Economic Research Service

November 2016

# National Household Food Acquisition and Purchase Survey (FoodAPS)

## Codebook: Food-at-Home (FAH) Item Data – Public Use File faps\_fahitem\_puf

The OMB clearance number for FoodAPS is 0536-0068. The data were collected by the U.S. Department of Agriculture under authority of U.S.C, Title 7, Section 2026 (a)(1).

Information about the entire data collection, including instructions on how to request access to the data, may be found at <a href="http://www.ers.usda.gov/foodaps">http://www.ers.usda.gov/foodaps</a>.

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#### Suggested citation:

National Household Food Acquisition and Purchase Survey (FoodAPS): Codebook: Food-at-Home (FAH) Item Data – Public Use File, faps\_fahitem\_puf. U.S. Department of Agriculture, Economic Research Service, November 2016.

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## 1. Introduction

This codebook provides details on the Food-at-Home items in the National Household Food Acquisition and Purchase Survey (FoodAPS) public use file (PUF). Users should first read the *User's Guide to Survey Design, Data Collection, and Overview of Datasets* for information about the survey design and sample, survey instruments and data collection, and analytic notes. Event-level variables are described in the "FAH Event codebook." This codebook provides a brief overview of how item-level information from Food-at-Home events was collected and how these data were processed for inclusion in this dataset.

## 2. Description of Data

#### 2.1. Data Contents

The **faps\_fahitem\_puf** data file contains one record per FAH item acquired at each event. There are a total of 143,050 items, from 15,205 events and 4,367 households. Variables are grouped into four main types:

- Identifying Variables
- Item-level Attribute Variables
- Purchase Variables
- Administrative Variables.

#### 2.2. Summary of Data Collection

The FAH item data file contains all information related to each FAH item acquired, coalescing information collected from the Blue Pages, scanners, and receipts. Respondents were asked to scan each item acquired, including multiple units of the same item. A barcode book was provided to each household to use to scan in items that did not have a UPC code. This barcode book provided barcodes for items commonly purchased in varying weights from grocery stores and supermarkets, such as fresh produce, bulk foods, and deli items. When using the barcode book, respondents would also scan a quantity barcode when applicable for the item. For

example, the respondent could scan the code for "Avocado" and then the quantity code for 5 to report purchasing five avocados. Respondents were asked to record the items that could not be scanned on the event's Blue Page and to attach the itemized receipt for each FAH event to the Blue Page. See the *FAH Event Codebook* for additional details on the collection of FAH acquisition events.

#### 2.3. Summary of Data Processing

Item-level information underwent a significant amount of post-collection processing to combine information from the various sources, to standardize weight and quantity information, and to impute missing prices or values (when the items were free).

#### 2.3.1. Data Compilation-Blue Pages, Receipts, Scanners

The three sources of item-level information were linked after data collection had ended. Information from Blue Pages was entered and coded. These "Blue Page items" and items that were scanned by respondents were matched to receipts. Processing of receipts included entering prices, item-level coupons, and store savings information, and filling in or updating quantity, weight (for variable weight purchases), and description information. This process also included adding items to the event when they appeared on the receipt, but had not been scanned or recorded on the Blue Page, and resolving (dropping) duplicate items (because a respondent scanned the item and recorded it on the Blue Page). Further cleaning identified some nonfood items that had been scanned by respondents or entered from the receipt during data entry, and these items were dropped from the item-level file.

#### 2.3.2. Item Size, Weight, and Expenditure

Since identical items could be described differently depending on how they were reported on the Blue Page by respondents or appeared on receipts from different retailers, efforts were taken to standardize item information obtained from receipts and Blue Pages. It should be noted that efforts to standardize and categorize items were

based on ITEMDESC. The accuracy of item descriptions from Blue Pages will vary across respondents, and the completeness and accuracy of item descriptions from receipts depends on the sophistication of the store's cash register and back-end operations.

To improve the usability of item descriptions from Blue Pages and receipts, these descriptions were reviewed and assigned Food Book barcodes, when applicable, and ITEMDESC is filled with a standardized Food Book barcode description. Items were assigned to Food Book barcodes using programming that scanned the original item description for keywords associated with each barcode.

Food Book barcodes were also assigned to replace scanned UPCs that were identified as uniform weight produce (IRI dictionary) or variable weight items (Nielsen dictionary).

Blue Page and receipt item descriptions were scanned for numeric information related to quantity, package size, and/or weight. Pertinent information was extracted to the relevant variables and then removed from the item description.

All Blue Page items that contained any information in the "Size or amount" or "How many" fields were reviewed to resolve inconsistent use of those fields by respondents. "Size or amount" was intended to capture package size, and "how many" was intended to capture quantity or a count of products. However, respondents often entered the package contents in the "how many" field. For example, eggs were reported as "size or amount"="1 dozen" and "how many"=12 when the price clearly indicated purchase of 1 carton of 12 eggs.

"Size and amount" from the Blue Page was used to determine weight purchased in pounds, the count of items, and, when UPC-coded, the package size. Package size is reported in two variables, PKGSIZE and PKGSIZEUNIT, where the unit information was standardized to reduce the number of categories (e.g., cup, pint, gallon, quart, etc. were converted to oz; indicators of discreet units within a package, such as the number of donuts, cookies, and eggs, were converted to counts). The Food Book barcodes provide size information for strawberries, which appear with

<sup>&</sup>lt;sup>1</sup> Additional Food Book barcodes were added during this process to identify produce or deli items that could not be specified with the available codes.

separate codes for pint- and quart-size containers; purchases of both quarts and pints were assigned a package-size unit of "PINT."

Information from the nutrient coding process, package sizes, and weight of variable-weight items was used to calculate the total amount of each item purchased in grams. The relevant variables from the FAH nutrient data have been included in the FAH item data to assist users prior to the release of the final FAH nutrient data. The following formulae were applied to calculate TOTGRAMSUNADJ:

For items with package size measured in grams:

TOTGRAMSUNADJ = quantity\*pkgsize if pkgsizeunit="GRAM"

For items that contain liquids:

TOTGRAMSUNADJ = quantity\*pkgsize\*fluidozgrams if pkgsizeunit="OZ" & dryweightcalc=0

TOTGRAMSUNADJ = quantity\*pkgsize\*33.8140226\*fluidozgrams if pkgsizeunit = "LITER" & dryweightcalc =0

For strawberries (the only item measured in PINT package sizes:

TOTGRAMSUNADJ = quantity\*pkgsize\*340.2 if pkgsizeunit="PINT"

For eggs measured as per count:

TOTGRAMSUNADJ = quantity\*pkgsize\*eggsize if eggsize ~=. & pkgsizeunit ="COUNT"

For all other items:

TOTGRAMSUNADJ = quantity\*varwgtlbs\*453.59 if varwgtlbs>0 & varwgtlbs<.

TOTGRAMSUNADJ = quantity\*pkgsize\*453.59 if pkgsizeunit="LBS"

TOTGRAMSUNADJ = quantity\*pkgsize\*28.35 if inlist(pkgsizeunit,"OZ","DRYOZ") & dryweightcalc=1

VARWGTCOUNT reports the count of items for variable-weight items (such as apples, banana, avocados), when reported.

For items such as fresh produce (e.g., cantaloupe, head of lettuce) where no package or weight information was provided, the gram weight was imputed

(TOTGRAMSUNADJIMP) by multiplying the count of items purchased (VARWGTCOUNT) by the gram weight of a large form of the item (or one item, when sizes were not distinguished) per USDA databases.

#### 2.3.3. Item Expenditure and Imputations

The total expenditure on the item, net of store savings and coupons is provided in TOTITEMEXP. The amount prior to coupons is reported in TOTITEMEXPNOCOUPONS and the amount of store savings is provided in TOTSTORESAVINGS. The total value of coupons is provided in COUPONS.

A total of 7.6 percent of FAH items have missing expenditure information either because a receipt was not provided, or the item was obtained at no cost. All imputed values are provided in separate variables. Expenditure was imputed (IMPUTEDEXP), when missing for purchased items, either because an itemized receipt was not provided or because the receipt was fully or partially unreadable. The value was imputed for free items (IMPUTEDVALUE).

Two methods were used to impute expenditures and values. Whenever possible, a deterministic imputation was made, taking the mean of observed expenditures for the specific UPC code, first searching within the same place (defined by PLACEID), then within the same PLACENAME in the primary sample unit (PSU), and then within the same PLACENAME over the whole sample.

The second imputation method was a stratified hot deck method. All items with non-missing information on package size and/or weight, and non-missing IRI department and aisle codes, were imputed using the second approach. Items that were imputed deterministically were also imputed using the hot deck method so that the two imputed values could be compared—a sort of benchmark for the hot deck method. In the stratified hot deck method, place type and package size unit were the two stratum, and items were sorted by PSU, IRI department and aisle, and package size or weight (whichever was applicable to the item). Six place types were included: super store (121), supermarket (122), convenience store or small grocery (102,110,113,114), all other food stores (PLACECATEG=1), eating places (PLACECATEG=2), and all other places (PLACECATEG=3). Three package size units were included: OZ, LBS, and

COUNT. The hot-deck imputed value matched the deterministic imputation for 80.4 percent of the 996 items that could be imputed deterministically. All deterministic imputations were retained in the data rather than replaced with the hot deck value.

#### 2.4. Summary of Known Data Anomalies

Food stores provide a mix of FAH and FAFH items; some have deli counters, hot bars, or salad bars where shoppers can purchase prepared foods (usually variable weight) that can be consumed on- or offsite. To reduce burden on respondents and streamline receipt entry, respondents were asked to characterize each acquisition, not each food item, as FAH or FAFH, so that each reporting page could contain a full transaction receipt. Therefore, some FAH acquisitions may include food items that could be characterized as FAFH; however, the acquisition as a whole is characterized as FAH.

If FAH items were not scanned and a receipt was not provided, the food item descriptions written on the Blue Page had to be entered as they appeared on the page because respondents were not available to clarify apparent inconsistencies. As a result, there are food item descriptions that appear to be inconsistent with place of acquisition. (For example, "Doritos" was reported at a Trader Joe's, which does not stock this item.)

These anomalies could indicate an error in the place name or the item descriptions. It is also possible that respondents use common brand names to describe similar store brand or generic items. Without a receipt, either scenario cannot be confirmed, so the data is maintained as reported by the respondent.

TOTITEMEXP, TOTITEMEXPNOCOUPONS, TOTSTORESAVINGS, and COUNT, were coded as valid skips for acquisitions that were identified as "Free" on the Blue Page, except when a receipt was provided. When receipts were provided for "Free" acquisitions, the item-level expenditure information was entered during the price entry process. These acquisitions were likely paid for by someone not in the household who gave the receipt to the respondent for study reporting purposes. TOTITEMEXP was entered as zero if the receipt showed a zero expenditure due to savings (e.g., "buy one, get one free" offers).

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## 4. Variable by Variable Codebook

## 4.1. Identifying Variables

## HHNUM

Variable: HHNUM	Definition: 6-digit unique identifier for household	Type: Numeric
	143,050 responses with 4,367 unique values. Indivinot shown.	vidual responses

#### **EVENTID**

Variable: EVENTID	Definition: Unique identifier for each event and can be used to link the event to the items in the faps_fahitem_puf file.	Type: Numeric			
	Note: EVENTID is unique across FAH & FAFH files.				
	143,050 responses with 15,205 unique values. Indinot shown.	ividual responses			

#### **ITEMNUM**

Variable: ITEMNUM	Definition: Sequential item number within event.	Type: Numeric		
	Note: To uniquely identify an item entry, EVENT ITEMNUM does not uniquely identify any particu as "12 oz box of Cheerios."			
Range:	1 – 202			
Missing observations (.):	0 (out of 143,050)			

#### **ITEMDESC**

Variable: ITEMDESC	Definition: Item/Product description	Type: Character		
	22,527 unique values. Individual responses not shown.			
Missing observations (.):	84,810 (out of 143,050)			

## **ITEMDESCSOURCE**

Variable: ITEMDESCSOURCE	Definition: Source of item description Universe: ITEMDESC not missing				Type: Numeric
	Value Count Percent Value description				
	1	84,286	58.92	.92 UPC database	
	2 23,066 16.12 Food Book barcod		Food Book barcode	е	
	3	29,051	20.31	Receipt	
	4	6,123	4.28	28 Survey book (Blue/Red Page)	
	-996	96 524 0.37 Valid skip			

## ITEMDESC\_FLAG

Variable: ITEMDESC_FLAG		on: FLAG data or fo	Type: Numeric		
	Value Count Percent		Value description		
	0	142,790	99.82	2 Item description not edited	
	1	80	0.06	Filled from sample data from receipts	
	2	180	0.13	Filled with manufacturer item category	

## BARCODE

BARCODE or FoodAPS scanned by		Item UPC scanned by respondent, S Food Book barcode either y respondent or assigned to item a processing	Type: Character
Un	ique values:	33,690	
Mi	Missing observations (.):		

## BARCODESOURCE

Variable: BARCODESOURCE		on: Sourc or receipt)	Type: Numeric		
	Value	Count	Percent	Value description	
	0	33,422	23.36	36 No barcode	
	1	81,919	57.26	26 Scanned UPC on item	
	2 2,268 1.59 Scanned other ba		Scanned other bare	code on item	
	3	9,386	6.56 Scanned Food Book barcode		ok barcode
	4	13,680	9.56	6 Assigned Food Book barcode	
	5	2,375	1.66	Extracted UPC from	m item description

## **UPCRECEIPTMATCH**

Variable: UPCRECEIPTMATCH	Definition: Indicates that UPC was printed on receipt and if matched to IRI database				Type: Numeric
	receipt		observed on the not indicate the RCE.		
	Value	Value Count Percent Value descripti		Value description	
	1	2,610	1.82	UPC printed on rec IRI	eipt matched to
	2	182		UPC printed on red to IRI	eipt did not match
		140,258	98.05	No UPC printed on	receipt

## IRI

Variable: IRI	Definiti catego		ng IRI food Type: Numeric	
	Value	Value Count Percent		Value description
	0	3,072	2.15	Not matched to food category codes
	1 79,337 55.46 UPC match to and product inf		UPC match to IRI food categories and product info	
	2	2 2,900 2.03 U		UPC match to IRI food categories (no product description)
	3			ITEMDESC manually assigned IRI Dept, Aisle, Cat, Type
	4			ITEMDESC manually assigned IRI Dept, Aisle, Cat
	5	479	0.33	ITEMDESC manually assigned IRI Dept, Aisle
	6	29	0.02	ITEMDESC manually assigned IRI Dept

## BARCODE\_ORIGINAL

BARCODE_ORIGINAL	Food Book bard	•	Type: Character
Unique valu	es:	1,139 (with 3,748 total responses	)

Valid skip ('-996'): 139,302 (out of 143,050)

## 4.2. Item-Level Attributes

#### **ITEMREPORTMETHOD**

Variable: ITEMREPORTMETHOD	Definition: Way in which item was reported						
	Value	Count	Percent	Value description			
	1	88,084	61.58	Scanned UPC code on package			
	2	9,386	6.56	Scanned Food Boo	ok barcode		
	3	11,070	7.74	Survey Book (Blue/Red Page)			
	4	34,510	24.12	Receipt			

#### **ITEMASSIGNMETHOD**

Variable: ITEMASSIGNMETHOD	Definiti items to and acc	Type: Numeric					
	Value	Count	Percent	Value description			
	1	11,054	7.73	Listed on Blue/Red Page, no match required			
	2	124,731	87.19	Matched to Blue Pa	age via receipt		
	3	2,691	1.88	Matched to Blue Page via programming			
	4	4,574	3.20	Matched to Blue Page via manual review			

#### **TOTGRAMSUNADJ**

Variable: TOTGRAMSUNADJ	Definition: To as purchased	ype: Numeric						
	The gram weight is taken from the nutrient file and is constructed either directly from pounds reported or package sizes. When a fluid volume, the fluid ounces are first converted to a gram weight. See FLUIDOZGRAMS.							
	N Min Max Mean #Missing							
	99,962	0.5103	640,307.2	972.1	1 43,088			

#### **TOTGRAMSUNADJIMP**

Variable: TOTGRAMSUNADJIMP									
	When package size or weight is not reported, grams are imputed.								
	N	N Min Max Mean							
	3,033	1	45,360	1,017.321	140,017				

## **PKGSIZE**

Variable: PKGSIZE		Definition: Package size or volume Type: Numeri Universe: PKGSIZESOURCE~= 0							
	Note: Only	Note: Only available for UPC-coded items.							
	N	N Min Max Mean #Missin							
	90,512	0.018	19,200	29.52711	42,316	10,222			

## **PKGSIZEUNIT**

Variable: PKGSIZEUNIT		Definition: Units for package size measure Universe: PKGSIZESOURCE~= 0						
	Value	Count	Percent	Description	on			
		42,128	29.45	Missing				
	.V	10,222	7.15	Valid skip				
	BAG	33	0.02					
	BOTTLE	2	0.00					
	BOX	31	0.02					
	CAN	14	0.01					
	COUNT	1,937	1.35					
	DOZEN	1	0.00					
	DRYOZ	29	0.02					
	FAMILY SIZE	1	0.00					
	GRAM	113	0.08					
	INCH	79	0.06					
	JUMBO	1	0.00					
	KING SIZE	3	0.00					
	LARGE	59	0.04					
	LBS	1,323	0.92					
	LITER	718	0.50					
	LOAF	52	0.04					
	MEDIUM	55	0.04					
	OZ	85,232	59.58					
	PACK	285	0.20					
	PIECE	43	0.03					
	PINT	595	0.42					
	PLATE	1	0.00					
	SERVING	5	0.00					
	SHEET	8	0.01					
	SLICE	16	0.01					
	SMALL	62	0.04					
	WHOLE	2	0.00					

## **FLUIDOZGRAMS**

Variable: FLUIDOZGRAMS	Definition: G conversion for		fluid-ounce	Тур	e: Numeric				
		This variable is from the <b>faps_fahnutrient</b> data (not yet released) and was used to calculate TOTGRAMSUNADJ.							
	N	N Min Max Mean #							
	25,899	16.5	42.4	29.72833	117,151				

#### **EGGSIZE**

Variable: EGGSIZE	Definiti gram w	on: Egg s reight	Type: Numeric			
	Value	Count	Percent	Value description		
	38	2	0.00	38g per egg (small)		
	44	115	0.08	44g per egg (medium)		
	50	1,492	1.04	50g per egg (large, indicated)	or size not	
	56	145	0.10	56g per egg (extra	large)	
	63	71	0.05	63g per egg (jumbo)		
		141,225	98.72	Missing		

## **QUANTITY**

Variable: QUANTITY	Definition: Q	Definition: Quantity of item acquired						
	When item is	When item is purchased by weight, quantity is equal to 1						
	N	N Min Max Mear						
	143,050	1	90	1.09023	0			

## **VARWGTLBS**

Variable: VARWGTLBS	Definition: weight	Definition: Weight (lbs) when item purchased by weight							
	N	Min	Max	Mean	#Missing (.)				
	10,222	0.01	60	2.001325	132,828				

## VARWGTCOUNT

Variable: VARWGTCOUNT	Definition: Count of loose items purchased by weight								
	Count of items from a scanned Food Book "Quantity code" or count of items from the Blue/Red Page. The Blue Page count populates VARWGTCOUNT (instead of QUANTITY) when this count differs from QUANTITY on the receipt, when the receipt indicates a WEIGHT, or when the item is typically purchased by weight. VARWGTCOUNT is assumed to be a count of loose items; however, it is not possible to know for certain if the reported count corresponds to items or packages.								
	N Min Max Mean #Missing (.)								
	5,149	1	200	5.49155	137,901				

## **PKGWTSOURCE**

Variable: PKGWTSOURCE	Definition: Source of package size or weight information						
	Note: For items with package sizes, information from the IRI productionary takes precedence over information provided by the respondent on the Blue Page when the respondent reported the item by both scanner and Blue Page. For all other items, if weight was indicated on both the receipt and the Blue Page, only receipt information was kept. Weight was obtained from the IRI product dictionary for uniform weight produce.						
	Value	Count	Percent	Value description			
	1	85,901	60.05	IRI product dictions	ary		
	2	4,524	3.16	Survey book (Blue/	Red) Page		
	3	9,815	6.86	Receipt			
	4	98	0.07	Food Book barcode	e (strawberries)		
	5	286	0.20	Blue page (volume	or unit, not both)		
	6	138	0.10	Extracted from item	n description		
	7	209	0.15	Blue/Red Page or receipt size recoded to OZ			
		42,079	29.42	Missing, no WEIGI provided	HT or PKGSIZE		

## 4.3. Purchase Variables

## TOTITEMEXP

Variable: TOTITEMEXP	of store sa	Definition: Total expenditure on line item, net of store savings and coupons. Universe: FREE (event-level indicator)=0							
		Note: Some items at free events (FREE=1) have non-missing TOTITEMEXP because respondent provided receipt.							
	N	Min	Max	Mean	#Missi	ing Valid Skip (.) (-996)			
	132,154	-10.99	124.80	2.817701	7,8	3,078			

#### **TOTITEMEXPNOCOUPONS**

Variable: TOTITEMEXPNOCOUPONS	Definition savings, but Universe:	out not c		Type: Numer	ic				
	Note: Some items at free events (FREE=1) have non-missing TOTITEMEXPNOCOUPONS because respondent provided receipt.								
	N	Min	Max	Mean	#Missi		Skip -996)		
	132,154	0	124.80	2.831728	7,8	318	3,078		

#### **TOTSTORESAVINGS**

Variable: TOTSTORESAVINGS		Definition: Total store savings on line item Universe: FREE (event-level indicator)=0						
		Note: Some items at free events (FREE=1) have non-missing TOTSTORESAVINGS because respondent provided receipt.						
	N	N Min Max Mean #Miss						
					(.)	(-996)		
	132,145	0	41.76	0.19104717	7,827	3,078		

## **COUPONS**

Variable: COUPONS		Definition: Total amount of coupons on receipt Type: Numeric applied to item							
	apply to multip Coca-Cola pro coupon, but m separately (e.g	Note: Coupon values are listed on one record in the file, but may apply to multiple items. For example, a coupon for multiple packs of Coca-Cola products is listed on one record at the face value of the coupon, but multiple products required for the coupon may be listed separately (e.g., regular and Diet Coke appear as separate items). Coupon redemption terms could not be determined from receipts.							
	N	N Min Max Mea							
	131,556	0	17.97	0.0140901	11,494				

## TOTITEMEXP\_FLAG

Variable: TOTITEMEXP_FLAG		ion: FLAG- ice not en	Type: Numeric				
	Value	Count	Percent	t Value description			
	0	142,953	99.93	Item expenditure not	missing		
	1	97	0.07	Item expenditure mis	sing		

## FREE

Variable: FREE	Definit	ion: Event	Type: Numeric					
		Note: This is an event-level variable and also appears in the faps_fahevent data file.						
	Value	Count	Percent	Value description				
	0	139,606	97.59	Purchased				
	1	3,239	2.26	Obtained at no cost				
		205	0.14	Missing, but applicab	ole			

## **IMPUTEDEXP**

Variable: IMPUTEDEXP	Definition Universe: missing P	ot	Type: Numeric				
	N	Min	Max	Mean	#Missi	ng Va (.)	alid Skip (-996)
	4,890	0.11	569.7	3.590116	6,0	06	132,154

#### **IMPUTEDVALUE**

Variable: IMPUTEDVALUE	free Universe:	Definition: Imputed value of item obtained for free Universe: TOTITEMEXP= -996 & FREE=1 & non-missing PKGSIZE or TOTGRAMSUNADJ						
	N	Min	Max	Mean	#Miss	ing (.)	Valid Skip (-996)	
	1,386	0	379.8	4.114219	1,	902	139,762	

#### **IMPUTEMETHOD**

Variable: IMPUTEMETHOD	expend Univers	on: Metho liture or vi se: IMPUT EDVALUE	Type: Numeric			
	Value	Count	Percent	Value description		
	1	223	0.16	UPC item: Avg price at PLACEID		
	2	138	0.10	UPC item: Avg price a PSU	at PLACENAME in	
	3	635	0.44	UPC item: Avg price a	at PLACENAME	
	4	5,280	3.69	Hot deck imputation		
	-996	136,774	95.61	Valid skip (not impute	d)	

## 4.4. Administrative Variables

## SCANDATE\_FLAG

Variable: SCANDATE_FLAG	post p Univer	ion: FLA rocessin se: SCAl availabl	Type: Numeric			
	Value	Count	Percent			
	0	95,377	66.67	SCANDATE not revised		
	1	666	0.47	Bad date replaced with receipt date		
	2	99	0.07	<ul><li>Bad date replaced with date indicate by Blue/Red Page</li><li>Bad date could not be fixed</li></ul>		
	3	20	0.01			
	4	1,308	0.91	Missing SCANDATE sindicated by Blue Pag		
	-996	45,580	31.86	Valid skip, item not sc	anned	