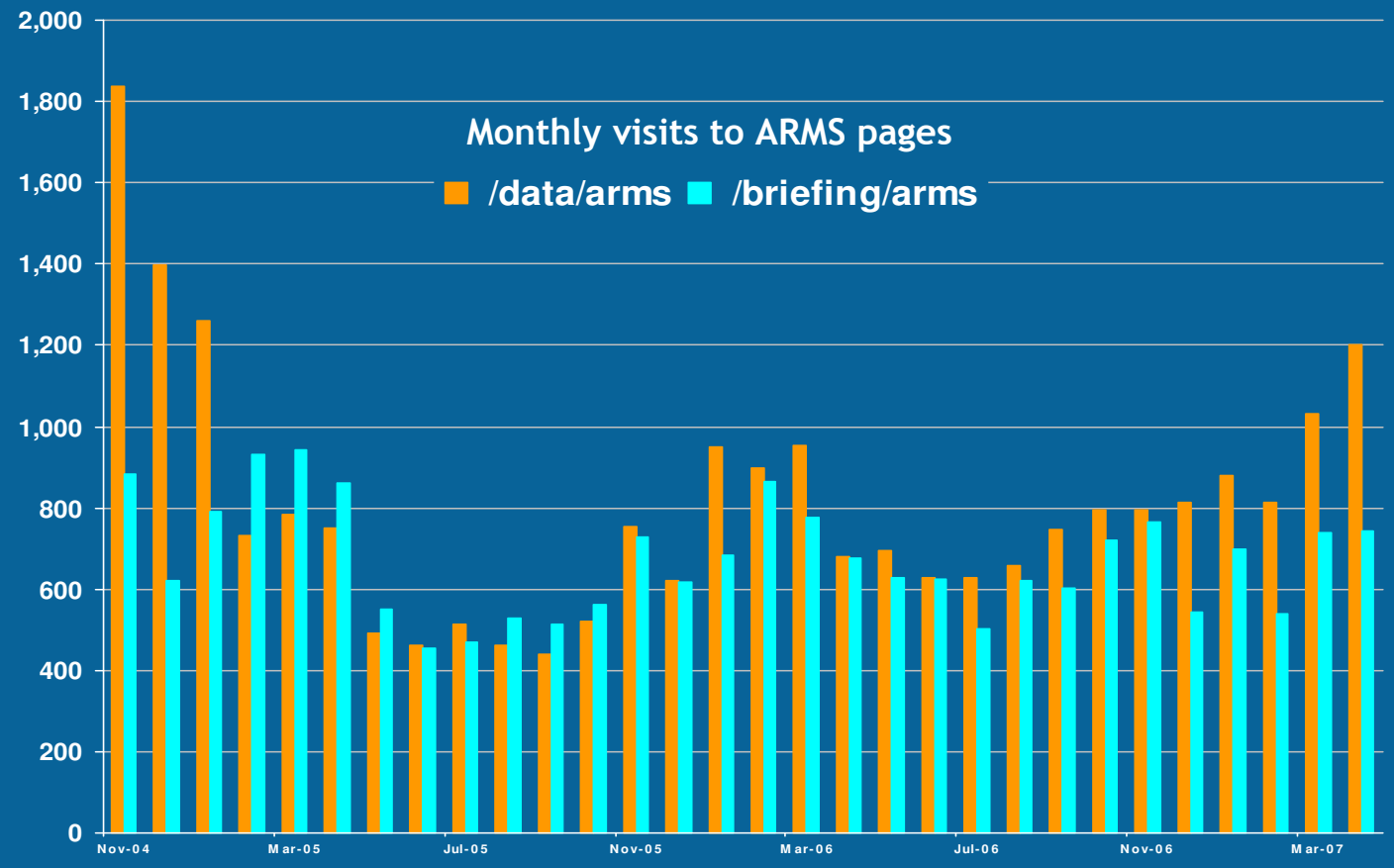
- Strengthening data security and protecting confidentiality
- Delivery speed and system load capabilities
- Access tracking capabilities

Tailored Reports: From prototype to final product

- System Enhancements
  - ⋆ Noise added to weights
  - ⋆ Data preprocessed
  - ⋆ SQL database
  - ⋆ Faster response time
  - ⋆ Graphic capabilities

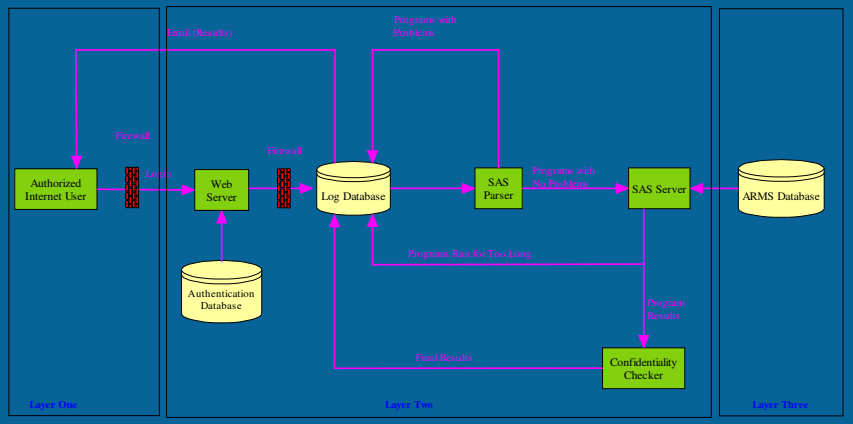


Tailored report capability widely accepted and used



Future enhancements focused on advanced statistical analysis

- In house remote access
  - ⋆ Complicated
  - ⋆ Expensive



- Data enclave