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Analysis of Effect of Three Different Feeds to the Growth Rate of Turkeys

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Abstract - *The research work is carried out to determine the most effective treatment that contribute the growth of Turkey and as well as to examine if there exist significant difference among the blocks. The source of data collection includes measuring the initial weight of turkey before administering the feed with the use of measuring scale. The statistical techniques applied are complete randomized design and postmortem analysis (i.e. using Fisher lease significant difference). The conclusion revealed that there is a significant difference in the treatment and Fisher Lease significance difference indicates that the Feed B produced the highest weights.*

Key Words: Experimental design, Fisher Lease significance difference, Weight gain.

1. INTRODUCTION

The word 'biometrics' originates from the Greek words bio (life) and Metron (measure). It is synonymous with biostatistics or biological statistics and depicts the combination of all statistical methods of recording and describing life's processes, evaluating the result so as to provide quantitative and objective explanation for them.

Turkey has been defined as 'large bird that is often kept for its meat eaten especially at Christmas and thanks giving in the United States. Rearing of turkey is not common and popular as that of chicken in Nigeria primarily because of financial and management problems encountered in the process of their maintenance.

The United States produced one hundred and thirty eight (138) million turkey in 1976 (turkey production bulletin (1986). It was also confirmed by the USDA that over 7000 farms report the sales of turkey and only about 3300 farms sell over 2000 turkeys per year.

Turkey meat is a source of protein, fat and oil for man. Some poultry farmers kept turkey for egg production while others rear them for ornamental purposes. They are mainly fed with diet of corn and soya beans meal mixed with a supplement of vitamins and minerals. Fresh water to be available at all times.

Turkeys are of different varieties, they are grouped into black, bourbon, bronze, Narragansett, royal palm, slate and white turkeys.

In poultry and other agricultural experimentation, biometrics functions as a tool in designing the experiment, analyzing its data and drawing conclusions from them.

1.1 Turkey Production

Technological advances in turkey genetics, production and processing have created and provides a pound of meat using a smaller amount of feed in less time than most other domestic meat-producing animals. This improvement in genetics and those on feed and management practices have made domesticated turkey more efficient at converting to profit

Domesticated turkeys: are also breed to have breast meat, meatier thighs and white feathers. White feathers are preferred so that, when plucked, they leave no unsightly pigment spot under the skin. Greater efficiencies have lowered costs to consumers, making turkey an excellent food value

Modern turkey: production practices are humane with the health and comfort of the birds of paramount importance this has been the best interest of the grower, both from ethical and economic vantages points. Turkey shelters are usually constructed to provide maximum protection from predators. Disease and bad weather. Turkeys are fed mainly a balanced diet of corn and soybean meal mixed with a supplement of vitamins and minerals. Fresh water is also available in support of the diet digestion and this availability of fresh water should be at all times. On average, it takes 84 pounds of feed to raise a 30 pounds tons turkey.

The cost of raising turkey is affected by many factors including buildings, equipment, labour, feed costs and interest on loans. Feed costs amount to almost two-birds of the cost of raising a turkey. Geographic location, degree of automation and size of the farm all contribute to differences in the cost of raising turkey.

Breeds and Varieties of Turkeys

Turkeys belong to the family of birds called meleagrididae. The young birds are commonly called pouts; the make birds are referred to as turkey cocks or toms while the females are called turkey hens.

Research has shown that there are two breeds of turkey and many varieties. The modern commercial (domesticated) broad breasted and the non broad breasted or wild types which are in by (Adewumi, S. A., 2011)[1] that is only one breed of turkey but many varieties

There are different varieties of turkeys which are usually influence by environment of breeding i.e. the weather condition exposed to and the common ones are broad-breasted (BB) white, the BB bronze, and the non commercial or wild turkeys.

The non commercials are the bourbon the black, the Narragansett the royal palm and the state turkey (Frank I, Platt (1925)[2]; American poultry journal, Chicago, American livestock breeds conservancy (2005).

Interbreeding between these varieties has given rise to the large sized turkey medium sized and the small sized turkey.

The Factors Responsible for Growth of Turkeys

1. Housing and maintenance
2. Spacing
3. Method of rearing
4. Lighting system

Diseases and Control

During the poult stage, birds are loss due to diseases contacted than at any other time of the rearing. Though, an improper management contributed to this but diseases contributed a lot to the causes. The following are some of the diseases encountered in the turkey's production.

Blackhead (INFECTIOUS ENTHEROHEPATITIS)

This is a wide spread, destructive diseases caused by a protozoan parasite called hsitomonas meleagridis, harboured in the common poultry ceceal worm. It affects turkey of all ages but more especially between 8 to 16 weeks. The symptoms include droopiness often with lowered head and wing, watery, yellow coloured dropping and darkened head parts. It may cause stunted growth, poor feed utilization and death. Outbreaks of this in turkey often can be traced to direct or indirect contact with ranges, houses or equipment previously used by chickens.

Prevention and treatment: good management practice can do much to control the black head problem. Turkeys should not be kept together with chickens on the same premises. Turkeys should not be range on ground previously used by chickens unless several years elapsed. Rotate range periodically if possible. Cecal worm control may help reduce blackhead incidence. Wire or slated floors around feeders and drinkers reduce exposure.

Coccidiosis

Coccidiosis affects poults 3 to 8 weeks old. Symptoms include raffled feathers and watery diarrhea sometimes slightly stained with blood.

Prevention and treatment: prevention can be effected by including amproliumor sulfaquianoxaline in the starting feed (Azeez, O. I., 2014)[3]. Coccidiosis can also be used to treat this disease.

Sinusitis

A part from blackhead disease experienced swelling ground the eye (similar to vitamin A deficiency) known as the symptom of "sinusitis" is also experience during this course of study (project). It is most important disease affecting turkey than blackhead. A deficiency of green feed or vitamin a substitute (Carotene) and poor sanitation is the usual predisposing causes.

Treatment: removal of the fluid from the swollen sinuses and injecting silver nitrate solution by a veterinarian. Streptomycin may also be used for prevention of vitamin A deficiency. Feeding of ample green feed or sufficient oil emulsion or powders containing vitamin A at the correct levels may be to the birds.

Erysipelas

This is usually affects turkeys of ages 4 to 7 months. It is characterized by enlarge friable liver, bloody areas in breast muscles, purplish blotches in the skin over the breast, enteritis, enlarged mottled spleen purplish red snood especially in males over 3 months old. The affected ones show a general weakness and restlessness, their heads, wings and tails droop.

Prevention: keep turkeys from all contact with sheep and swine and with land used by these animals. Early debarking and decoding help to prevent the disease. Sanctuary measure and the use of clean range are also helpful. Vaccinate with erysipelas bacteria at 8 weeks or when moving poults from the brooder house.

Others diseases are turkey rhino-Tracheitis (TRT) turkey pox, pasteunella multocida, airsacculitis, aspergillosis, lice etc.

2. AIM AND OBJECTIVE OF THIS PAPER

The aim and objective of this paper are as follows:

1. To determine the most effective treatment that contributes to fast growth of turkeys.
2. To test whether there is significant differences among the blocks (experimental unit) and the three feeds (treatment) or etc not.

3. RESEARCH METHOD

Biometrical procedure was followed to study the growth of turkeys raised with three groups in each location. To minimize the variation that are bound to occurred, the method of randomization was employed when allocating turkeys into each experimental group (unit). Therefore six experimental units were able to be formed and each consists of mixture of black and white feather poults.

Biometrical experimentation considered includes;

- ✓ The field layout and experimental design procedure
- ✓ The type and mode of data collection
- ✓ The format for recording, summarizing and presentation of data and
- ✓ Testing the significance differences among the blocks, feeds and follow up procedures (post-mortem analyses) to determine the most effective out of the three feeds.

3.1 Experimental Design Techniques

The development of experimental design principle is generally attributed to Sir Ronald fisher who was concerned with agricultural research in the 1920s for the improvement of yield. Further development of these initial principles was provided by innovators such as frank Yates and George box, most notably through their contributions to agriculture and industrial experimentation (Ajit, C. T. 2009)[4].

The impact of Sir R. Fisher's work was to become apparent in the late 1980s when terms such as statistics, experimental design, treatment effect, randomization, analysis of variance and significance were to be recognized as synonymous with the efficient planning and analysis of data over a wide range of subject area.

It should be realized that the term experiment is open to a very broad interpretation and covers any type of study, trial or investigation where data are to be collected and assessed.

The experimental laboratory was partitioned into four and prevented from each other. The partitioned section named plots were designed in the same way and thus results to eight (8) homogeneous groups-four groups in the laboratory 1 and 2 with equal facilities and apparatus.

3.2 Sources of Data

The procedure for data collection includes measuring the initial weight of turkeys before administering the feeds with the use of measuring scale. The same instrument was used in measuring and recording the quantity (kilogram) of feed given to the birds and the left over in the next day. The daily feed intake i.e. the consumption rate was taken care of by subtracting the left over feeds of each plot from the feed given to the birds at the previous day. Mathematically, consumption= feed given – left over.

The measuring instrument was also used for weekly observation of the birds' weight in response to the treatment administered. Each bird of the experimental group was identified with dye of different colour and their material values (kg) were recorded in corresponding to their colour. While measuring nylon material was used to tight their two legs together and place confidently on the weighing scale plate by a researcher when another person in the group) on duty read out the weight for recording

The process is repeated for all the sample units in a group after which all other group is considered one after the other. The measurement was repeated for twelve weeks. This is as shown in table one.

3.3 Statistical Tools and Techniques

Statistical tools and techniques employed in the analysis of this paper are tabulation, and complete randomized design and the post-mortem analysis (using fisher's least significant difference, LSD). And the techniques include the formulation of statistical hypothesis statement of level of significance, the test statistics, the decision rule, the computation, decision and conclusion.

4. ANALYSIS OF VARIANCE AND TEST OF SIGNIFICANT DIFFERENCE AMONG THE TREATMENTS (FEED)

Hypothesis

H0: there is no significant differences in the treatment effect (T_A=T_B=T_C)

H1: there is a significant difference in the treatment effect (TA≠TB≠`TC)

Level of Significance

α =5% =0.05

Critical Value

$$F^{\alpha}_{V_1,V_2} = F^{0.05}_{(N-1)(K-1)-(N-1)} = F^{0.05}_{(3-1)(36-3)} = 3.27$$
$$=3.27$$

Test Statistics

$$\text{f-ratio}=\frac{MST}{MSE}=\frac{Mean\ \ square\ Treatment}{Mean\ \ square\ \ error}$$

Decision rule

Reject H0 if F-calculated is greater than the critical value. If otherwise, do not reject H0.

Computation

Weekly weight gain=succeeding-preceding week i.e. Wk 1 weight gain equal (week 1-week 0) weight value.

Likewise mean weekly weight gain is calculated as follows Mean weekly weight gain=total weight gain in a week/ number of turkeys taking the feed in the week i.e.

Week 1 $y_{ij} = \sum y_{ij} + k \;\; week\ 1 \;\; per \;\; each \;\; treatment$

y_{ij}=unit of turkey

k=number of turkey in each of experimental unit or per each treatment

Table 1

LAYOUT OF THE MEAN WEEKLY WEIGHT GAIN (KG)			
REPLICATE	TREATMENT		
	1	2	3
1	0.12	0.13	0.11
2	0.1	0.13	0.09
3	0.14	0.15	0.11
4	0.07	0.11	0.03
5	0.19	0.21	0.11
6	0.18	0.23	0.17
7	0.12	0.26	0.12
8	0.13	0.26	0.18
9	0.14	0.26	0.12
10	0.11	0.29	0.09
11	0.21	0.28	0.11
12	0.18	0.2	0.23
Total (Yi)	1.69	2.51	1.47
Mean (Yi)	0.14	0.21	0.12
Number of observation per treatment (k)	12	12	12

$$Correcting \;\; Factor = \frac{y_{..}^2}{nk} = \frac{5.67^2}{36} = 0.89303$$

$$SS_{total} = \sum\sum y_{ij}^2 - CF$$

$$= 0.12^2 + 0.13^2 + ... + 0.23^2 - 0.89303$$

$$= 0.14307$$

$$SS_{trt} = \frac{\sum y_{ij}^{\ 2}}{n} - CF$$

$$\frac{1}{2}(11.3171) - 0.89303 = 0.9431 - 0.89303 = 0.05007$$

$$\frac{1}{2}\sum\sum y_{ij}^2 - \frac{1}{n}\sum y_{ij}^2 = 1.0361 - 0.9431 = 0.09300$$

Degree of freedom for total (dfT) = nk-1=12(3)-1=36-1=35

Degree of freedom for treatment (dfTr) = k-1=3-1=2

Degree of freedom for error = nk – k = 12(3)-3=33

Mean square error (MSE) =

SSError/dError=0.09300/33=0.002818

Mean square treatment (MST) = SStmt/df tmt=

0.05007/2=0.025035

Analysis Of Variance (ANOVA)

WGT GAINS

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.050	2	.025	8.882	.001
Within Groups	.093	33	.003		
Total	.143	35			

Decision

Since the F-calculated (the variance ratio) is greater than the critical value (F-tabulated) at 0.05 level of significance, the null hypothesis is rejected.

Comment

The chosen decision is shown that the treatment differences are significant ($p<0.05$ i.e. at 0.05 level of significance) among the mean weight of turkeys.

5. SUMMARY

The influence of the treatment component compounded from different feeds. Response of these treatments: the standard feed (feed A), self compounded local feed (feed C) signify that laboratories (blocks) are also have impact on the growth of turkeys even though it is not significant.

The result obtained from the chart in figure 4.1 and the summary of the mean weekly weight gain of table 4.6 show the efficiency of feed B above other feed. Presence of soyabean meal with adequate ratio of sulphur containing amino acid such as methonine and lysine and some require feed components like maize GC, fish meal, limestone, bone meal, common salt, etc in treatment B supported their body immunities against diseases viruses. The growth rate of birds taking feed B is faster but as a result of improper management experienced at eleventh week cannot withstand bad condition like those in group 3 and 5 taking feed C. this is shown in figure 4.1 were the bars feed A and B started falling while feed C continue rising. It was a result of local feed components contained in feed C that aided this.

The randomized completely block design (RCBD) employed for the test of no difference between the blocks supported the statement of null hypothesis that there is no significant ($p<0.05$) different among the blocks. But the significant ($p<0.05$) different among the treatments (feeds) is confirmed by completely randomized.

Design (CRD) which prompts to the use of fisher's least significant different (LSD) to compare the feed mean weight gain and result obtained proved only feed B with mean 0.21kg significant from others while feed a (0.14) and feed C (0.12) are not significant from each other. The effect of the inadequate feed components of feed A and feed C resulted to the sicknesses called blackhead and sinusitis diseases even death of one bird from group 1 experienced.

In conclusion based on the summary of the analysis it can be concluded that feed B with feed mean 0.21kg contributed to turkey's growth than feed A and feed C with feed mean 0.41kg and 0.12kg respectively.

Finally fed B containing; soya bean meal (0.5kg) maize (12kg) groundnut cake (5 kg), lysine (0.05kg), methionine (0.05kg), vitamin b premix (0.05kg), limestone (0.75kg), bone meal (0.75kg), fish meal (1.25kg) and common salt (0.01kg) is therefore recommended feed B to poultry farmers.

5.1 Conclusion

It is therefore concluded that the feeds (treatments) differences are significant. In other words the mean weight of turkeys feed with three different feeds (treatments) are significantly different from one another; this implies the growth rate of turkeys depends on the feed.

Fisher's Least Significant Difference (LSD)

Since the ANOVA indicates that there are significant differences among the mean weight of turkey in response the feeds stuffs. Then there is need to test for differences among pairs of means, using the LSD procedure.
To determined the most effective treatment

Multiple Comparisons
LSD

Multiple Comparisons

Dependent Variable: WGT GAINS

LSD

(I) Factors	(J) Factors	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	-.06833*	.02167	.003	-.1124	-.0242
	3.00	.01833	.02167	.404	-.0258	.0624
2.00	1.00	.06833*	.02167	.003	.0242	.1124
	3.00	.08667*	.02167	.000	.0426	.1308
3.00	1.00	-.01833	.02167	.404	-.0624	.0258
	2.00	-.08667*	.02167	.000	-.1308	-.0426

*. The mean difference is significant at the 0.05 level.

In terms of high and fast growth rate, feed B could be chosen because turkeys taking feed B produced the highest weight.

APPENDIX I

WEIGHTS OF TURKEYS FOR TWELVE WEEKS (KG)

Ages in weeks			7	8	9	10	11	12	13	14	15	16	17	18	19
Trmt	Expr. Group	Unit	Weeks of observation												
			0	1	2	3	4	5	6	7	8	9	10	11	12
A	1	G	0.40	0.50	0.65	0.80	0.90	1.07	1.20	1.40	1.45	1.60	1.80	2.10	2.35
		Y	0.50	0.70	0.75	0.97	1.10	1.42	1.70	1.90	2.05	2.20	2.30	2.70	2.90
	4	N	0.25	0.35	0.45	0.62	0.70	0.93	1.15	1.20	1.40	1.50	1.60	1.85	2.00
		R	0.20	0.30	0.45	0.60	0.60	0.76	0.85	0.90	0.90	0.80	-	-	-
		B	0.25	0.40	0.48	0.62	0.60	0.76	0.88	0.95	1.05	1.10	1.15	1.40	1.50
		R	0.25	0.35	0.40	0.52	0.65	0.80	0.99	1.15	1.27	1.140	1.50	1.60	1.85
		G	0.30	0.45	0.56	0.68	0.70	0.97	1.10	1.25	1.40	1.50	1.70	1.85	2.15
		Y	0.25	0.30	0.50	0.55	0.65	0.80	0.96	1.00	1.20	1.40	1.40	1.60	1.75
		B	0.25	0.35	0.46	0.60	0.60	0.75	0.92	1.00	1.10	1.30	1.40	1.55	1.60
		N	0.25	0.40	0.48	0.60	0.65	0.85	0.99	1.10	1.20	1.35	1.50	1.55	1.75
B	2	Y	0.30	0.40	0.55	0.64	0.70	0.95	1.15	1.45	1.60	1.80	2.00	2.20	2.30
		G	0.28	0.50	0.58	0.75	0.90	1.10	1.18	1.40	1.68	1.90	2.20	2.60	2.80
	6	N	0.40	0.50	0.65	0.87	1.00	1.19	1.55	1.95	2.23	2.45	2.80	3.00	3.20
		B	0.28	0.40	0.50	0.37	0.65	0.90	1.15	1.40	1.70	2.05	2.30	2.60	2.75
		R	0.40	0.50	0.68	0.85	1.05	1.40	1.76	2.05	2.48	2.80	3.10	3.50	3.60
		Y	0.40	0.55	0.65	0.92	1.00	1.30	1.54	1.75	2.14	2.40	2.60	2.85	3.35
		R	0.28	0.45	0.70	0.82	1.05	1.33	1.65	1.95	2.10	2.30	2.70	2.90	3.05
		B	0.20	0.30	0.45	0.50	0.55	0.70	0.78	0.95	1.10	1.35	1.50	1.70	1.80
		G	0.28	0.40	0.52	0.66	0.70	0.78	0.85	1.00	1.30	1.65	2.05	2.40	2.65
		N	0.30	0.45	0.50	0.65	0.75	0.81	1.16	1.45	1.62	1.80	2.10	2.40	2.65
C	3	Y	0.35	0.50	0.72	0.90	1.00	1.12	1.15	1.15	1.30	1.35	1.40	1.60	1.70
		G	0.40	0.48	0.50	0.65	0.65	0.85	0.91	1.10	1.30	1.30	1.40	1.60	1.70
	5	N	0.28	0.40	0.52	0.58	0.70	0.97	1.20	1.30	1.48	1.55	1.60	1.75	2.00
		B	0.25	0.35	0.45	0.60	0.50	0.62	0.65	0.75	0.95	1.10	1.20	1.30	1.50
		R	0.30	0.40	0.48	0.60	0.65	0.85	0.90	1.10	1.20	1.35	1.40	1.60	1.80
		R	0.40	0.50	0.60	0.70	0.75	1.00	1.25	1.45	1.68	1.85	1.85	1.65	2.00
		Y	0.30	0.40	0.42	0.50	0.50	0.40	0.97	1.10	1.15	1.30	1.40	1.40	1.60
		B	0.28	0.40	0.48	0.56	0.60	0.62	0.72	0.80	1.05	1.15	1.30	1.40	1.75
		G	0.25	0.36	0.40	0.48	0.50	0.52	0.70	0.75	1.05	1.35	1.50	1.70	1.90
		N	0.30	0.45	0.52	0.65	0.70	0.72	0.90	1.00	1.10	1.20	1.30	1.70	1.75

APPENDIX II

WEEKLY WEIGHT GAIN PER TREATMENT (KG)
(a) TREATMENT 1 (FEED A)

UNIT	NUMBER OF REPLICATE											
	1	2	3	4	5	6	7	8	9	10	11	12
1	0.10	0.15	0.15	0.10	0.17	0.13	0.20	0.5	0.15	0.20	0.30	0.25
2	0.20	0.05	0.22	0.13	0.32	0.28	0.20	0.15	0.15	0.10	0.40	0.20
3	0.10	0.10	0.17	0.08	0.23	0.22	0.05	0.20	0.10	0.10	0.25	0.154
4	M	M	M	M	M	M	M	M	M	M	M	M
5	0.15	0.08	0.14	-0.02	0.16	0.12	0.07	0.10	0.05	0.05	0.25	0.10
6	0.10	0.05	0.12	0.13	0.15	0.19	0.16	0.12	0.13	0.10	0.10	0.25
7	0.15	0.11	0.12	0.02	0.27	0.13	0.15	0.15	0.10	0.20	0.15	0.30
8	0.05	0.20	0.05	0.10	0.15	0.16	0.04	0.20	0.20	0.00	0.20	0.15
9	0.10	0.11	0.14	0.00	0.15	0.17	0.08	0.10	0.20	0.10	0.15	0.05
10	0.15	0.08	0.12	0.05	0.15	0.19	0.11	0.10	0.15	0.15	0.05	0.20
TOTAL	1.10	0.93	1.23	0.59	1.75	1.59	1.06	1.17	1.23	1.00	1.85	1.65
MEAN	0.12	0.10	0.14	0.07	0.19	0.18	0.12	0.13	0.14	0.11	0.21	0.18

M=> MISSING OBSERVATION

APPENDIX III

(b) TREATMENT 2 (FEED B)

UNIT	NUMBER OF REPLICATE											
	1	2	3	4	5	6	7	8	9	10	11	12
1	0.10	0.15	0.09	0.06	0.25	0.20	0.30	0.15	0.20	0.20	0.20	0.10
2	0.22	0.08	0.17	0.15	0.20	0.08	0.22	0.28	0.22	0.30	0.40	0.20
3	0.10	0.15	0.22	0.13	0.19	0.36	0.40	0.28	0.22	0.35	0.20	0.20
4	0.12	0.10	0.07	0.08	0.25	0.25	0.25	0.30	0.30	0.25	0.30	0.15
5	0.10	0.18	0.17	0.20	0.35	0.36	0.29	0.43	0.32	0.30	0.40	0.10
6	0.15	0.10	0.27	0.08	0.30	0.24	0.21	0.39	0.26	0.20	0.25	0.50
7	0.17	0.25	0.12	0.23	0.28	0.32	0.30	0.15	0.20	0.40	0.20	0.15
8	0.10	0.15	0.05	0.05	0.15	0.08	0.17	0.15	0.25	0.15	0.20	0.10
9	0.12	0.12	0.14	0.04	0.08	0.07	0.15	0.30	0.35	0.40	0.35	0.25
10	0.15	0.05	0.15	0.10	0.06	0.35	0.29	0.17	0.18	0.30	0.30	0.25
TOTAL	1.33	1.33	1.45	1.12	2.11	2.31	2.58	2.60	2.55	2.85	2.80	2.00
MEAN	0.13	0.13	0.15	0.11	0.21	0.23	0.26	0.26	0.26	0.29	0.28	0.20

APPENDIX IV

(c) TREATMENT 3 (FEED C)

UNIT	NUMBER OF REPLICATE											
	1	2	3	4	5	6	7	8	9	10	11	12
1	0.15	0.22	0.18	0.10	0.12	0.03	0.00	0.15	0.05	0.05	0.20	0.10
2	0.08	0.02	0.15	0.00	0.20	0.06	0.19	0.20	0.00	0.10	0.20	0.10
3	0.12	0.12	0.06	0.12	0.27	0.23	0.10	0.18	0.07	0.05	0.15	0.25
4	0.10	0.10	0.15	-0.10	0.12	0.03	0.10	0.20	0.15	0.10	0.10	0.20
5	0.10	0.08	0.12	0.05	0.20	0.03	0.20	0.10	0.15	0.05	0.20	0.20
6	0.10	0.10	0.10	0.05	0.25	0.05	0.20	0.23	0.17	0.00	-0.20	0.35
7	0.10	0.02	0.08	0.00	-0.10	0.25	0.13	0.05	0.15	0.10	0.00	0.20
8	0.12	0.08	0.08	0.04	0.02	0.57	0.08	0.25	0.10	0.15	0.10	0.35
9	0.11	0.04	0.08	0.02	0.02	0.10	0.05	0.30	0.30	0.15	0.20	0.20
10	0.15	0.07	0.13	0.05	0.02	0.18	0.10	0.10	0.10	0.10	0.10	0.35
TOTAL	1.13	0.85	1.13	0.33	1.12	1.68	1.15	1.76	1.24	0.85	1.05	2.30
MEAN	0.11	0.09	0.11	0.03	0.11	0.17	0.12	0.18	0.12	0.09	0.11	0.23

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