

# SRP

Application of Benford's Law  
in the e-Audit tool

**"SRP – Summary Risk Profiling"**  
of the German Tax Administration

***12 years of experience in the field***

Stresa 11.07.2019

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- Trainer -

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- Trainer -

# SRP is ...

effectively focusing an audit



high-quality overview over increasing amount of (taxpayer's) data



Combines & links several modern audit-methods



Data-analysis toolkit



1. *A picture is worth a thousand words.*

2. *An audit-grid is better than one single method*

# What is the background of SRP?

- ④ Designed as a toolkit for tax authorities
- ④ Many different challenges:
  - ④ Rapidly increasing amounts of data
  - ④ Increasingly smart methods of manipulation
  - ④ Increasingly concealed connections between affiliated companies
- ④ All challenges primarily require overview + understanding of data



# Components of SRP

*Using Pivot-Tables in SRP-templates widens provision of data.*

*(Technically) Applying SRP-templates only requires basic Excel-skills.*



## Time-based / time series analysis

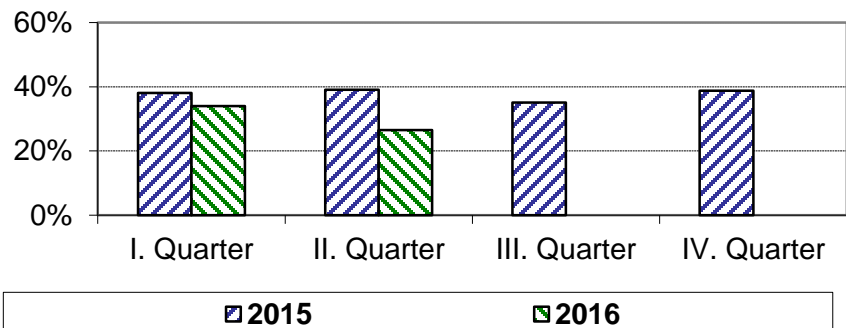
- ⓧ Single-scaled
- ⓧ Double-scaled
- ⓧ Serial
- ⓧ Sliding
- ⓧ Fuzzy logic → from rough to detail



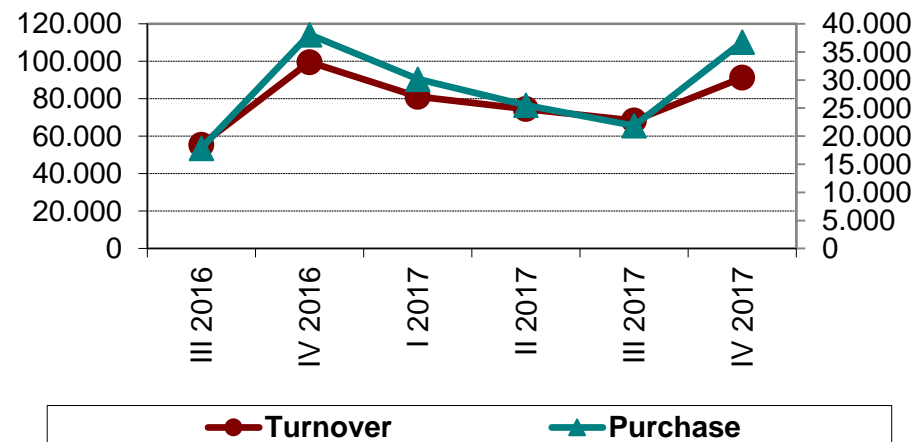
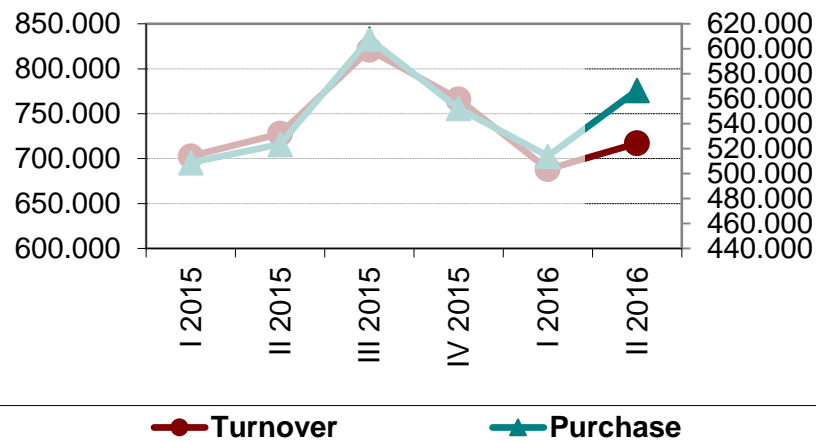
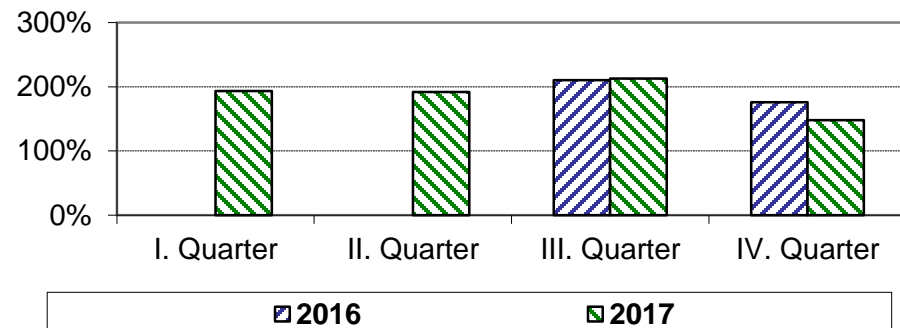
## Frequency-oriented

- ⓧ Digit analysis
  - ⓧ Equipartition of One-Unit-Spot (amounts  $\geq 100$ )
  - ⓧ **Benford distribution** of second leading digit
- ⓧ Lognorm distribution of values
- ⓧ Normal distribution of log. values
- ⓧ Mathematically secured via likelihood tests (displayed as propability of mismatch)

# Pharmacy

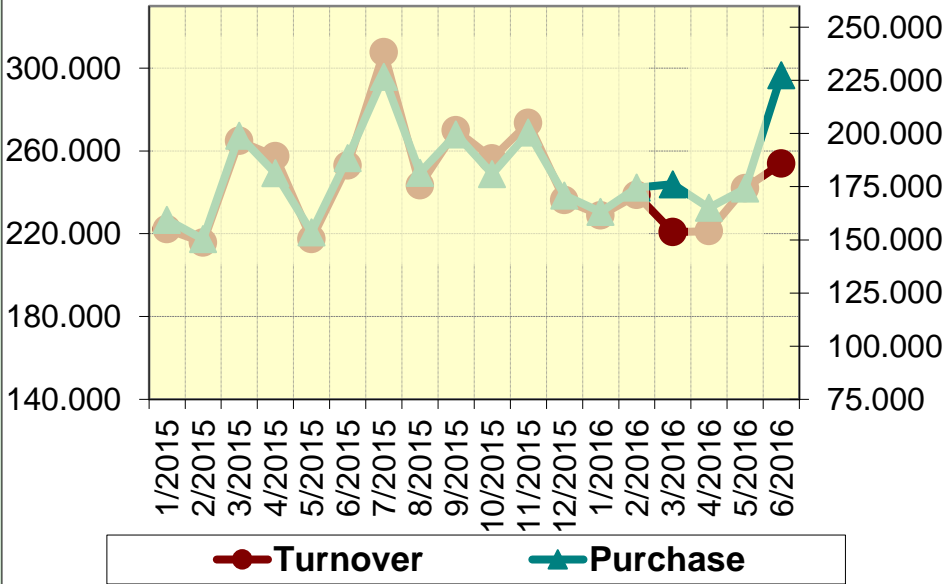


# Restaurant



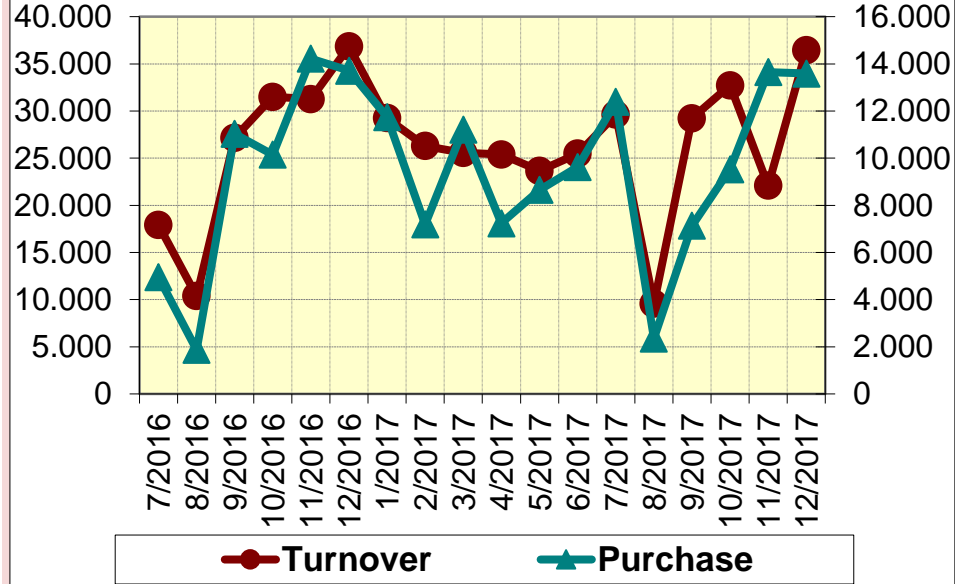
# Pharmacy

**Monthly time series (double scaled correlation oriented)**

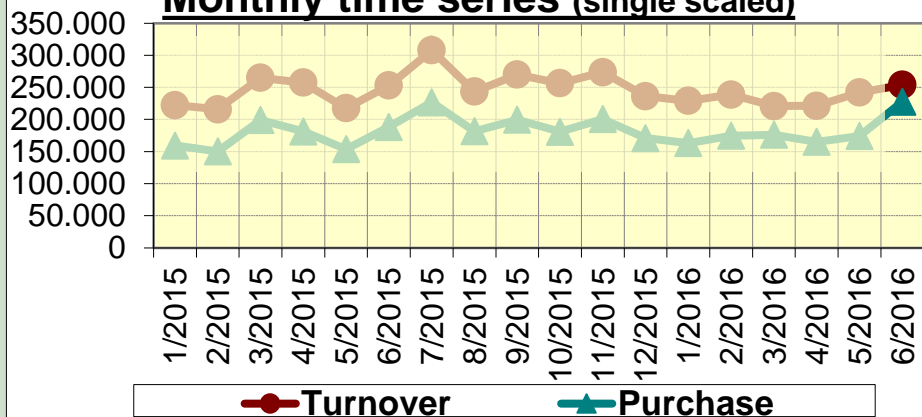


# Restaurant

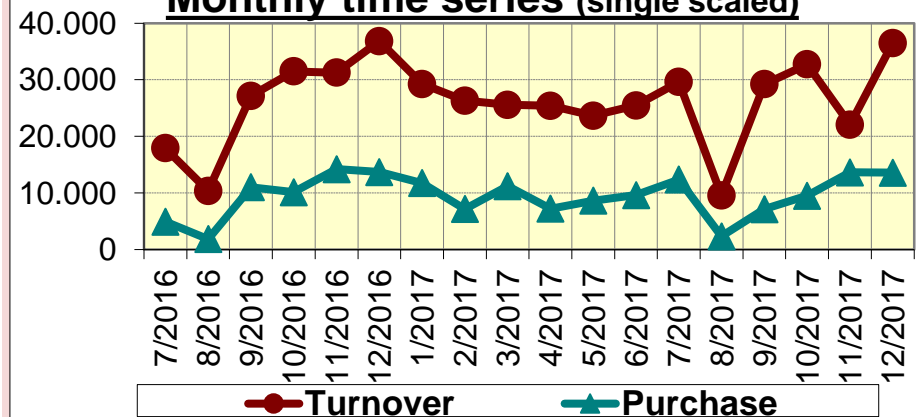
**Monthly time series (double scaled correlation oriented)**



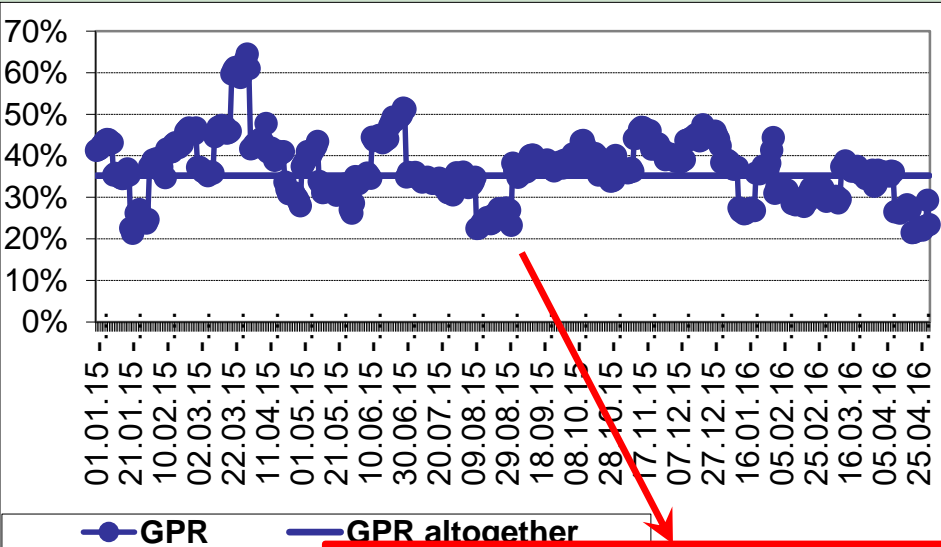
**Monthly time series (single scaled)**



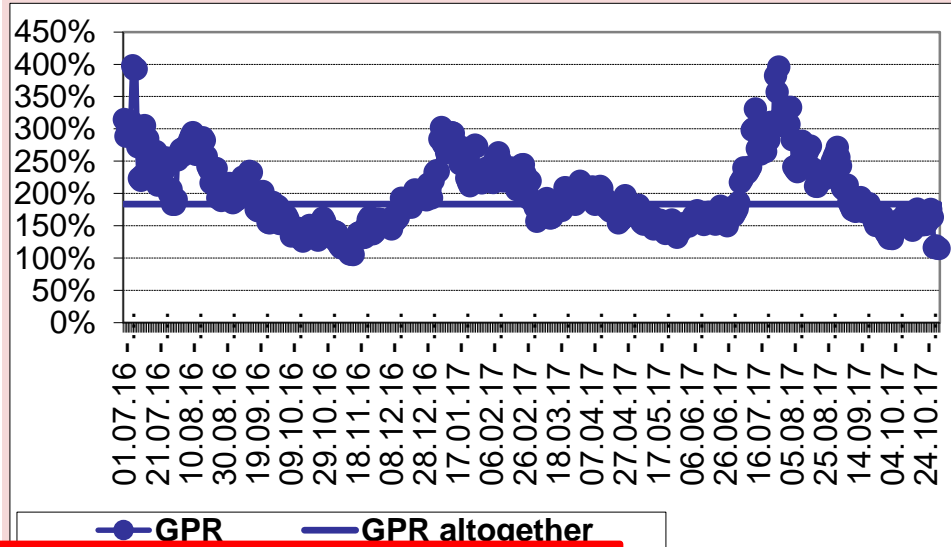
**Monthly time series (single scaled)**



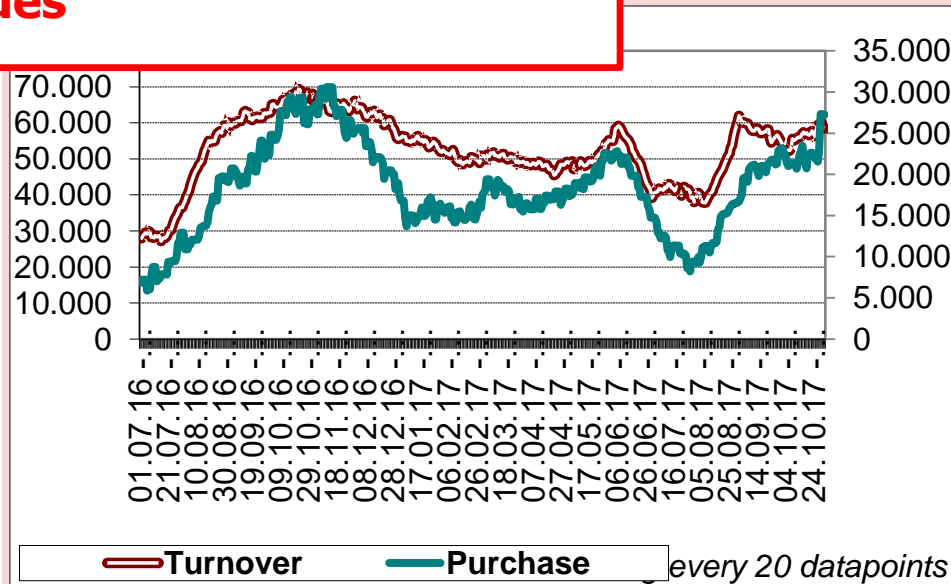
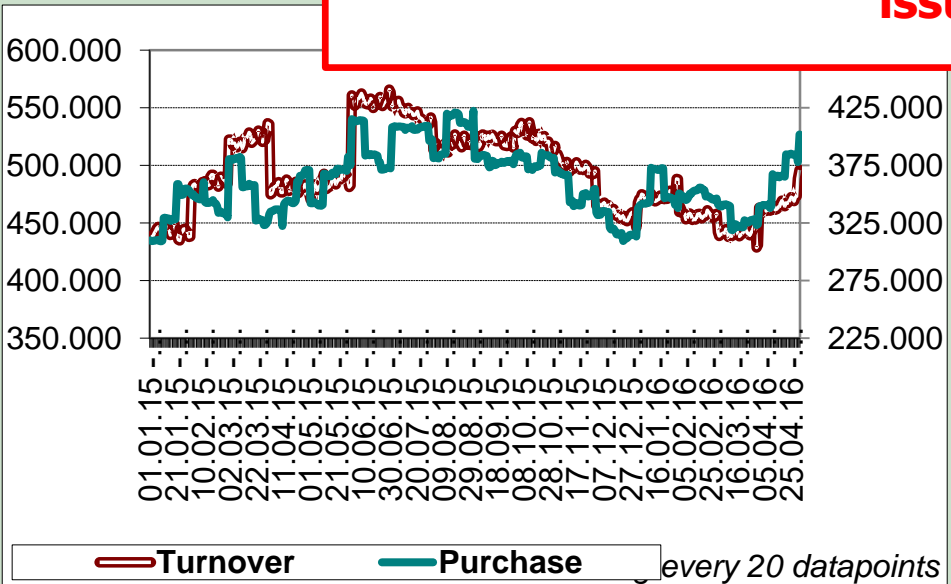
# Pharmacy



# Restaurant

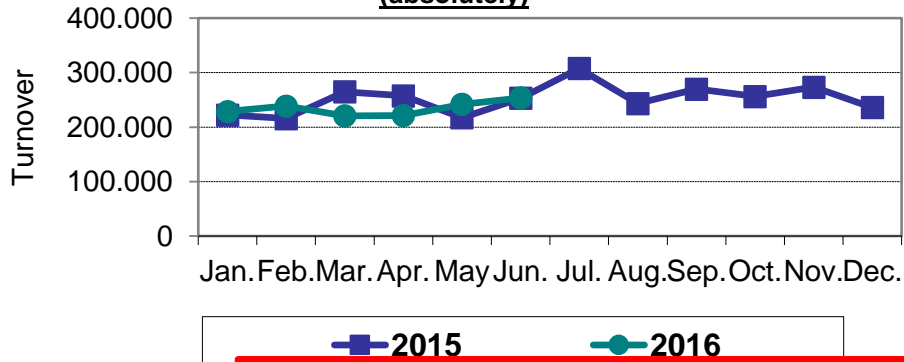


**Perfectly suitable for detecting single audit issues**



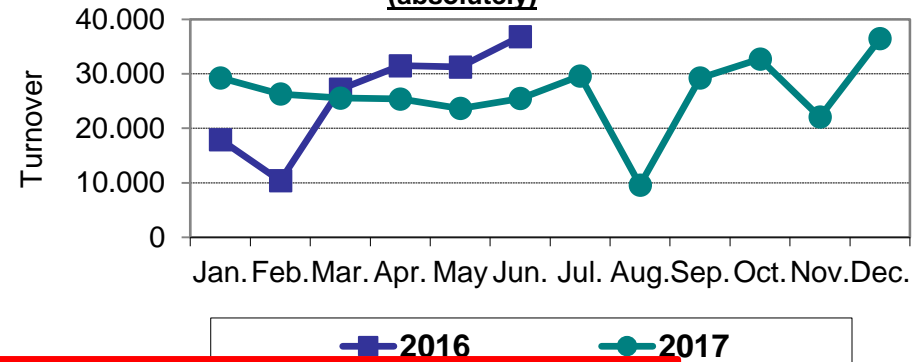
# Pharmacy

**Development of the monthly sums**  
(absolutely)

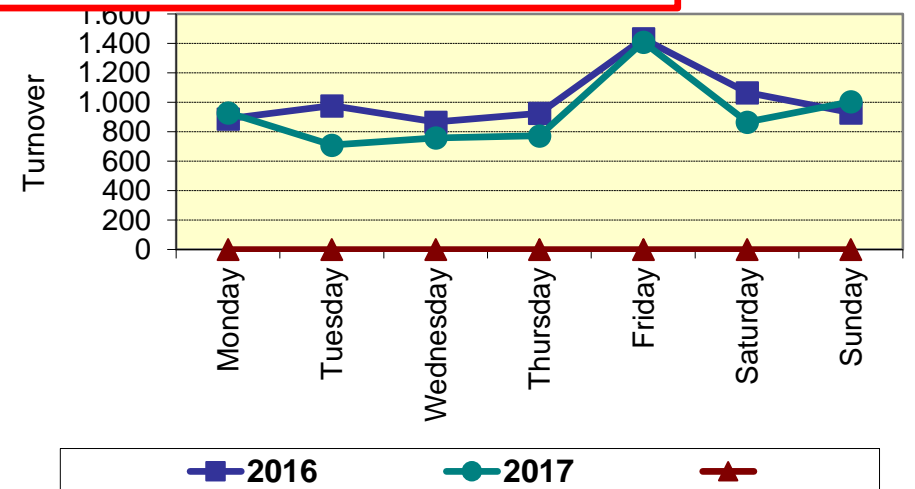
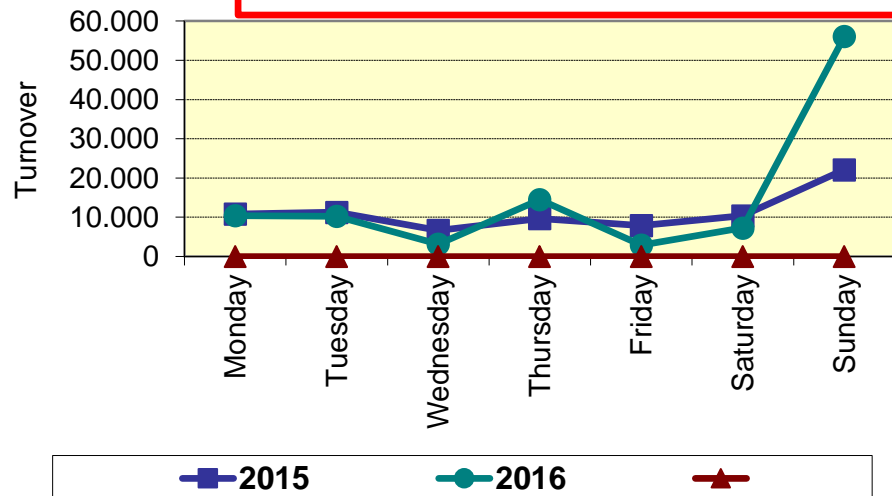


# Restaurant

**Development of the monthly sums**  
(absolutely)



**Indispensable prerequisite for appropriate application:  
thorough understanding of methods**

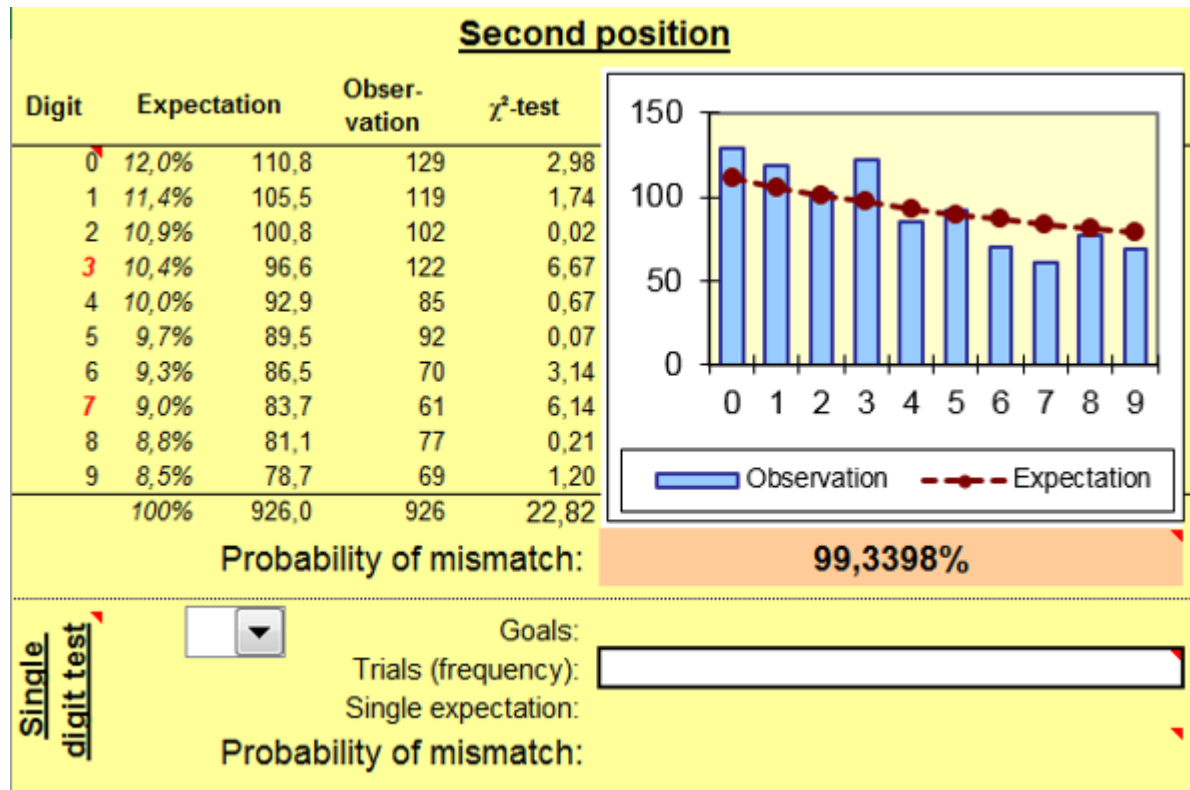




# Stochastic template - BL

Data: Daily cash revenue of 3 years of a restaurant

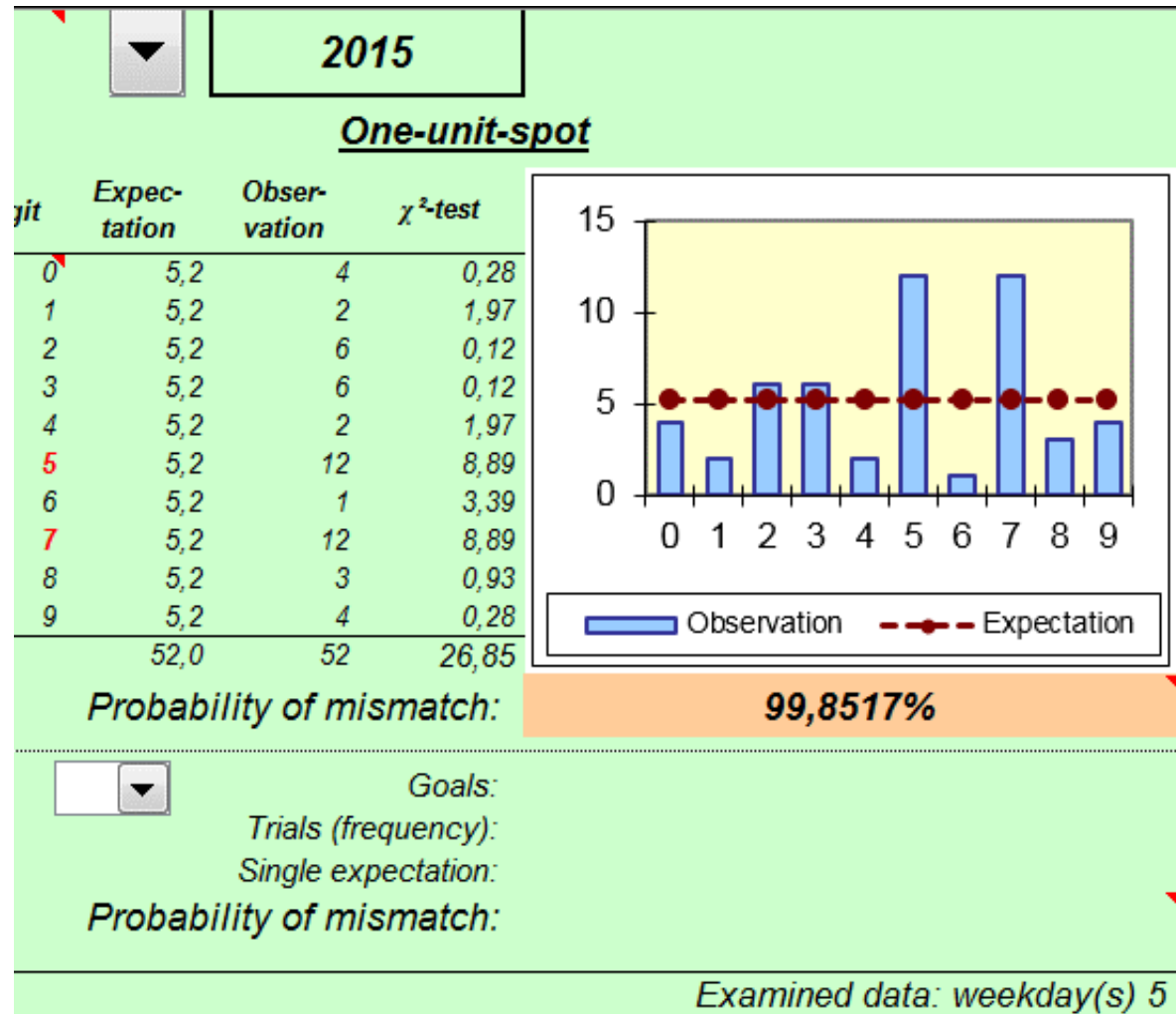
Result: Clear clue of manipulation by thinking up the sum of the daily cash revenue



# Stochastic template - BL

Data: Daily cash revenue of 3 years of a restaurant

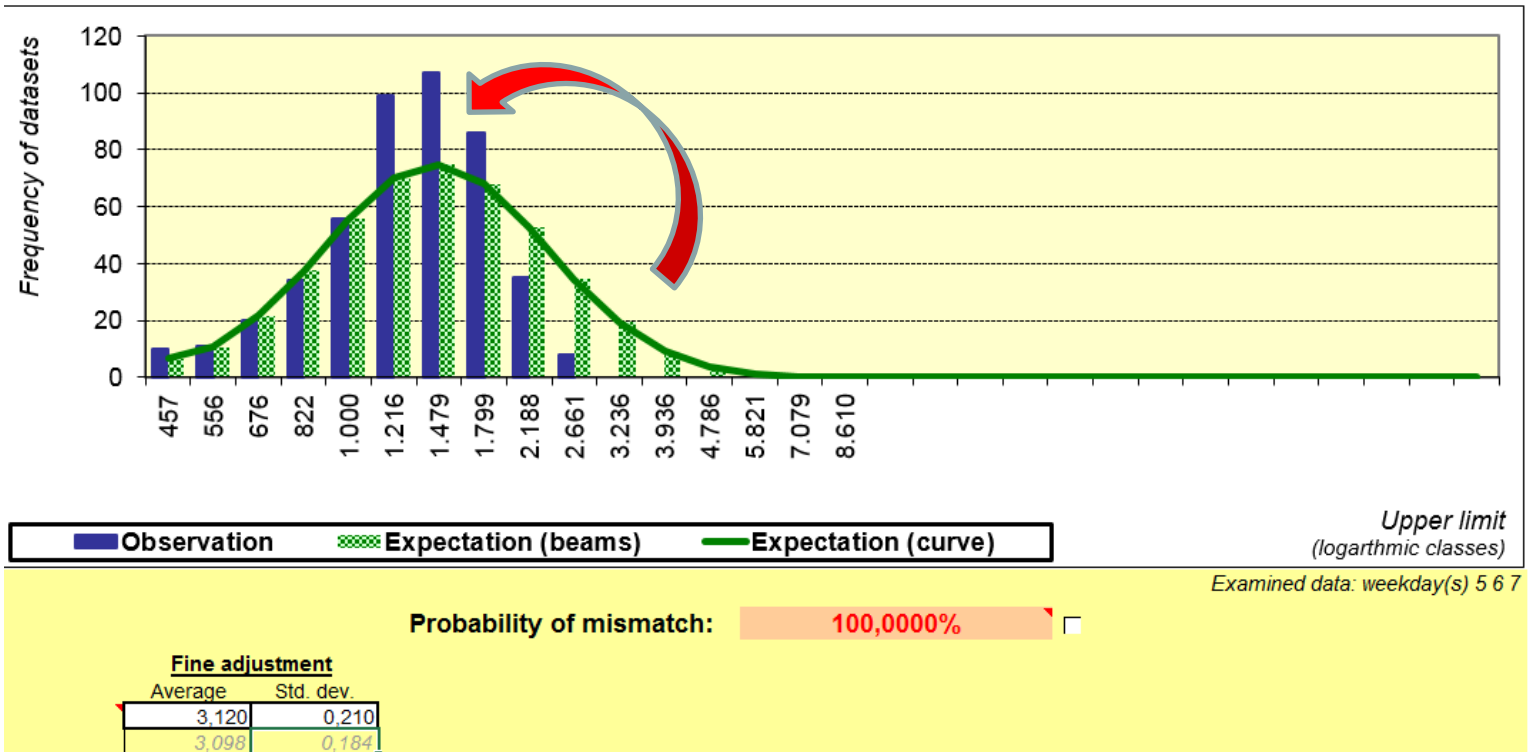
Result: Clear clue of manipulation by thinking up the sum of the daily cash revenue



# Stochastic template – Top Cut

Data: Daily cash revenue of 3 years of a restaurant

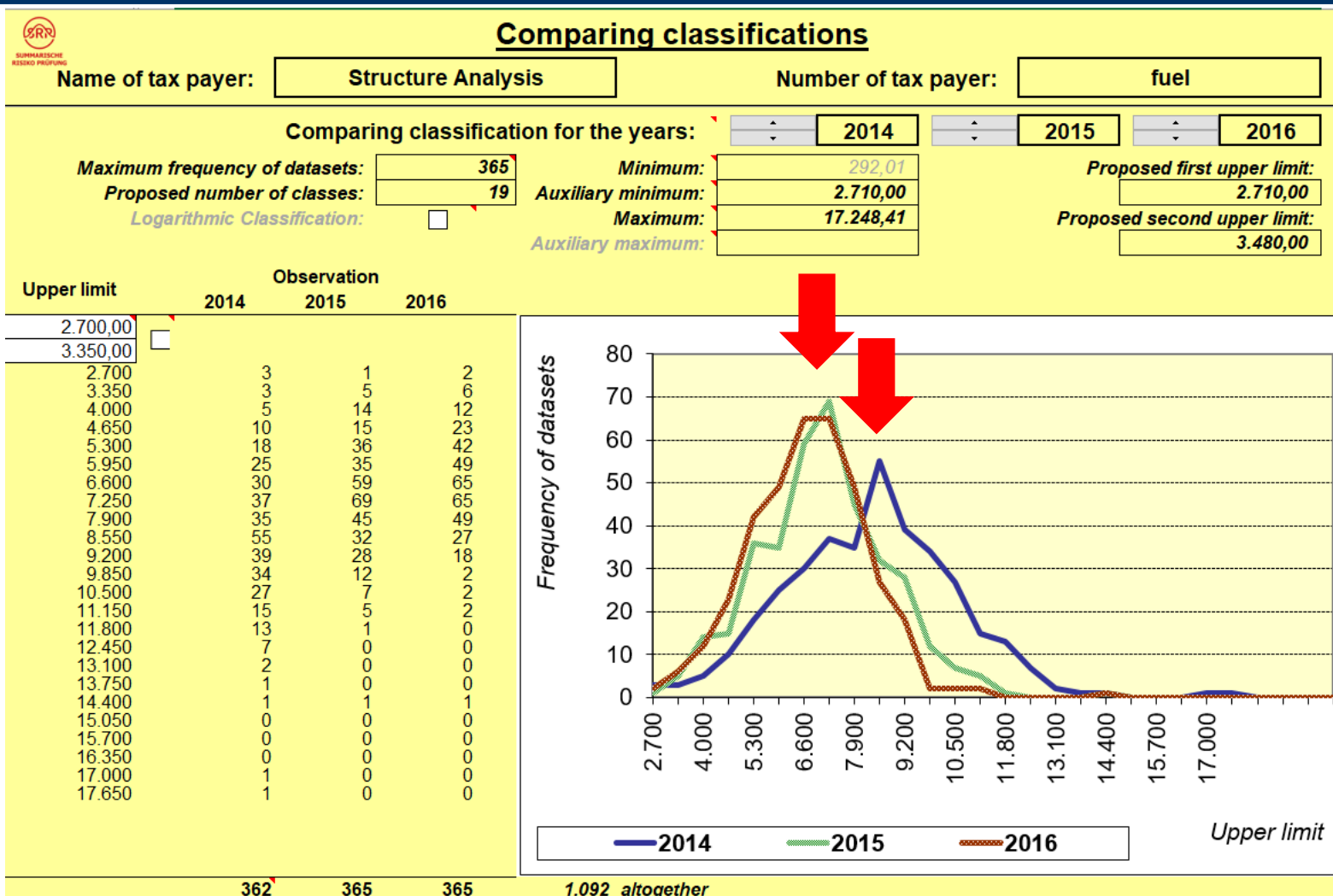
Result: Clear clue of manipulation by reducing the earnings on profitable days



# Stochastic template – Structure Analysis

Data: 1 Mio.  
Journal  
Entries of an  
ECR of a  
petrol  
station

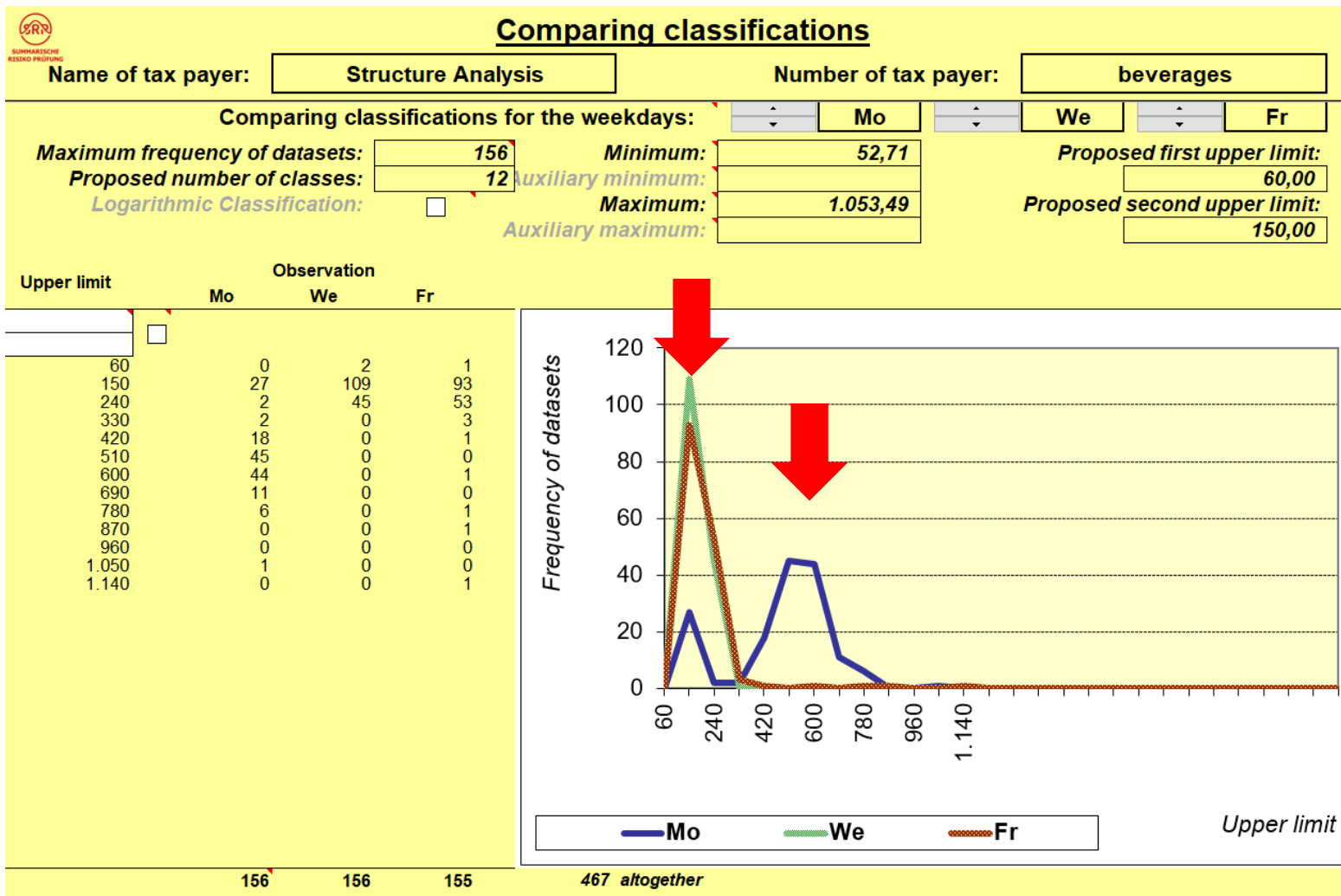
Result: Why  
decreases  
the turnover  
from fuel  
from 2014  
to the  
following  
years?



# Stochastic template – Structure Analysis

Data: 1 Mio.  
Journal  
Entries of an  
ECR of a  
petrol  
station

Result: Why  
is the  
turnover  
from  
beverages  
on Mondays  
five times  
higher than  
on any other  
day?



# Geographical distribution of application

 > 2.000 tax auditors in all German Federal States

 Coop-projekt with German customs authorities

 Increasing distribution throughout the Netherlands

 Coop-project with Serbian tax-authorities

(IMF project)

 Coop-projects with Bosnian tax-authorities

(World Bank Group & IMF projects)

 **Very vital network**



# Experiences

- ④ Started in 2007
  - ④ Distribution of SRP since 2008
  - ④ 1 week of basic training
  - ④ Additional seminars (depending on local position): 3 days
  - ④ Regional workshops
  - ④ Seminars for managers, legal departments and criminal law enforcement
- 
- ④ **Monitoring** (first 3 years of SRP in Schleswig-Holstein):
    - ④ 250 tax-auditors
    - ④ > 1.000 cases
    - ④ Additional taxes due to SRP usually > 10.000 € / case
    - ④ Criminal proceedings confirmed findings of SRP every single time
    - ④ **NO case of unjust accusation**



# Summary

- SRP Accumulated experience:
  - SRP Audits
  - SRP Trainings
  - SRP Implementation / Concepts
- SRP some positive and promising verdicts
- SRP Currently reviewed by the German Bundesrechnungshof
- SRP Quick and high acceptance among auditors
- SRP Application on any kind of business regardless of company's size
- SRP Door-opener for data-visualisation
- SRP Only condition: data







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