



Differentiation of local school systems

The use of national examination systems to evaluate education processes at the local level

Roman Dolata, Artur Pokropek

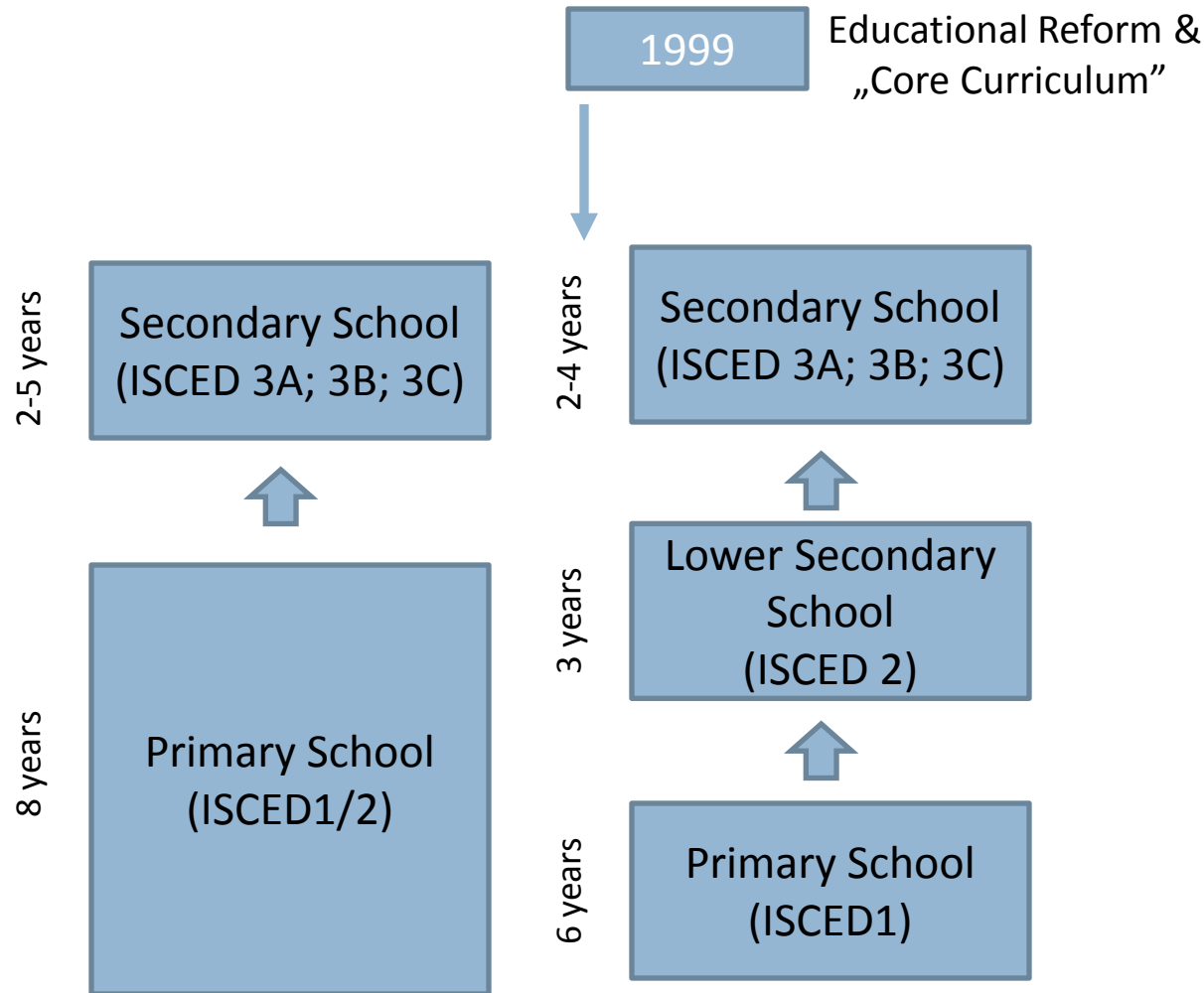
Educational Research Institute and the National Examination Board,
Methodology of Value Added Team



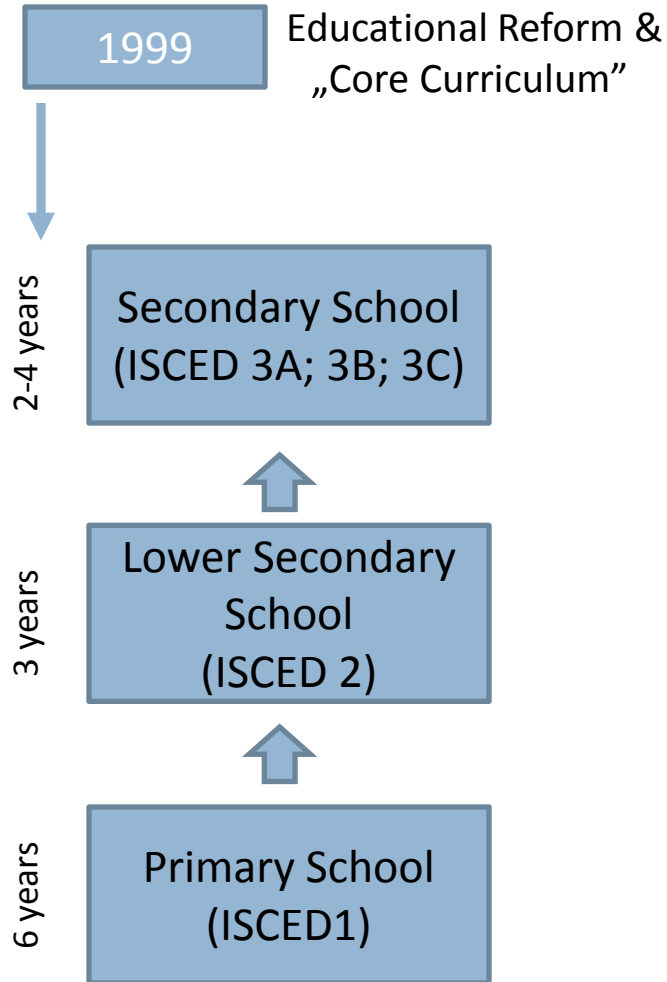
Outline

- National examination system in brief and its functions
- Differentiation of lower secondary school system
 - Differentiation processes at national level
 - Using information from national examination system
 - Differentiation processes at local level
 - Using Value Added Models
 - Differentiation processes at school level
 - Using Value Added Models
- Summary and conclusion

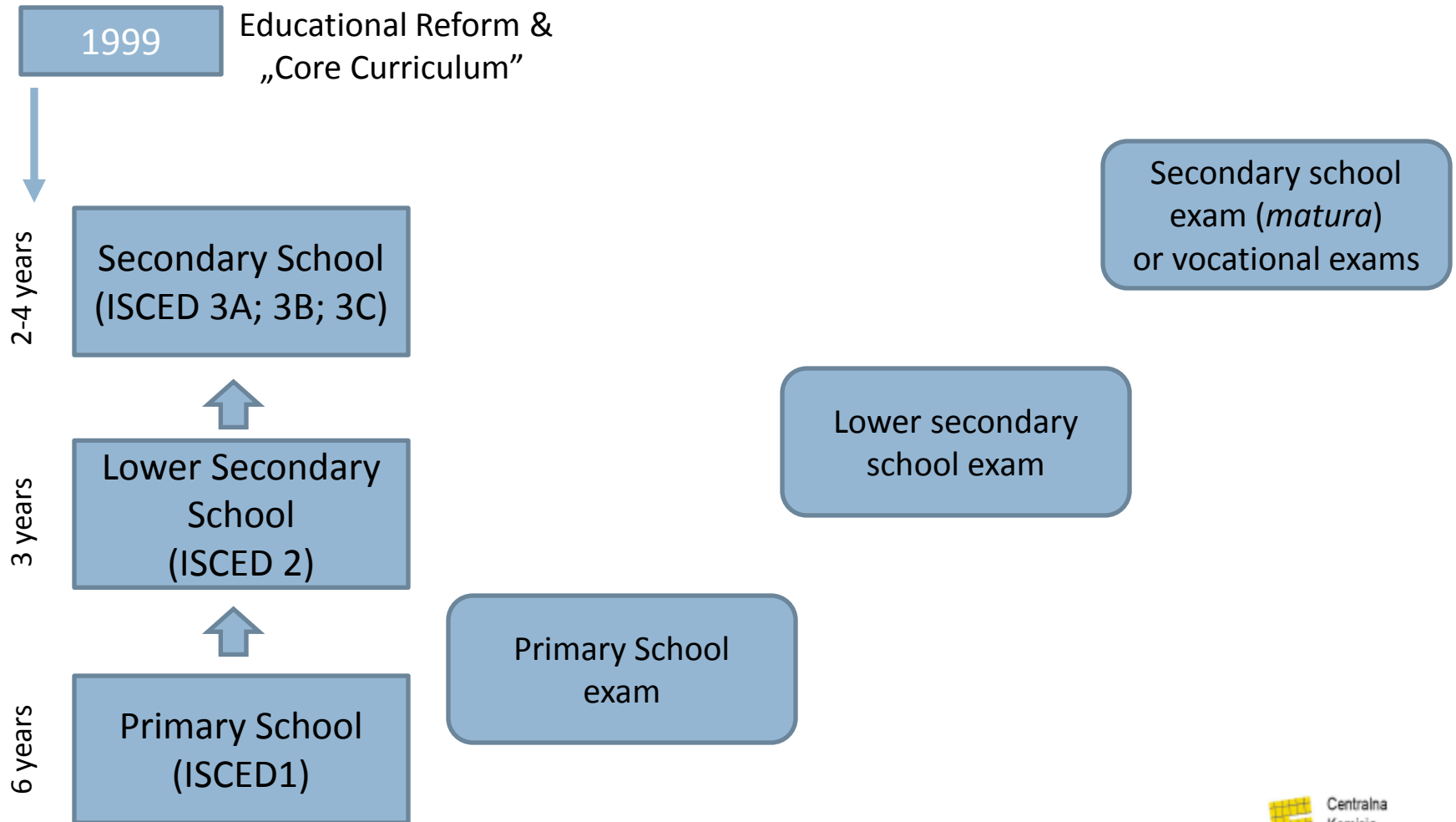
National examination system in brief



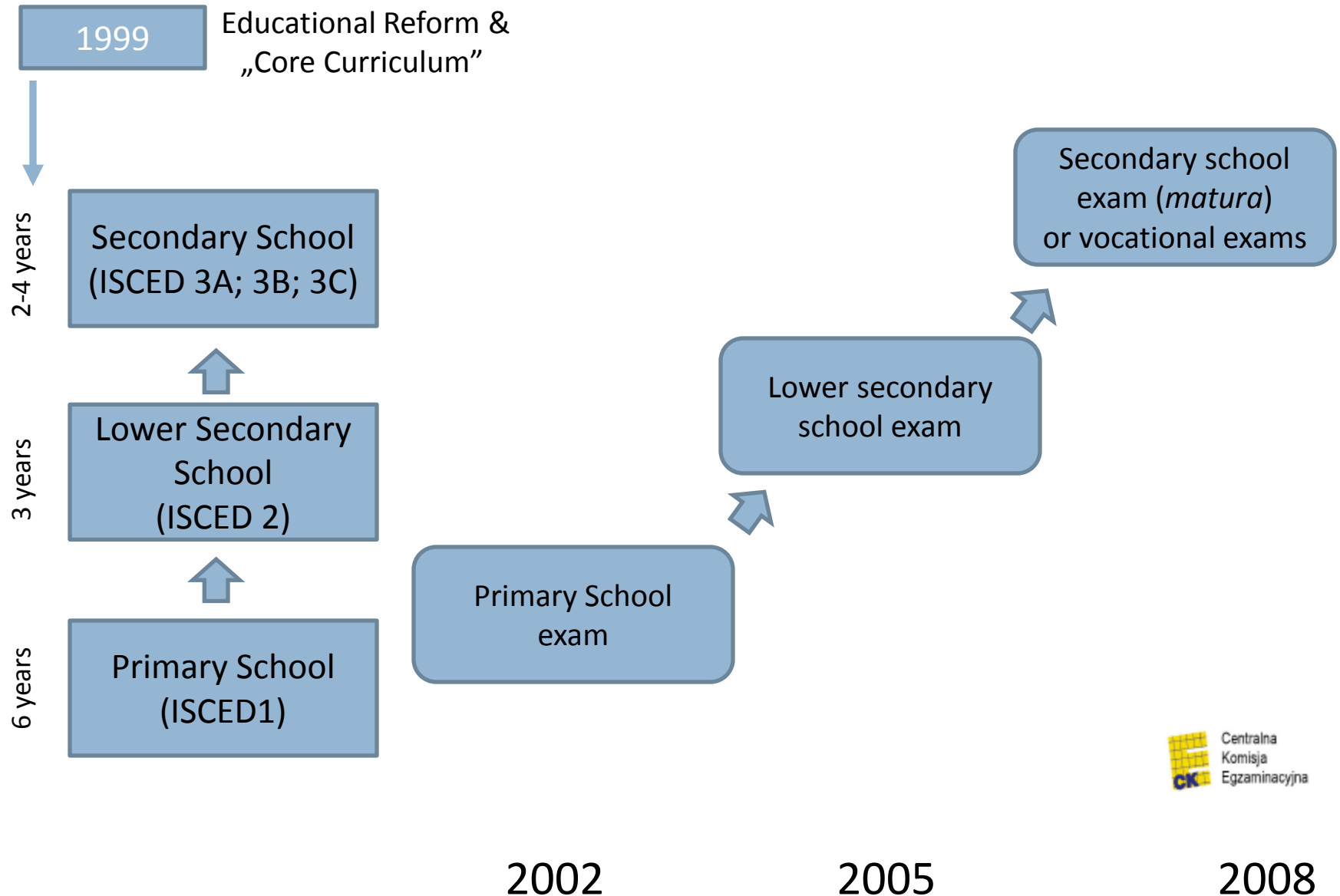
National examination system in brief



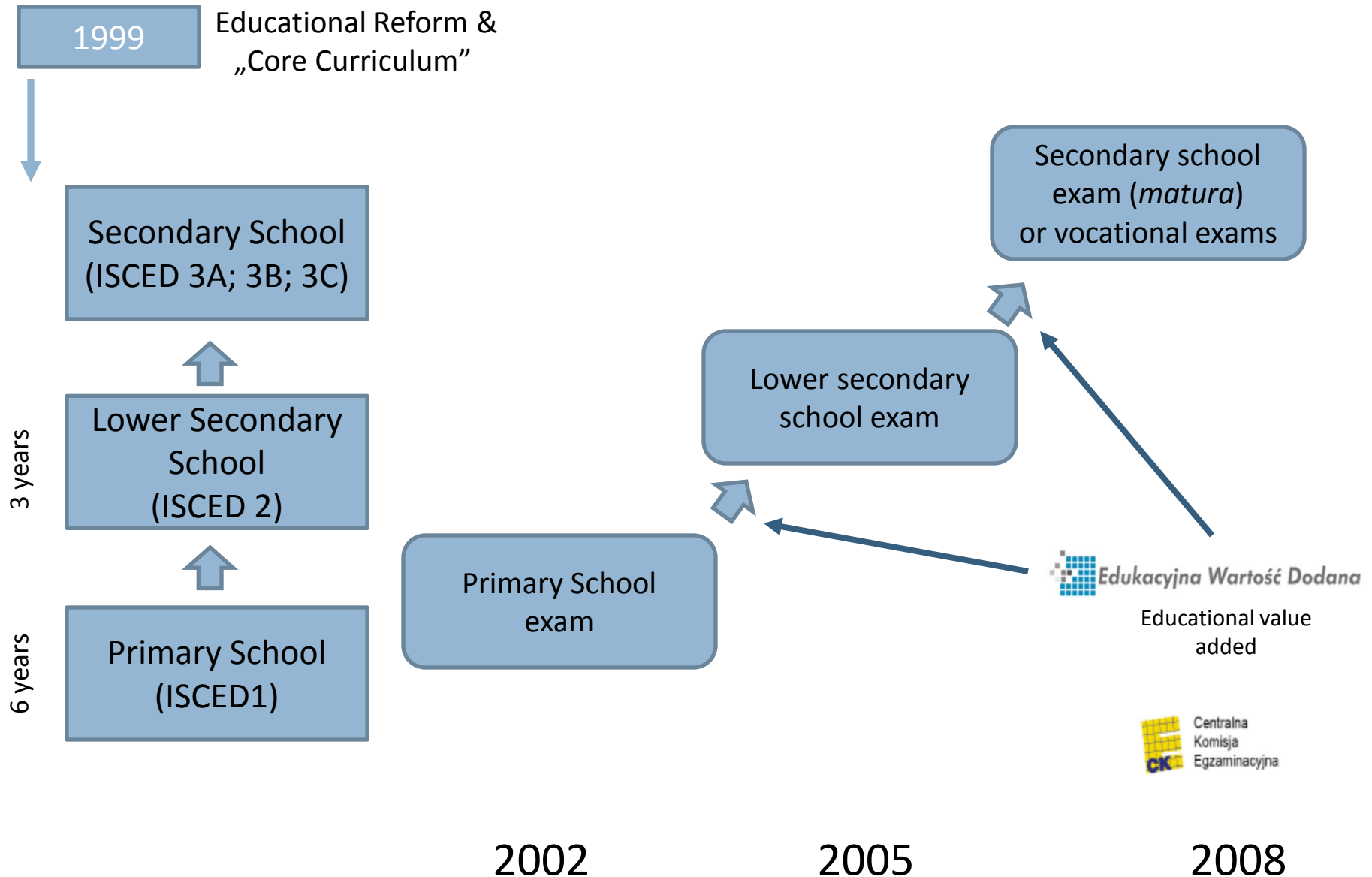
National examination system in brief



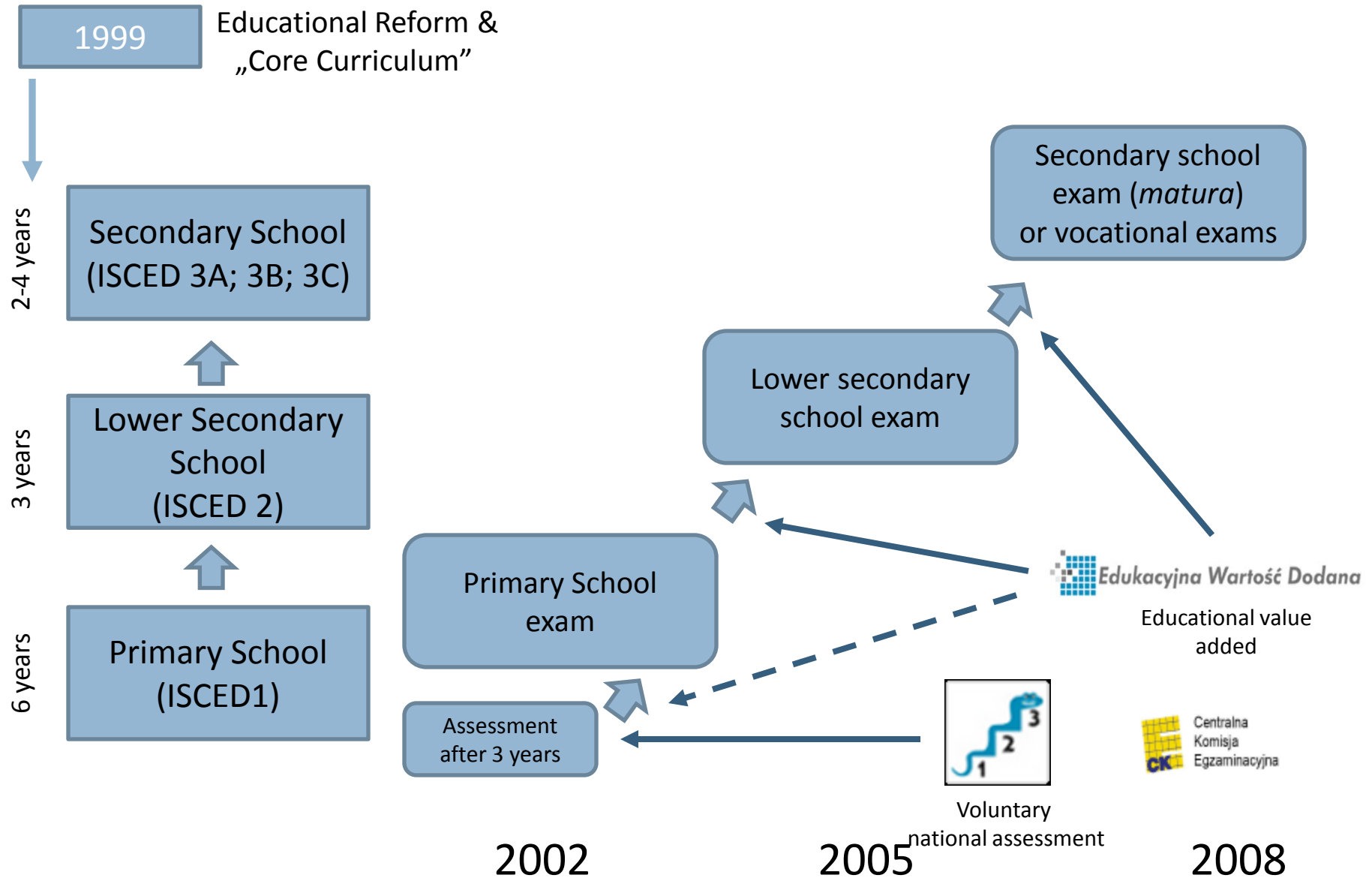
National examination system in brief



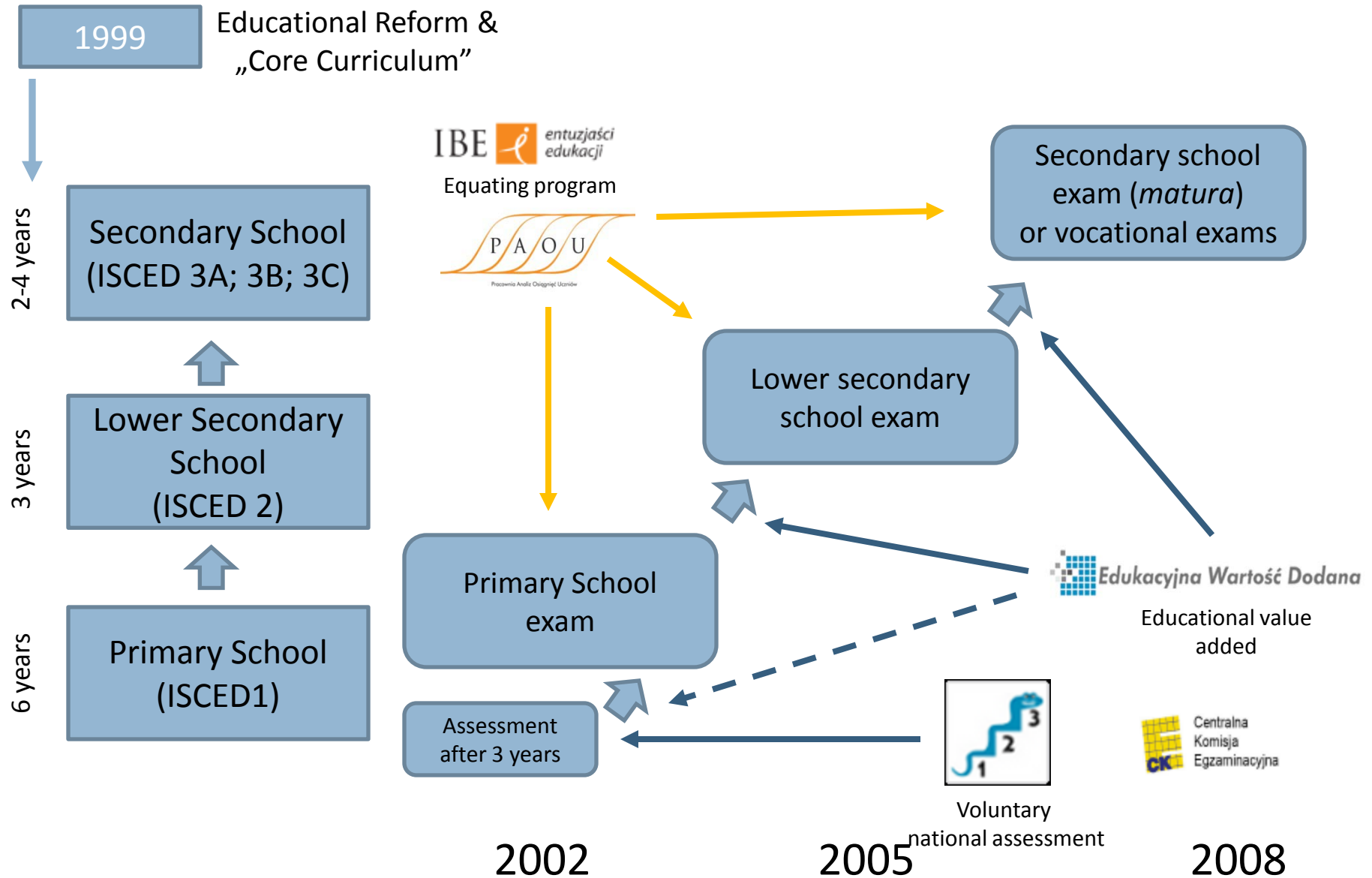
National examination system in brief



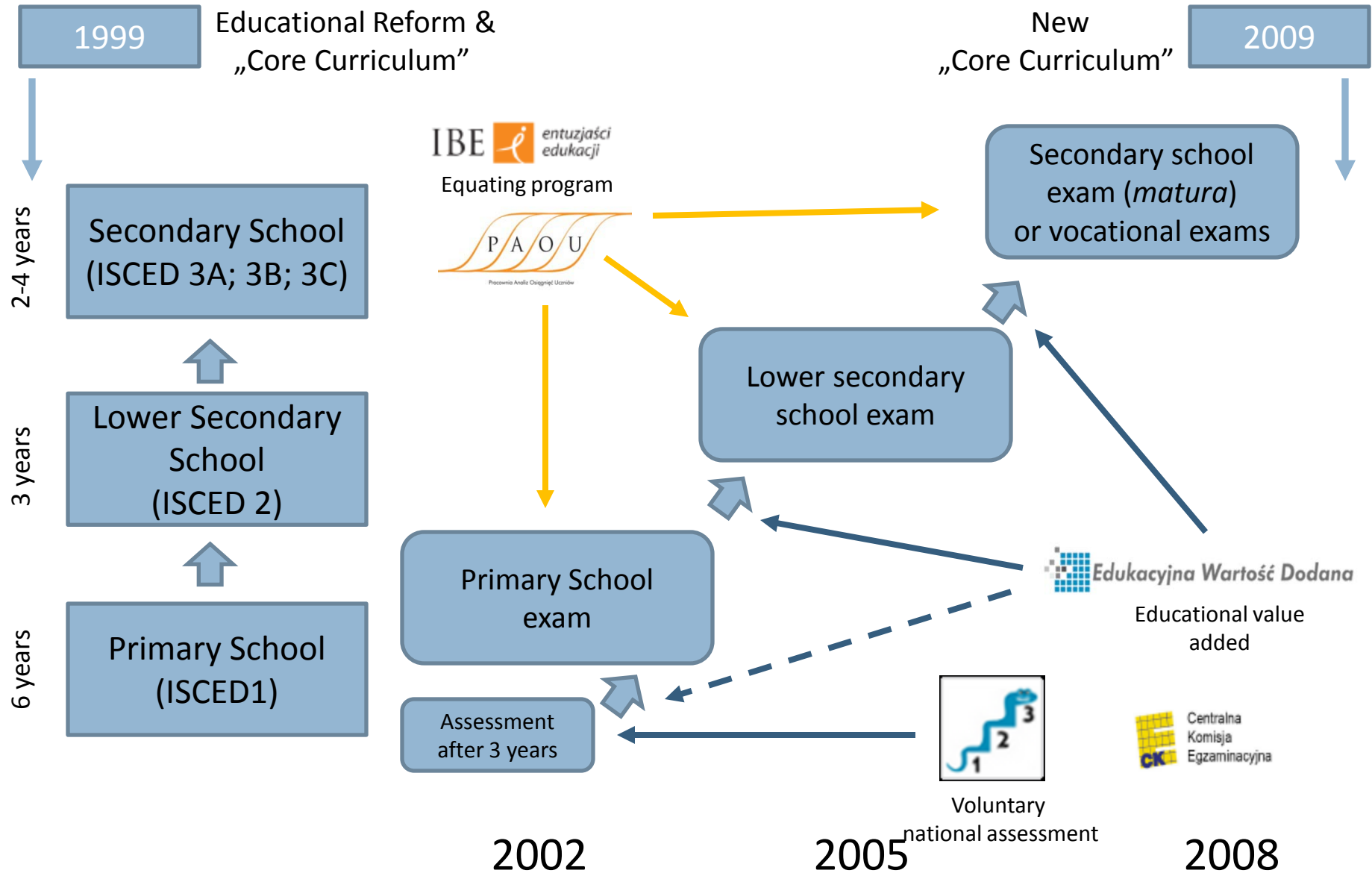
National examination system in brief



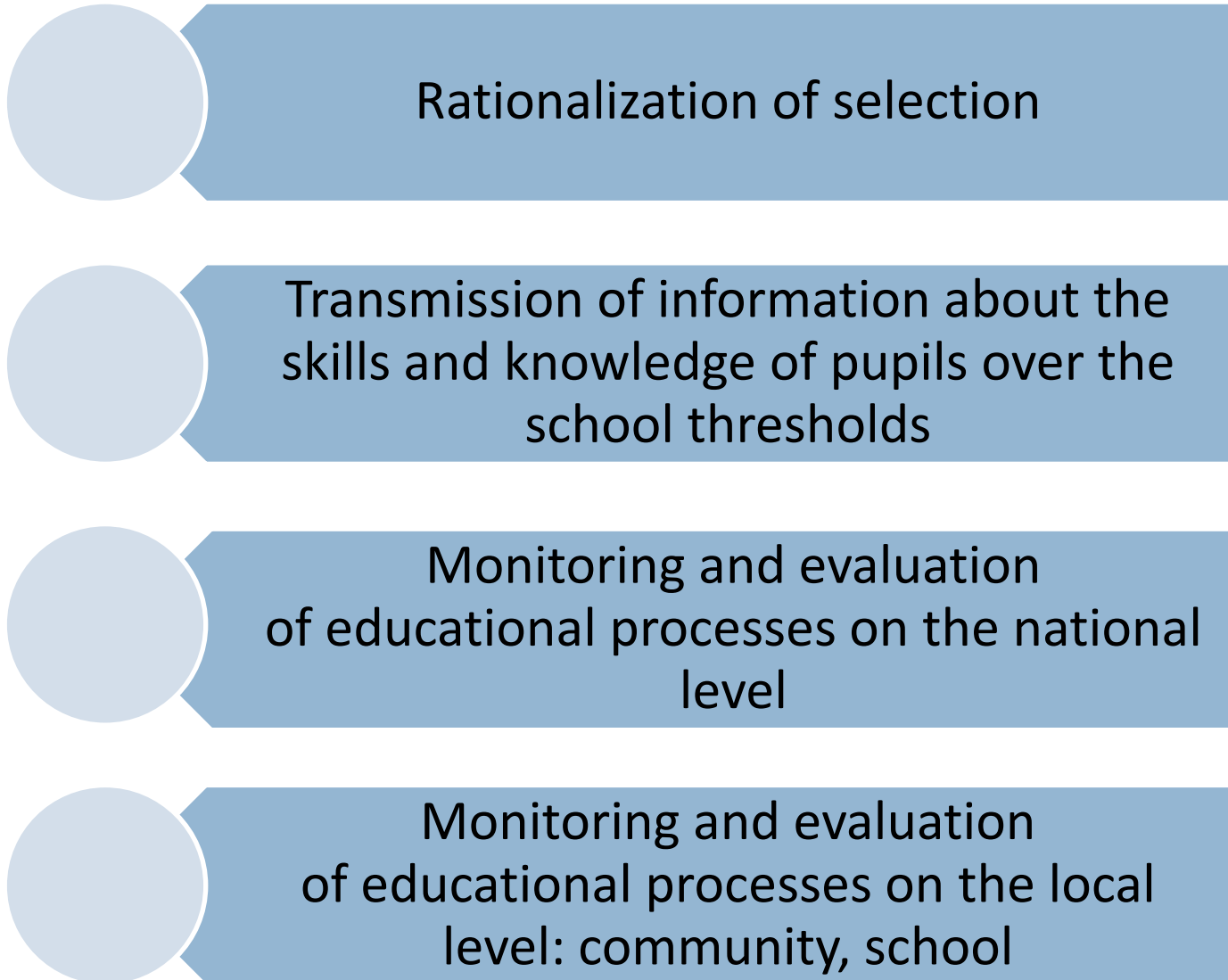
National examination system in brief



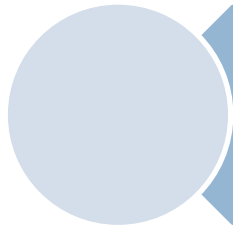
National examination system in brief



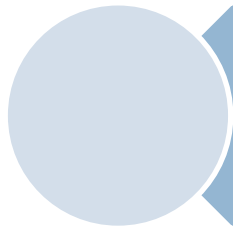
National examination system functions



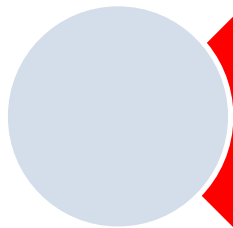
National examination system functions



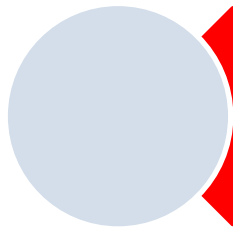
Rationalization of selection



Transmission of information about the skills and knowledge of pupils over the school thresholds



Monitoring and evaluation of educational processes on the national level



Monitoring and evaluation of educational processes on the local level: community, school

Differentiation of lower secondary school system

Possibility of using tests for monitoring and evaluation of educational processes will be presented for example of the problem of differentiation of the lower secondary schools.

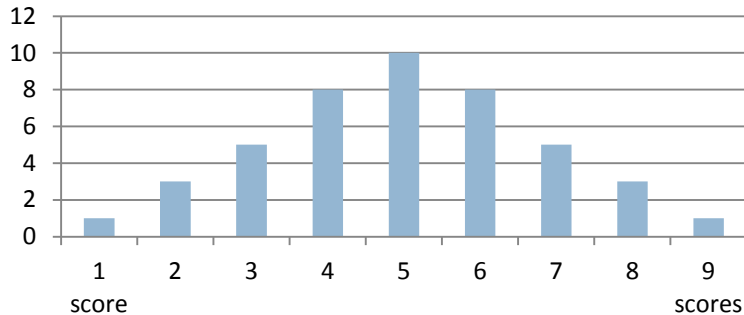
Differentiation on account of what?

Two local school systems (two elements: schools A and B)

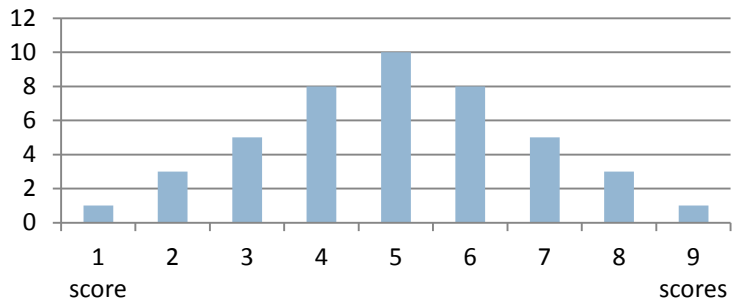
lack of differentiation



School A



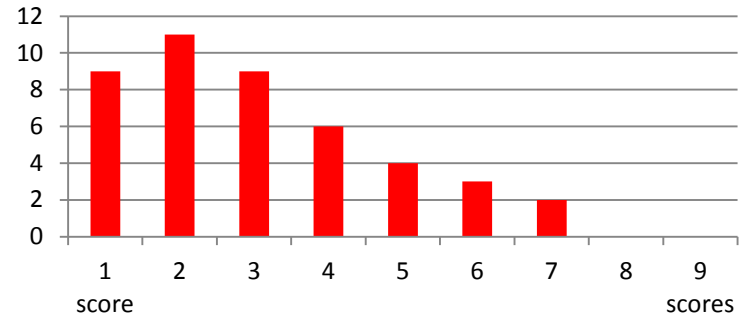
School B



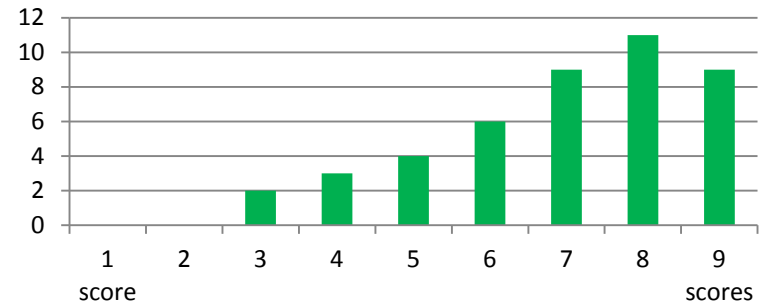
strong differentiation



School A

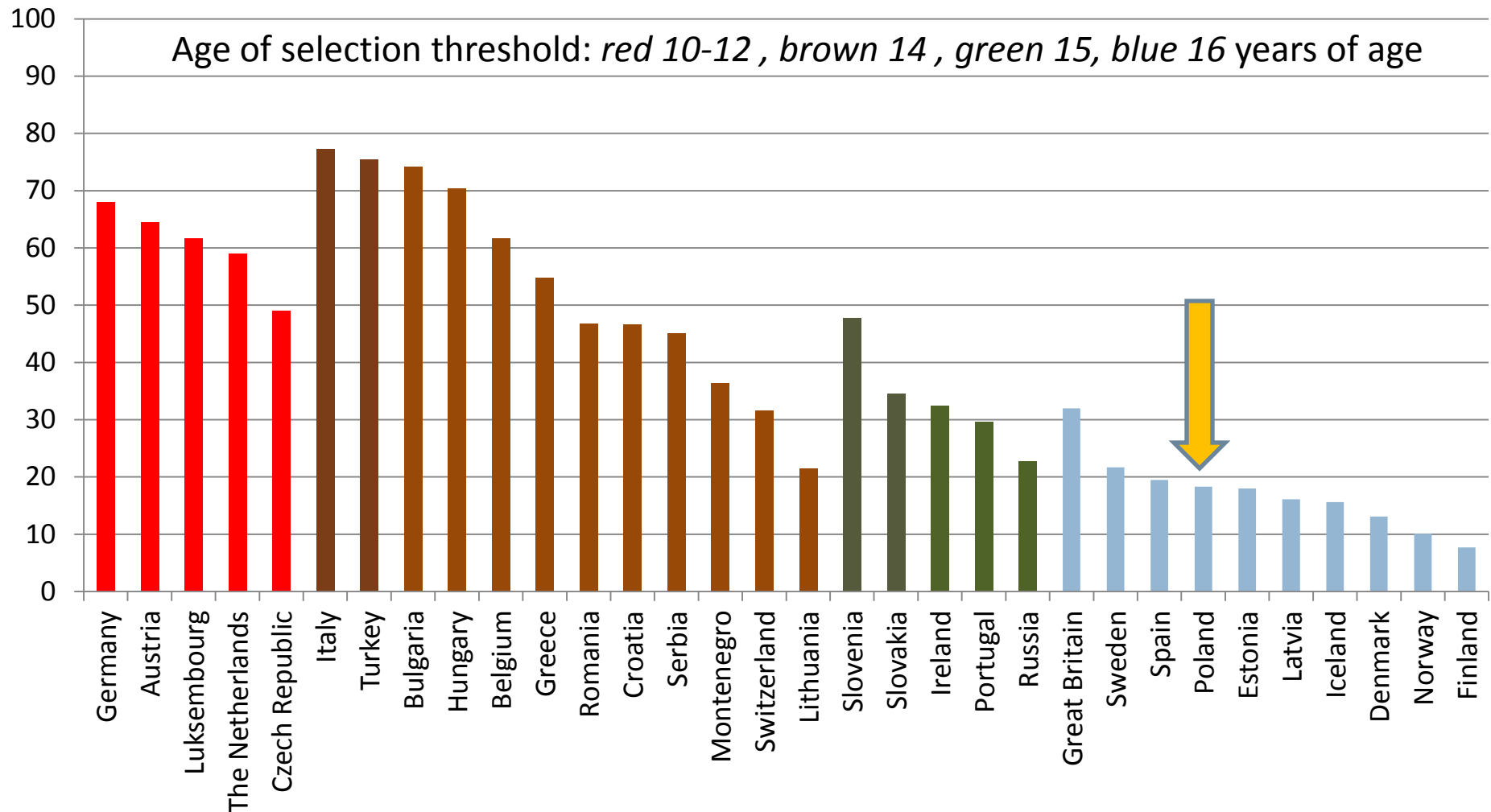


School B



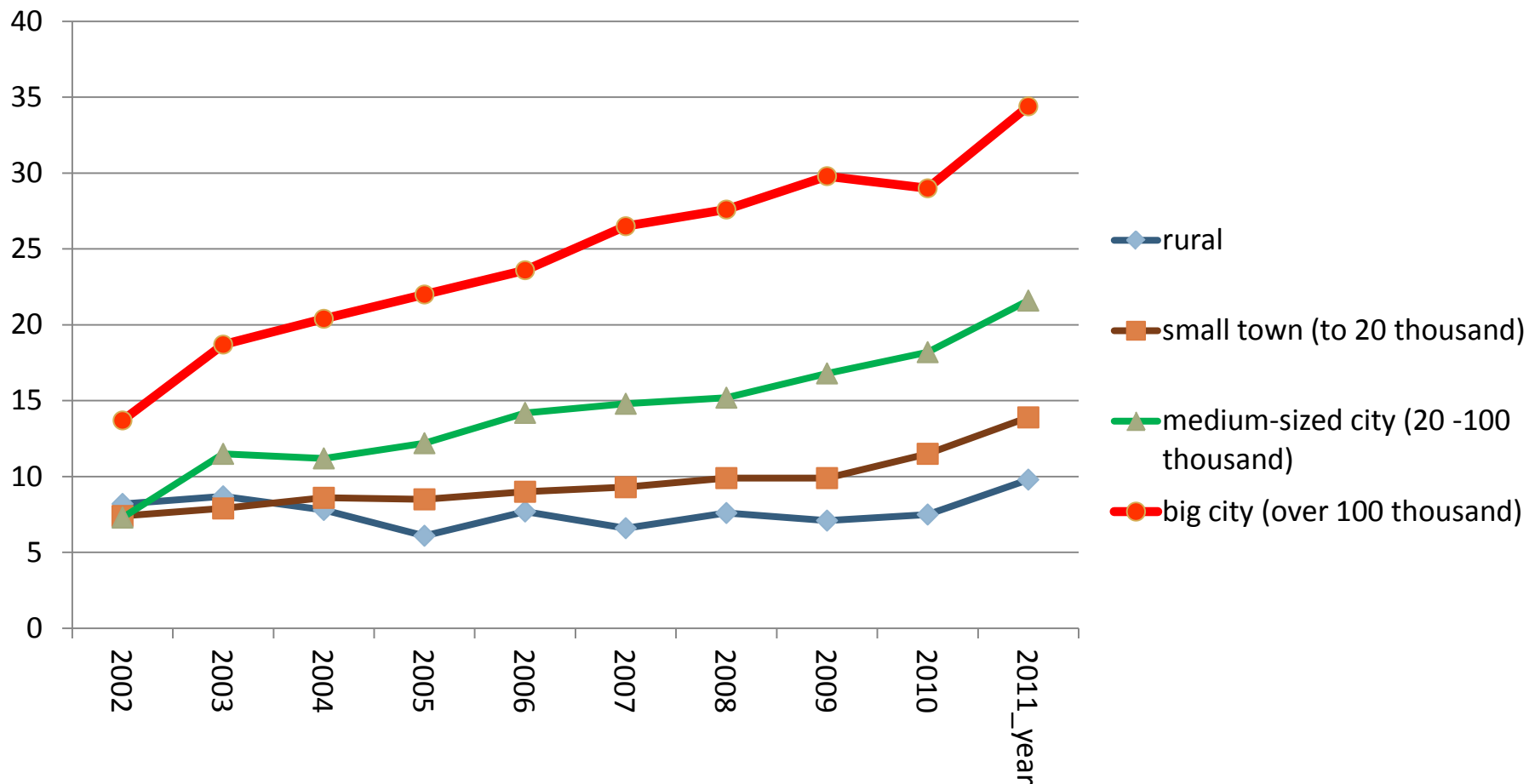
Differentiation processes at national level

Between school variance as a percent of total variance in OECD countries, PISA 2009, reading only the European countries



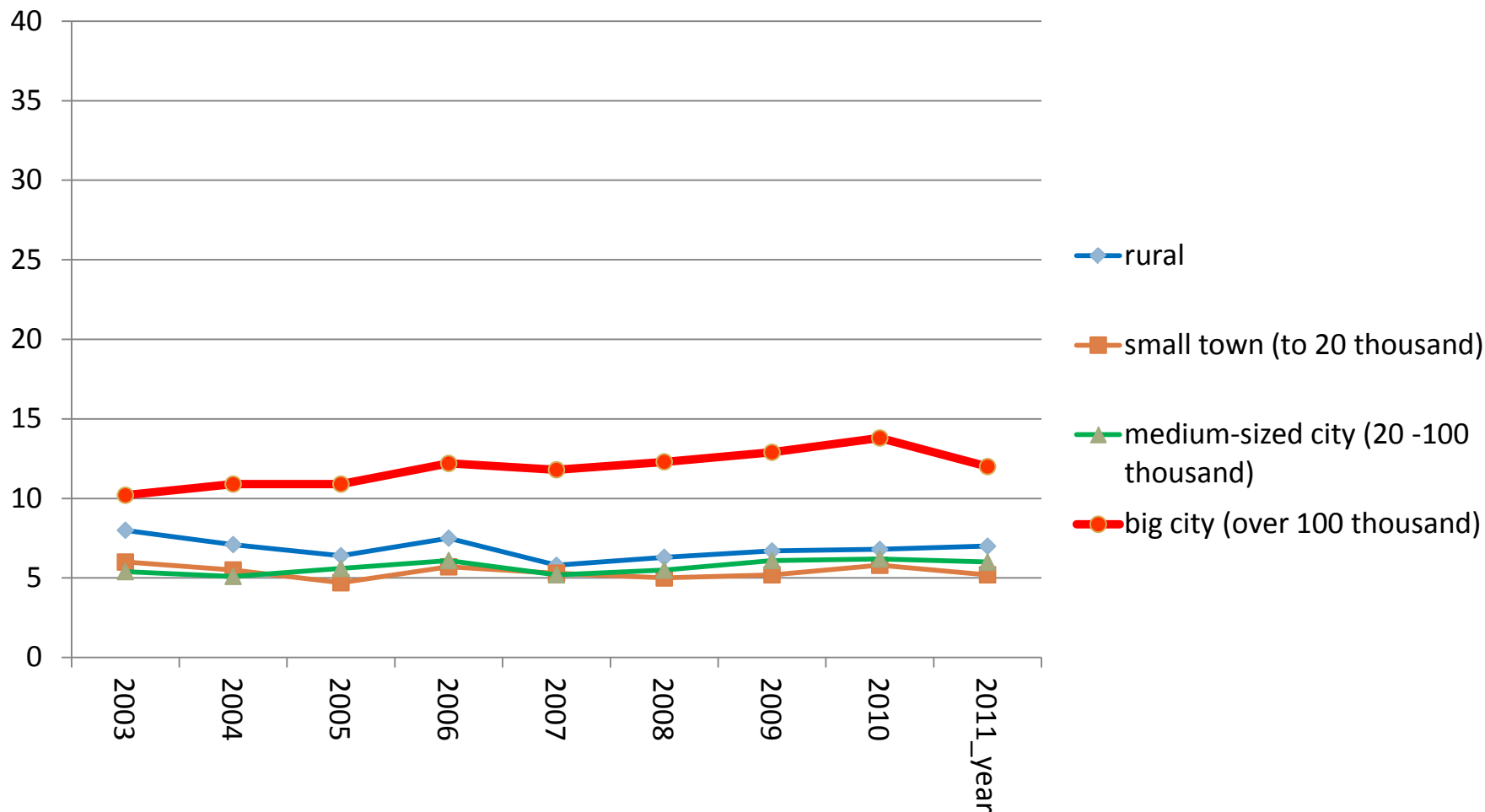
Between school variance as a percent of total variance of scores (lower secondary school exam, humanistic part)

Analysis of the dynamics by the location of the school

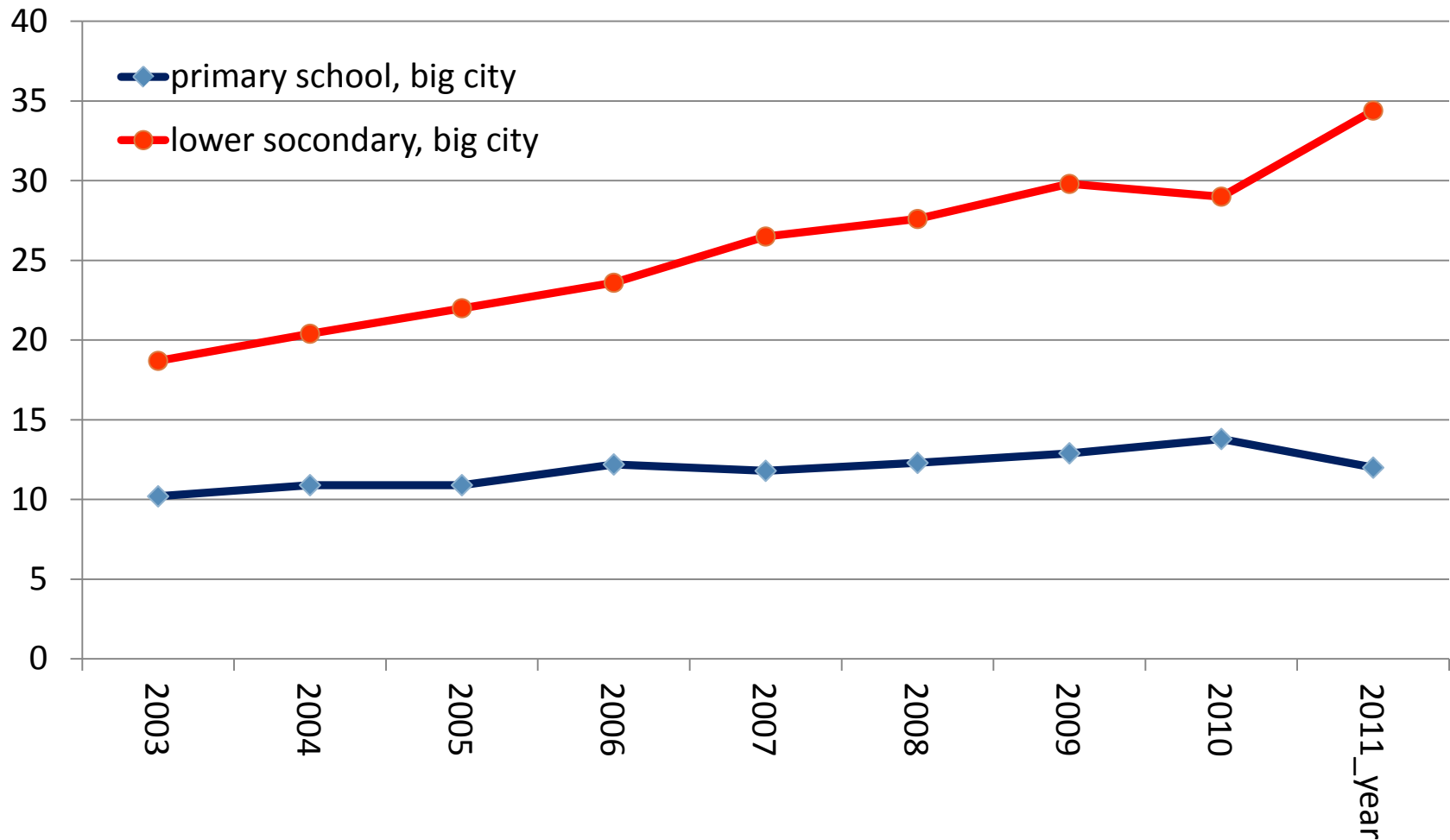


Between school variance as a percent of total variance of scores (**primary** school exam)

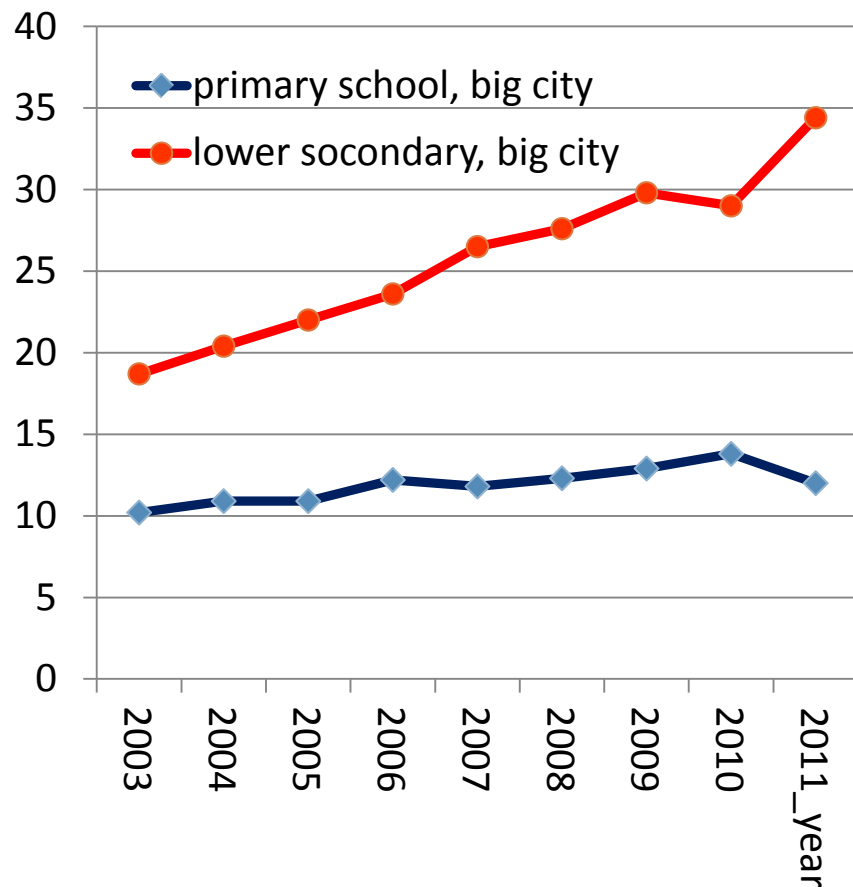
Analysis of the dynamics of the phenomenon by the location of the school



Comparison of the dynamics of this phenomenon in the segment of primary and secondary schools



Has the split of uniform education into primary school and lower secondary school started hidden selection processes in big cities?



The analysis leaves no doubts: when it comes to the schools located in big cities, the 1999 reform has put in motion massive, hidden selection processes at the doorstep of lower secondary school.

- In big cities we are dealing with highly selective system with selective threshold at the age of 12
- In rural areas we are facing the creation of 9-year long uniform school.

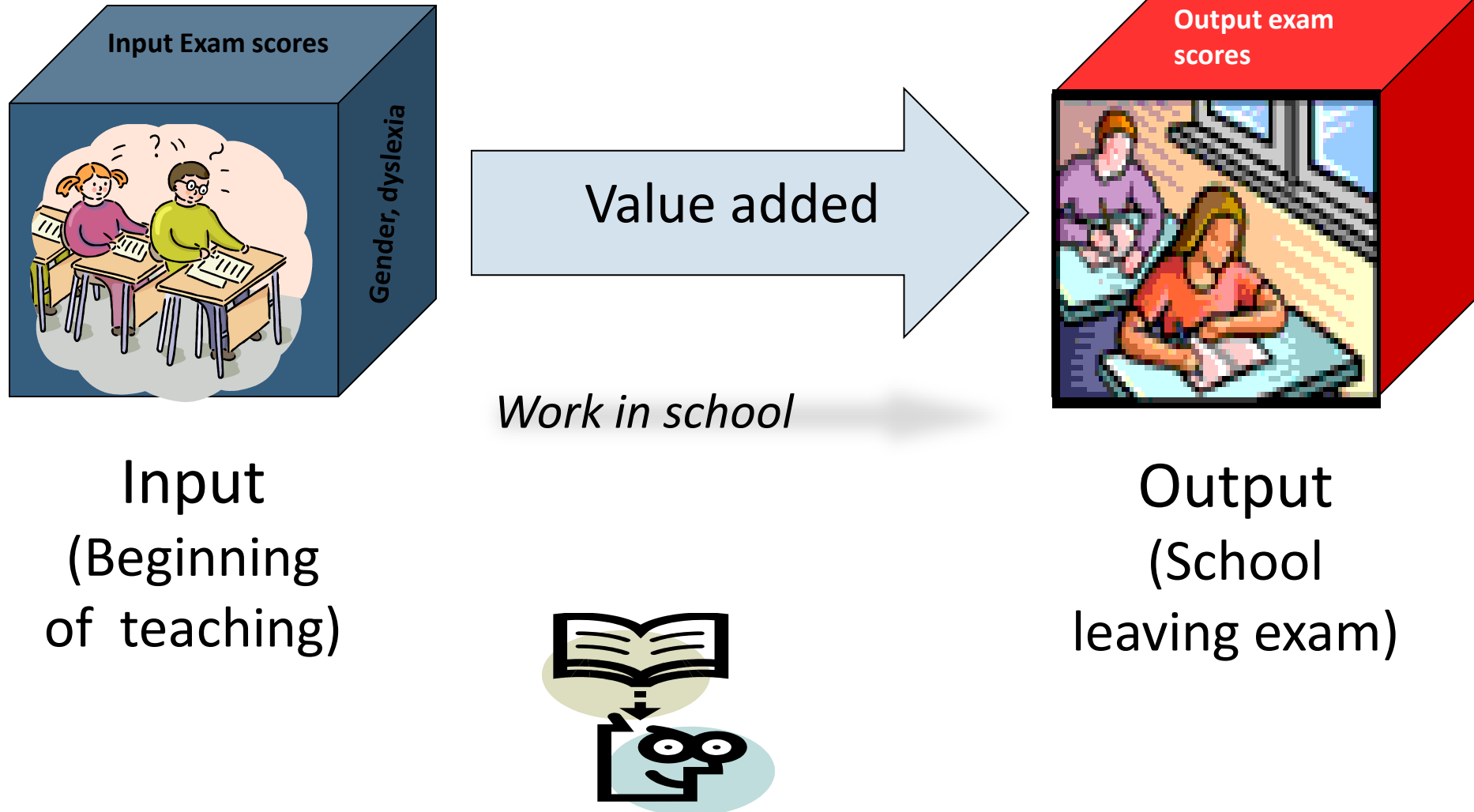
Differentiation processes at local level

- Processes involved in the differentiation of the school system happen at the local level.
 - Local authorities determine the shape of a school network
 - Define recruitment area
 - Encourage schools to compete for students
- The results of national exams allow local authorities to monitor the impact of local educational policy.

The use of national examination systems to evaluate education processes at the local level

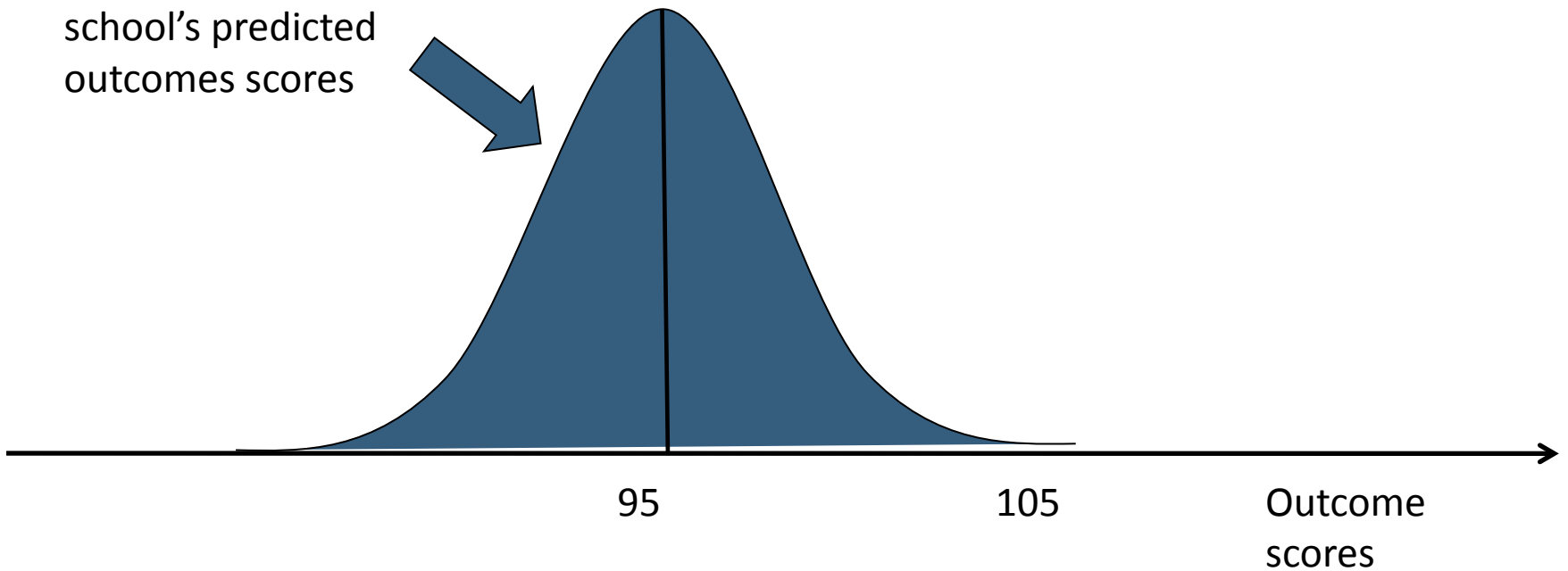
- We need:
 - scales comparable between years
 - correctly estimated statistical indicators (error of indicator estimation)
 - good measure of the effectiveness of teaching – educational Value Added index
- We will fokus on Value Added measures

Value added in brief

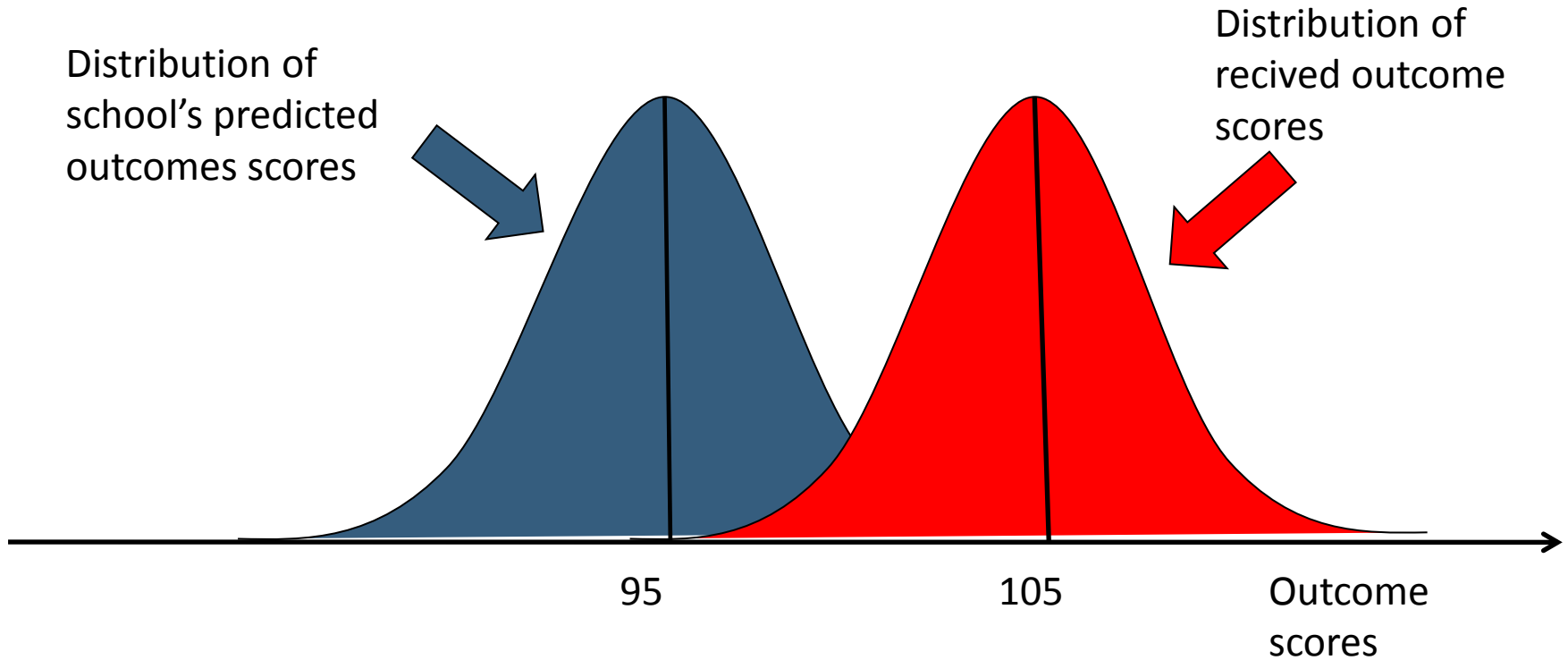


Simplified statistic approach for value added modeling

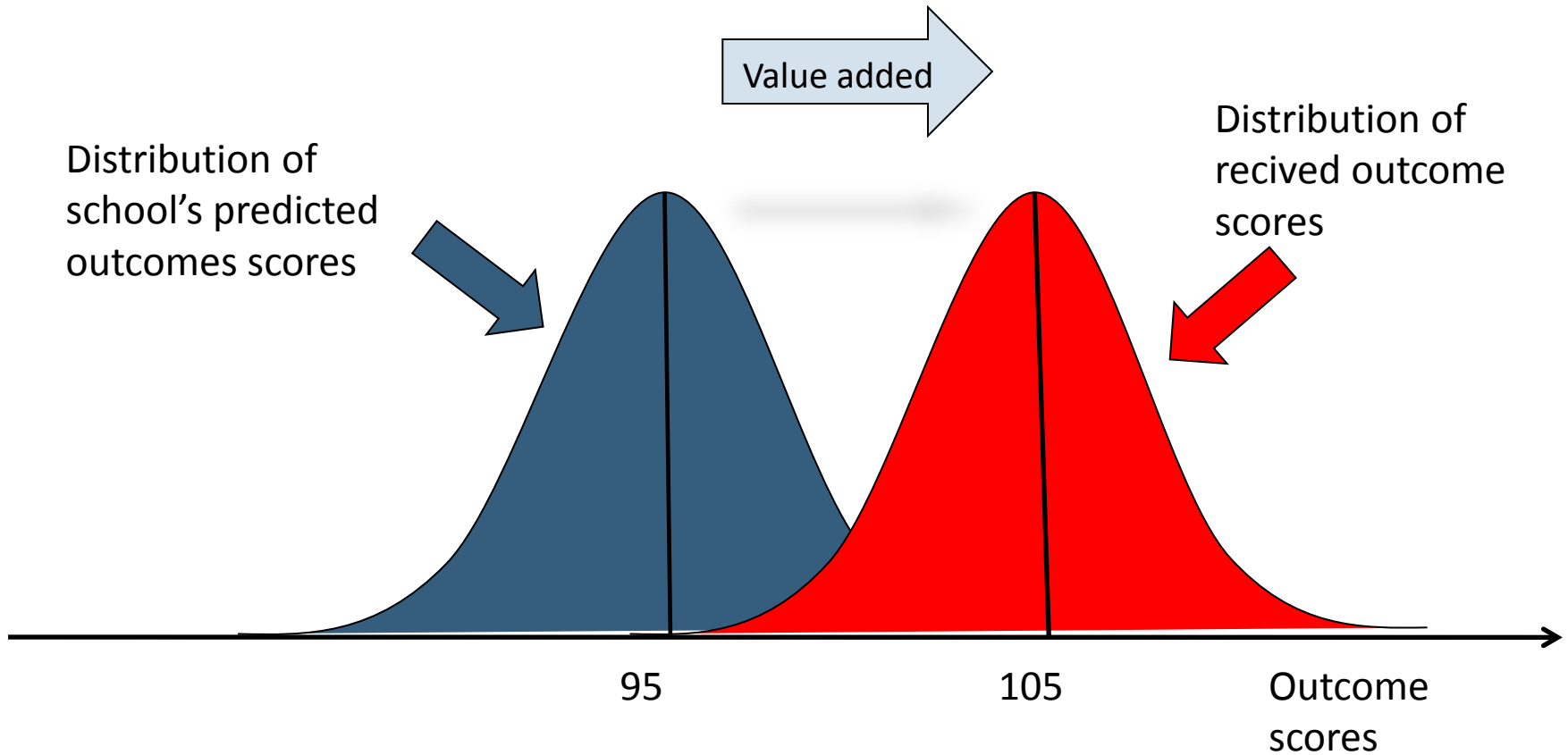
Distribution of
school's predicted
outcomes scores



Simplified statistic approach for value added modeling



Simplified statistic approach for value added modeling



Value added = 10

Co to jest EWD?

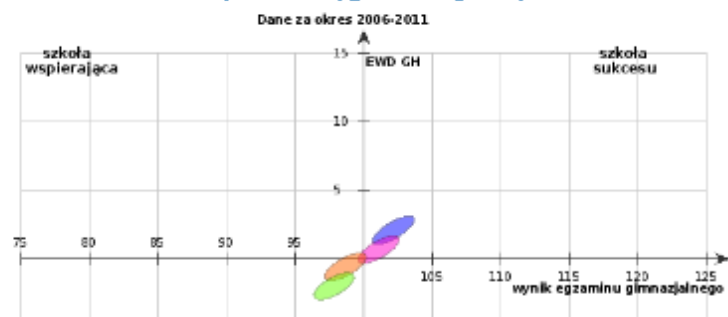
Termin edukacyjna wartość dodana (EWD) oznacza zarówno **metode**, jak i **wskaźnik** liczbowy wyliczony tą metodą.

Metody EWD to metody statystyczne pozwalające na podstawie zasobów na wejściu (np. wynik na egzaminie poprzedniego etapu kształcenia) oraz wyjściu (np. wynik na egzaminie końcowym) oszacować efektywność nauczania, czyli wkład danej szkoły w końcowy poziom wiedzy uczniów na danym etapie kształcenia. W polskim modelu EWD wykorzystywana jest przede wszystkim informacja o wynikach egzaminacyjnych na kolejnych etapach kształcenia, dlatego też **wskaźniki EWD** są jednym ze sposobów komunikowania wyników egzaminacyjnych.

EWD jest miarą efektywności nauczania w szkole.

[więcej o EWD](#)

Wskaźniki trzyletnie (gimnazjum)



Aktualności

O EWD nauczycieli w Instytucie Badań Edukacyjnych

24.02.2012

W dniach 21-22.02.2012 w ramach cyklu "Badania i polityka edukacyjna" w IBE odbyło się seminarium poświęcone wynikom badań w zakresie mierzenia kompetencji nauczycieli. Zespół EWD reprezentował Tomasz Żółtak.

[zobacz więcej](#)

Szkolenia dla wizytatorów ds. ewaluacji w zakresie wykorzystania metody EWD

6.02.2012

W dniach 4-5.02.2012 odbyło się już kolejne, czwarte z zaplanowanych pięciu, szkolenie dla wizytatorów ds. ewaluacji.

[zobacz więcej](#)

Spotkanie z przedstawicielami okręgowych komisji egzaminacyjnych

20.01.2012

19.01.2012 w siedzibie CKE odbyło się spotkanie z przedstawicielami okręgowych komisji egzaminacyjnych poświęcone dwuletnim maturalnym wskaźnikom EWD.

[zobacz więcej](#)

Próbka danych egzaminacyjnych do celów badawczych

Szybki start

Kalkulator EWD Plus

Gimnazjum - wskaźniki trzyletnie

Matura - wskaźniki dwuletnie

Zespół EWD

» [Aktualności](#)

» [O projekcie](#)

» [Zespół EWD](#)

» [Publikacje](#)

» [Kontakt](#)

O EWD

» [Materiały szkoleniowe](#)

» [Blog EWD dla praktyków](#)

» [Słowniczek](#)

» [FAQ](#)

EWD w Polsce, EWD na świecie

» [Szkoły EWD](#)

» [EWD w Polsce](#)

» [EWD na świecie](#)

Gimnazjum

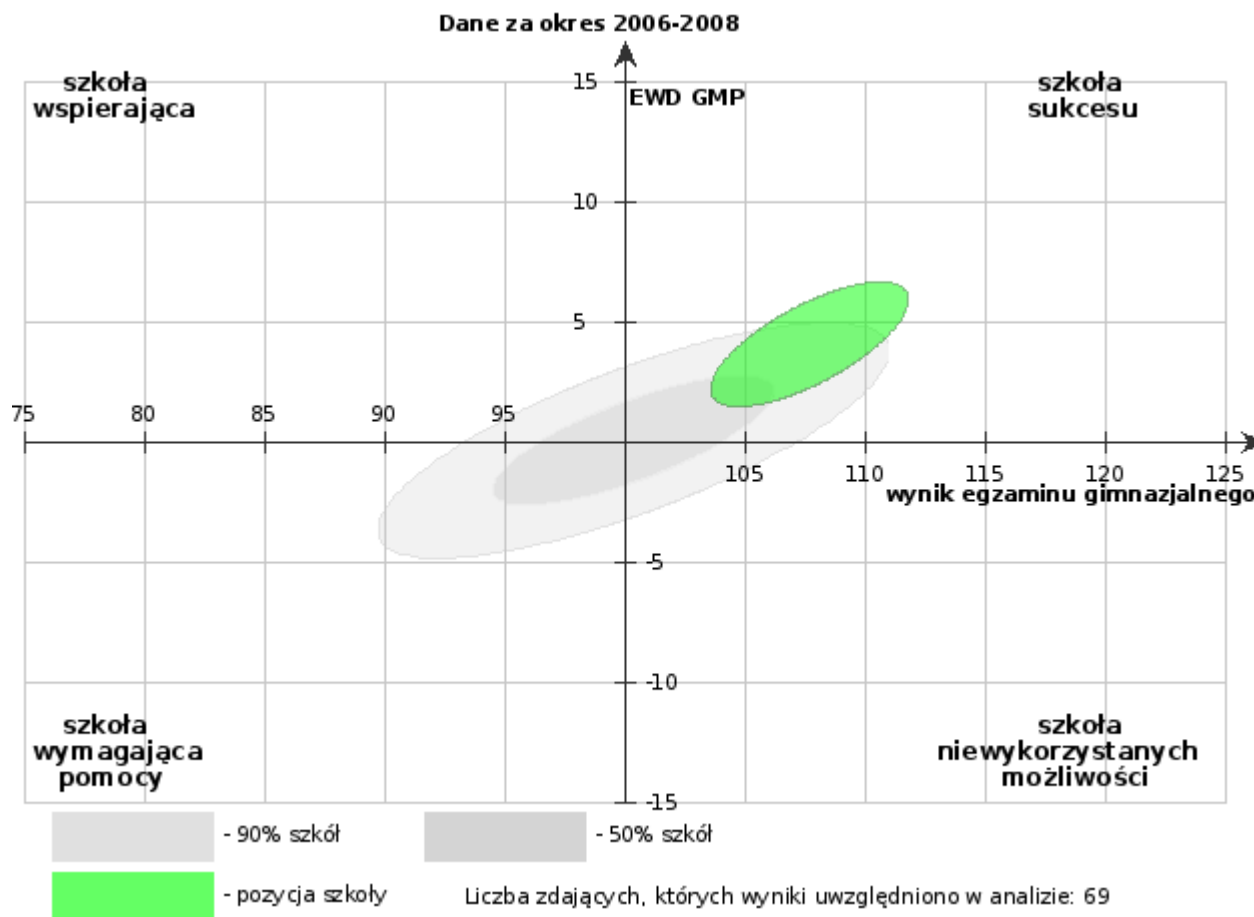
» [Wskaźnik trzyletni](#)

» [Kalkulator EWD Plus](#)

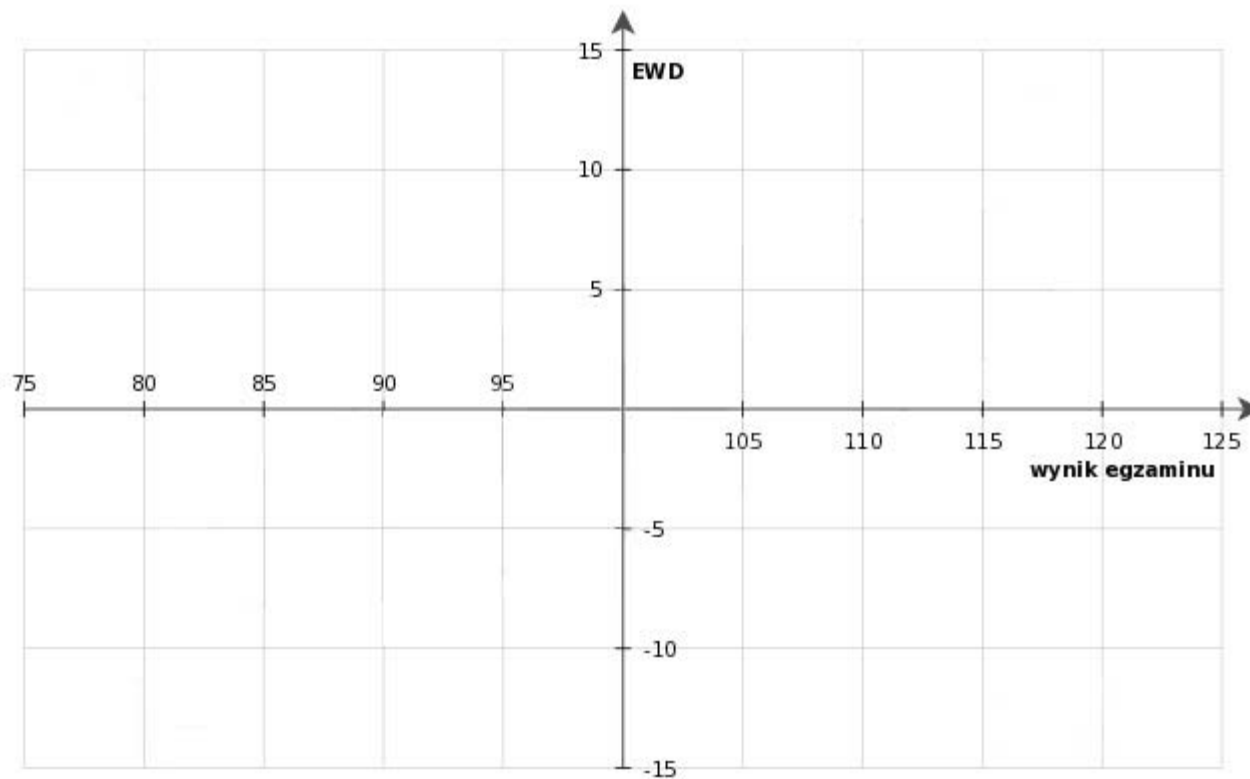
» [Kalkulatory EWD](#)

» [Studia przypadków](#)

Communication of value added

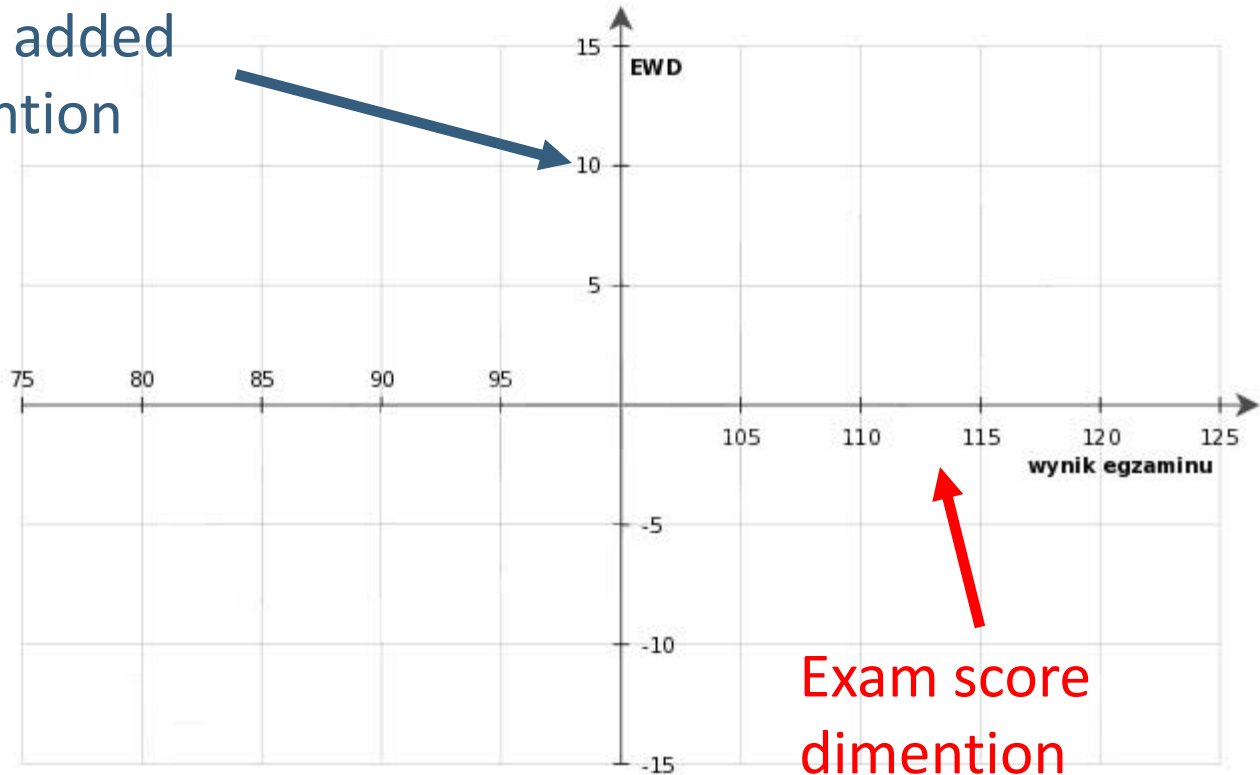


Two dimensional space



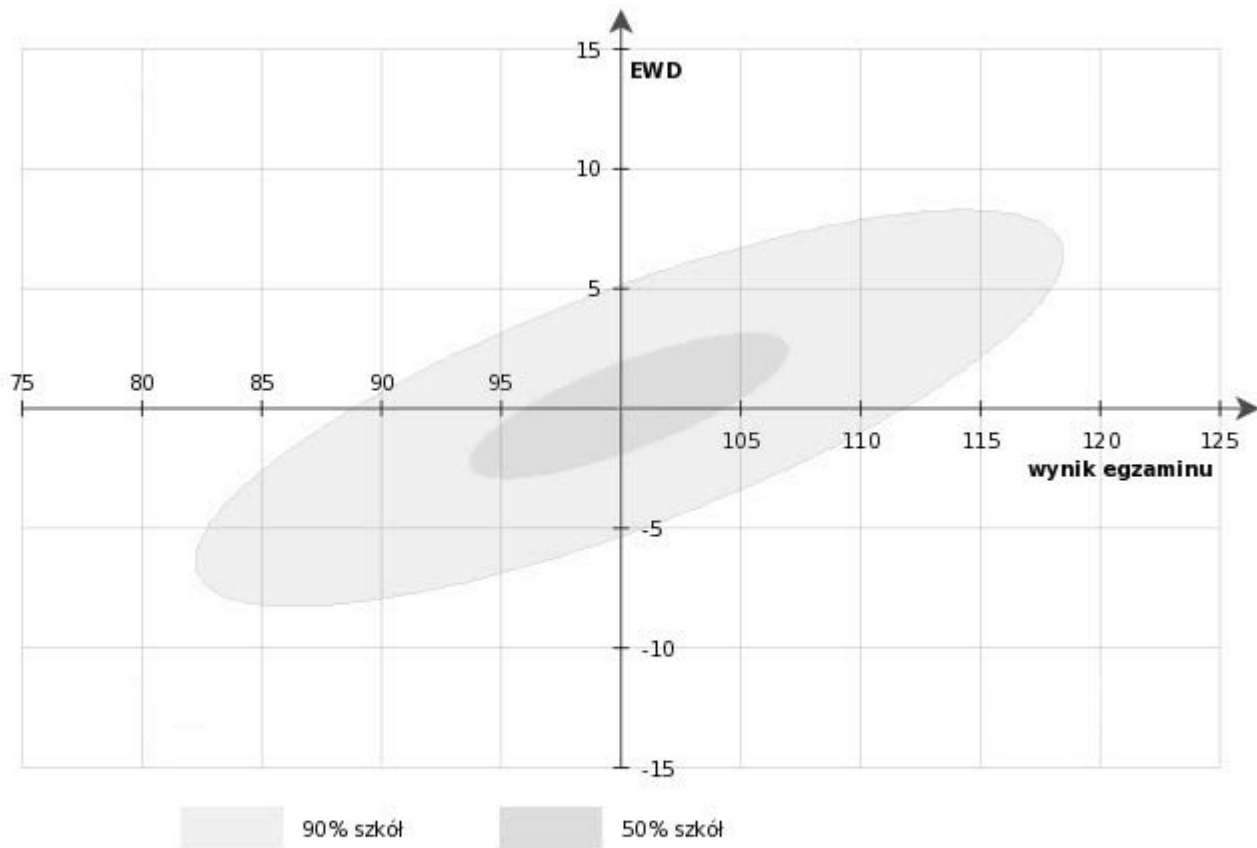
Two dimensional space

Value added
dimention

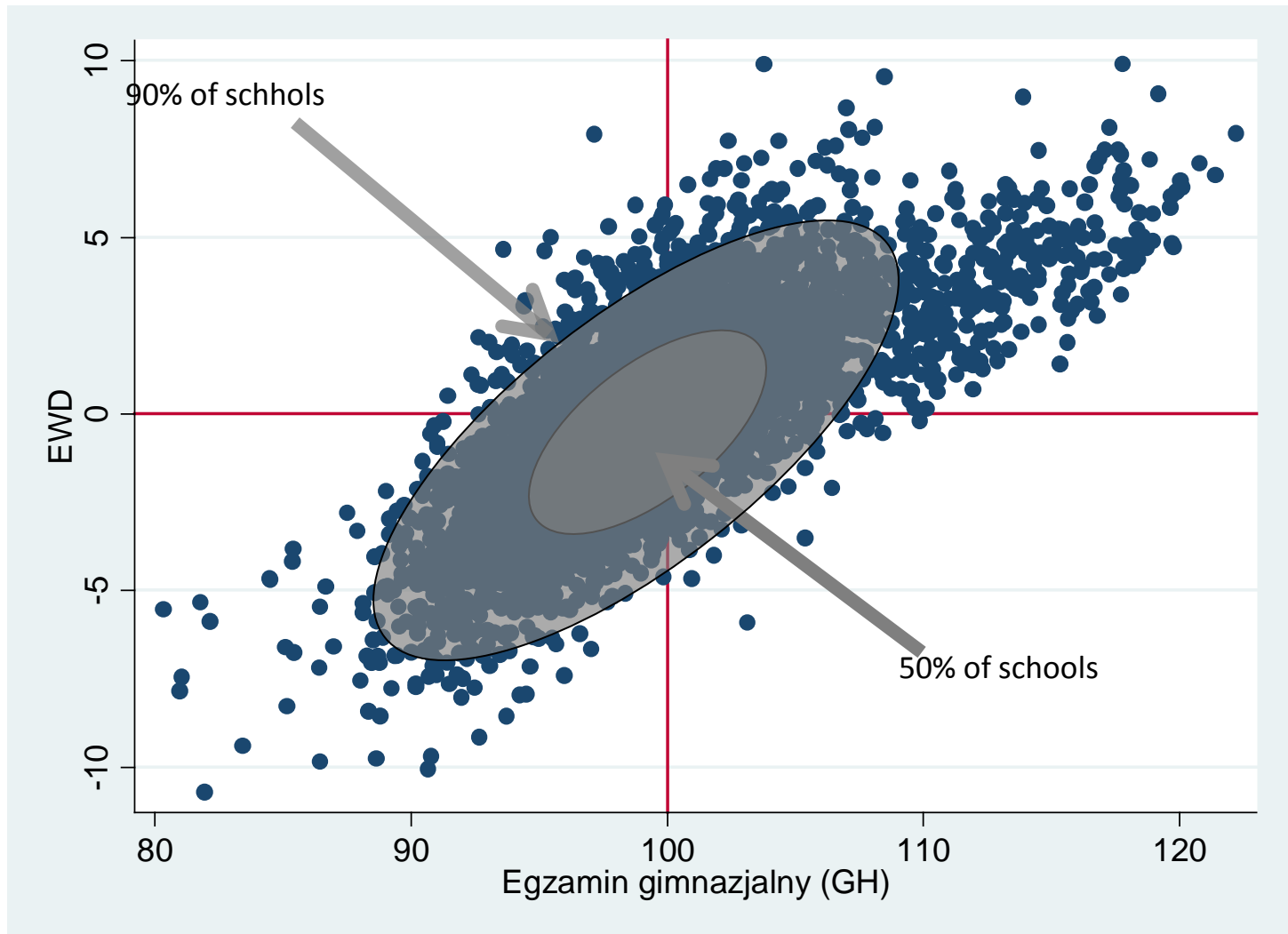


Exam score
dimention

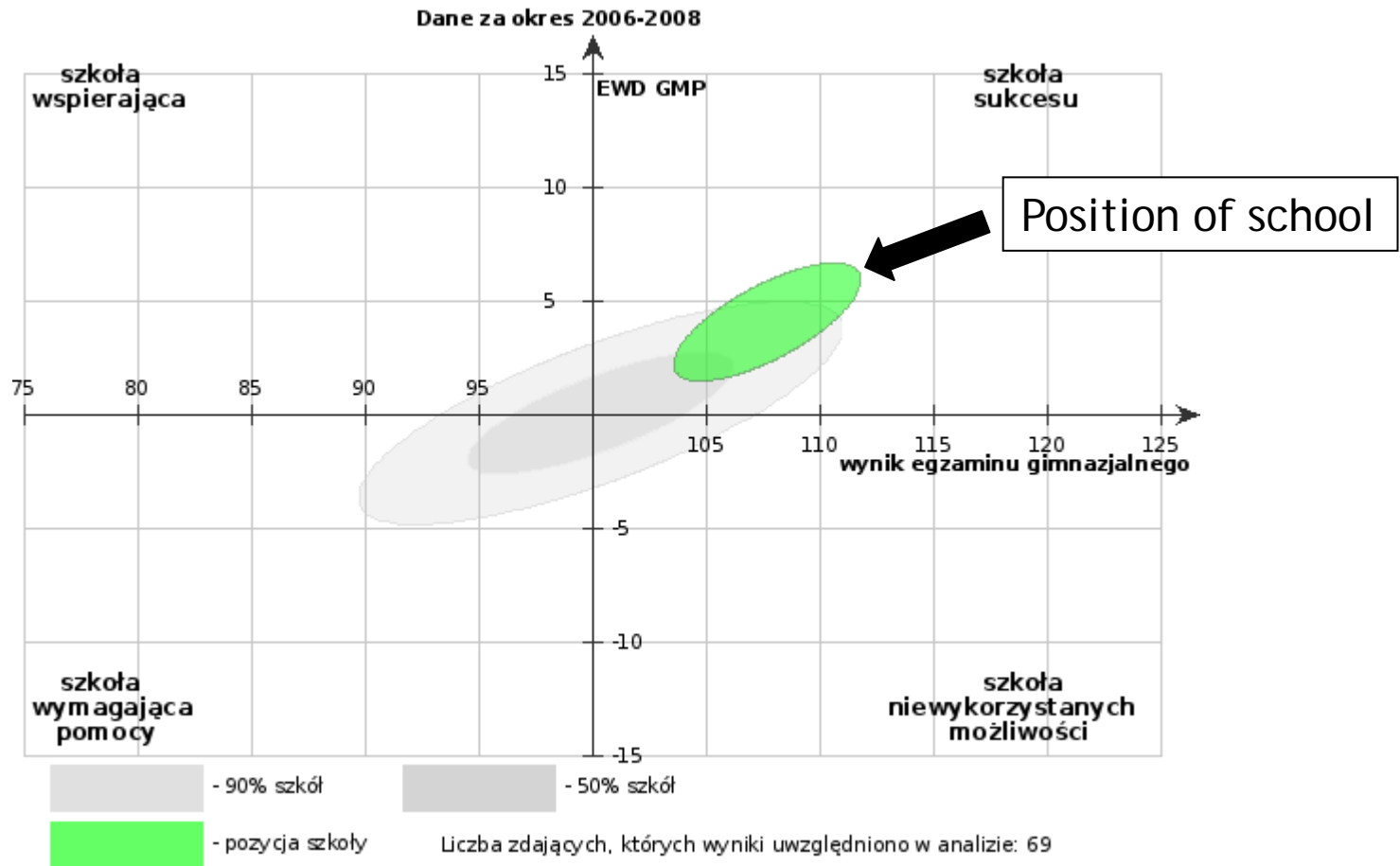
Contour lines



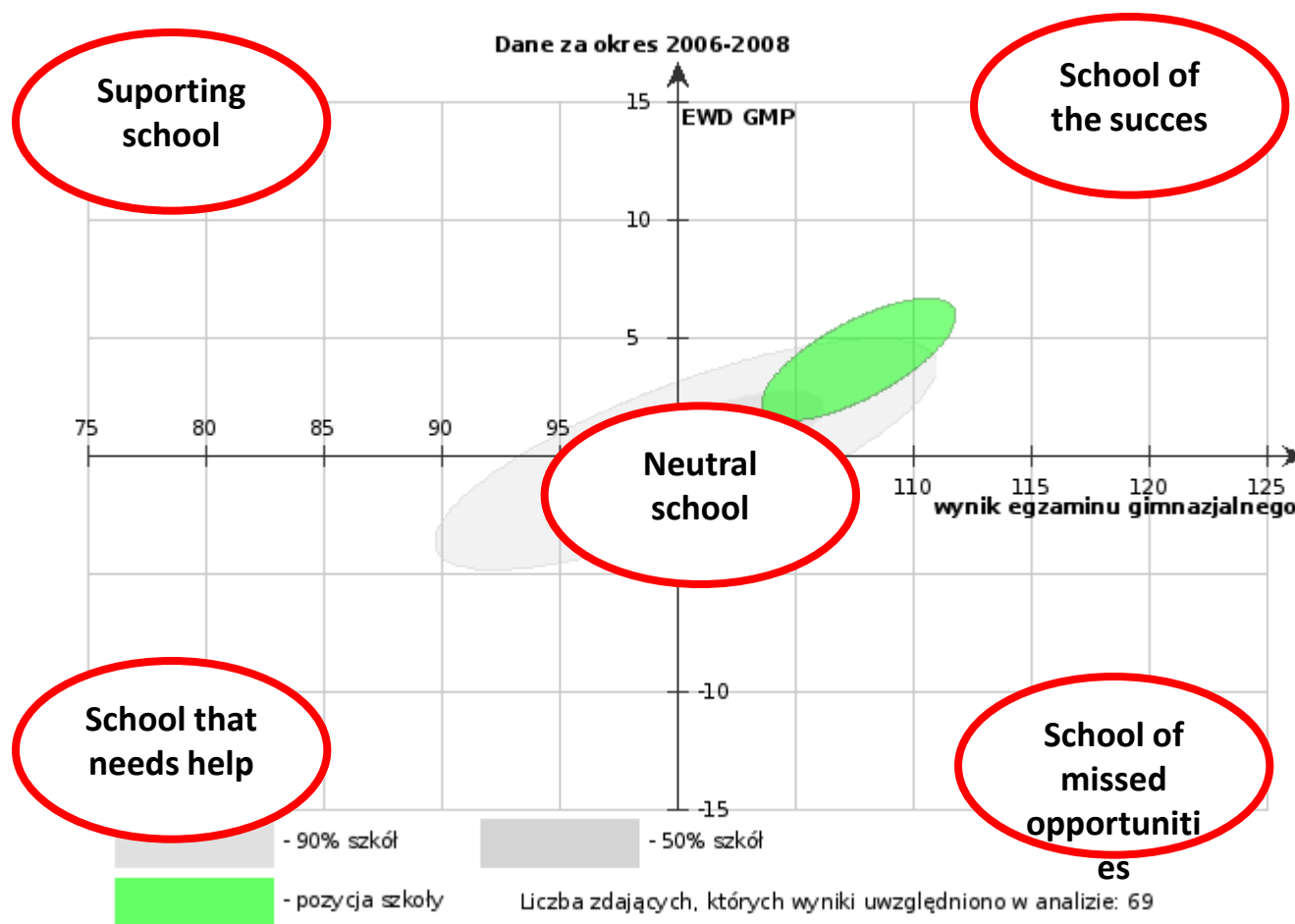
Distribution of schools



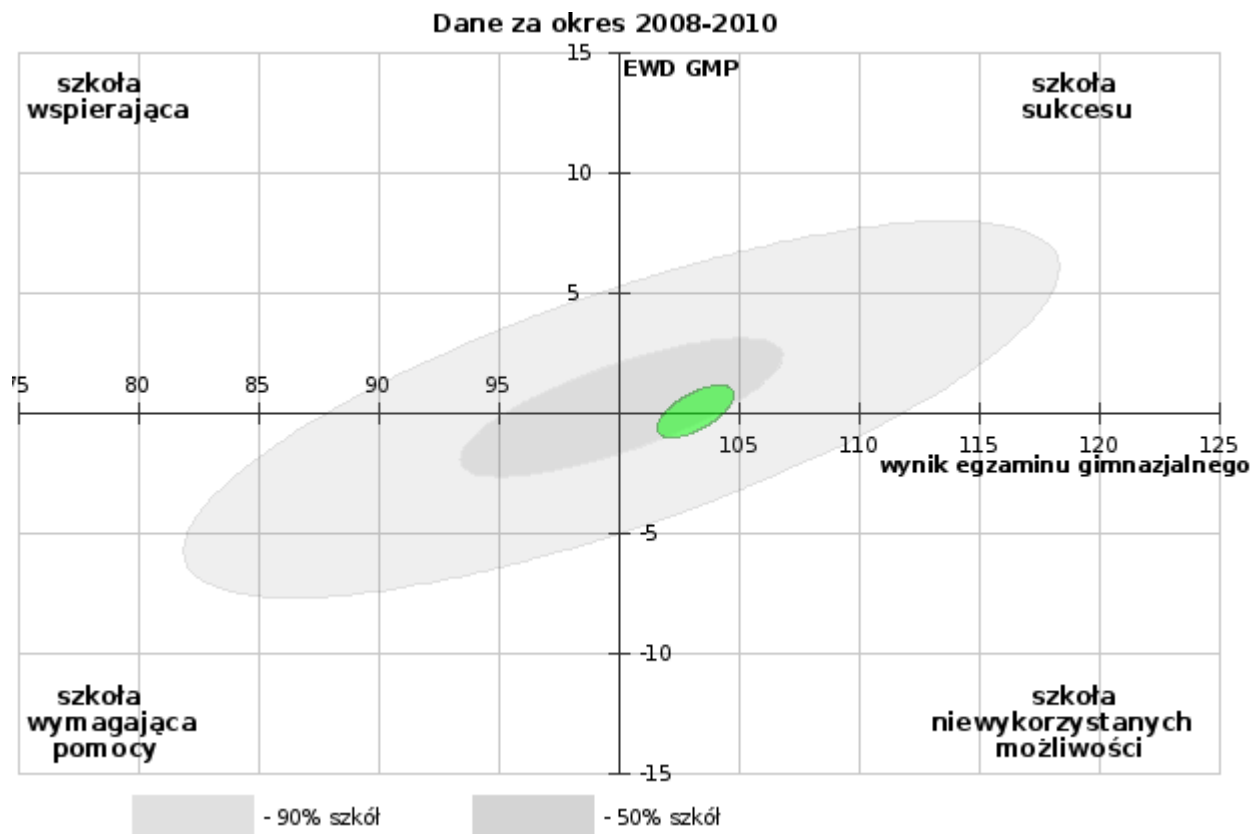
Position of school



Guidance labels



Additional frames of reference



Wskaźniki dla okresu:

☒ 2008-2010

☐ 2007-2009

☐ 2006-2008

wyrysuj średnią dla:

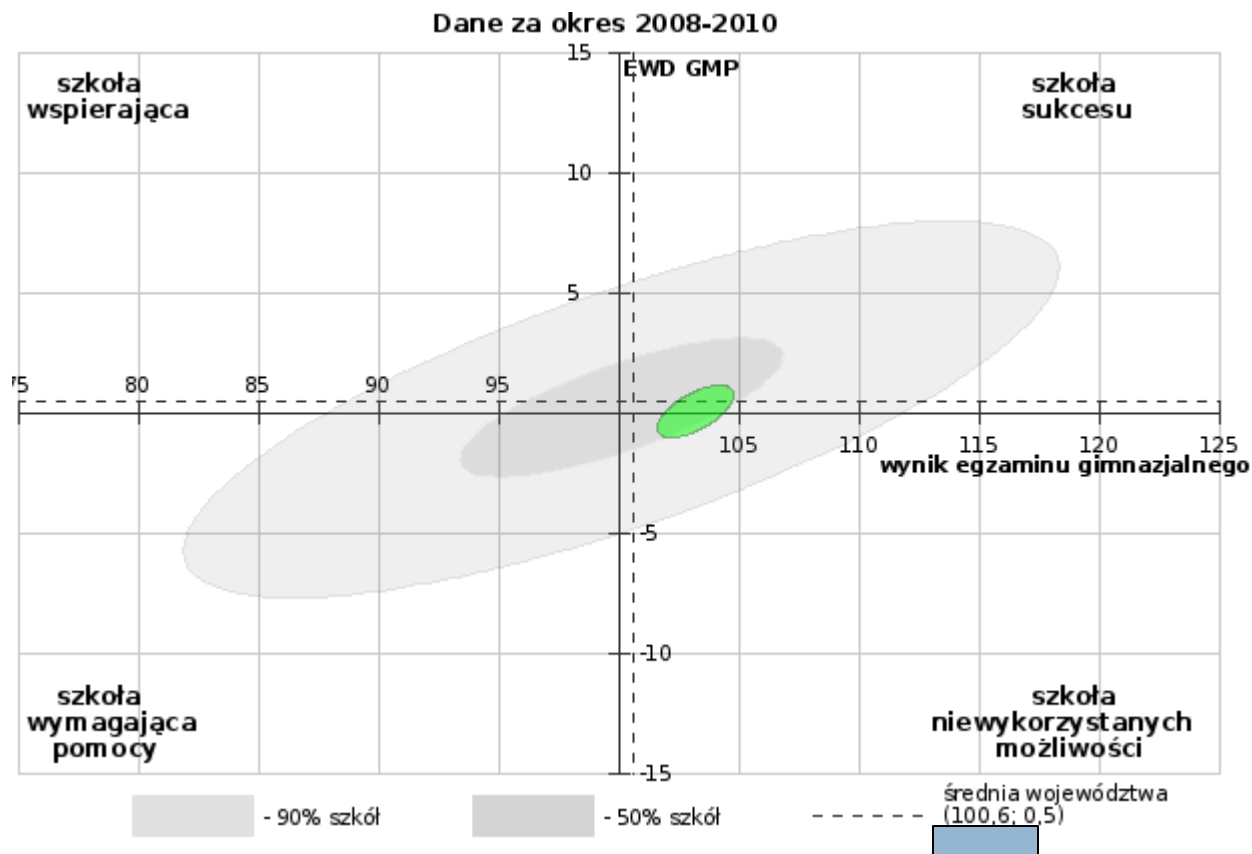
województwa
powiatu
gminy

Dodaj tę szkołę
do listy modułu
Analizy porównawczej

Moduł
Analizy porównawczej
(obecnie 0 szkół)

Edukacyjna
Wartość
Dodana

Additional frames of reference



Wskaźniki dla okresu:

- ☒ 2008-2010
- ☐ 2007-2009
- ☐ 2006-2008

wyrysuj średnią dla:

(res)
 województwa
 powiatu
 gminy

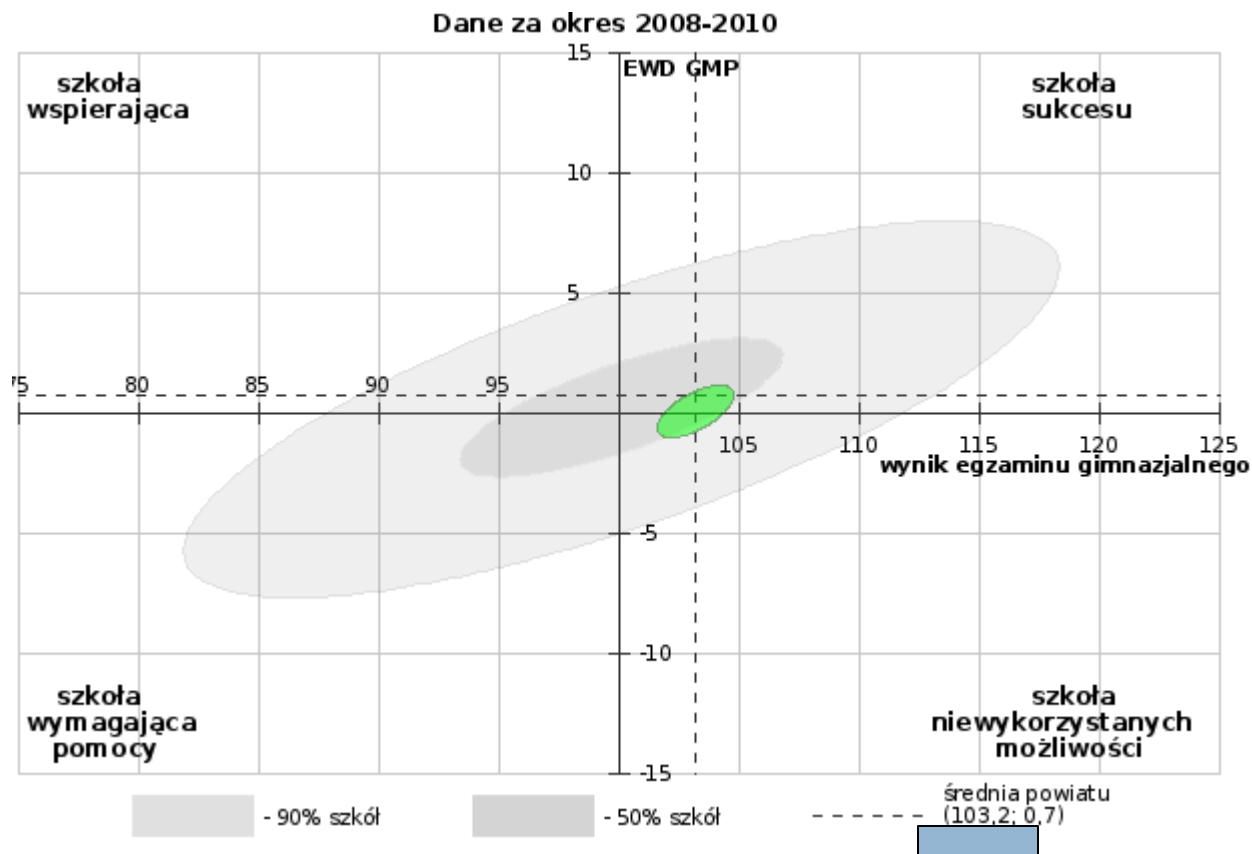
Dodaj tę szkołę
 do listy modułu
 Analizy porównawczej

Moduł
 Analizy porównawczej
 (obecnie 0 szkół)



Province (voivodeship)

Additional frames of reference



Wskaźniki dla okresu:

- ☒ 2008-2010
- ☐ 2007-2009
- ☐ 2006-2008

wyrysuj średnią dla:

(res)

wnjewództwa

powiatu

gminy

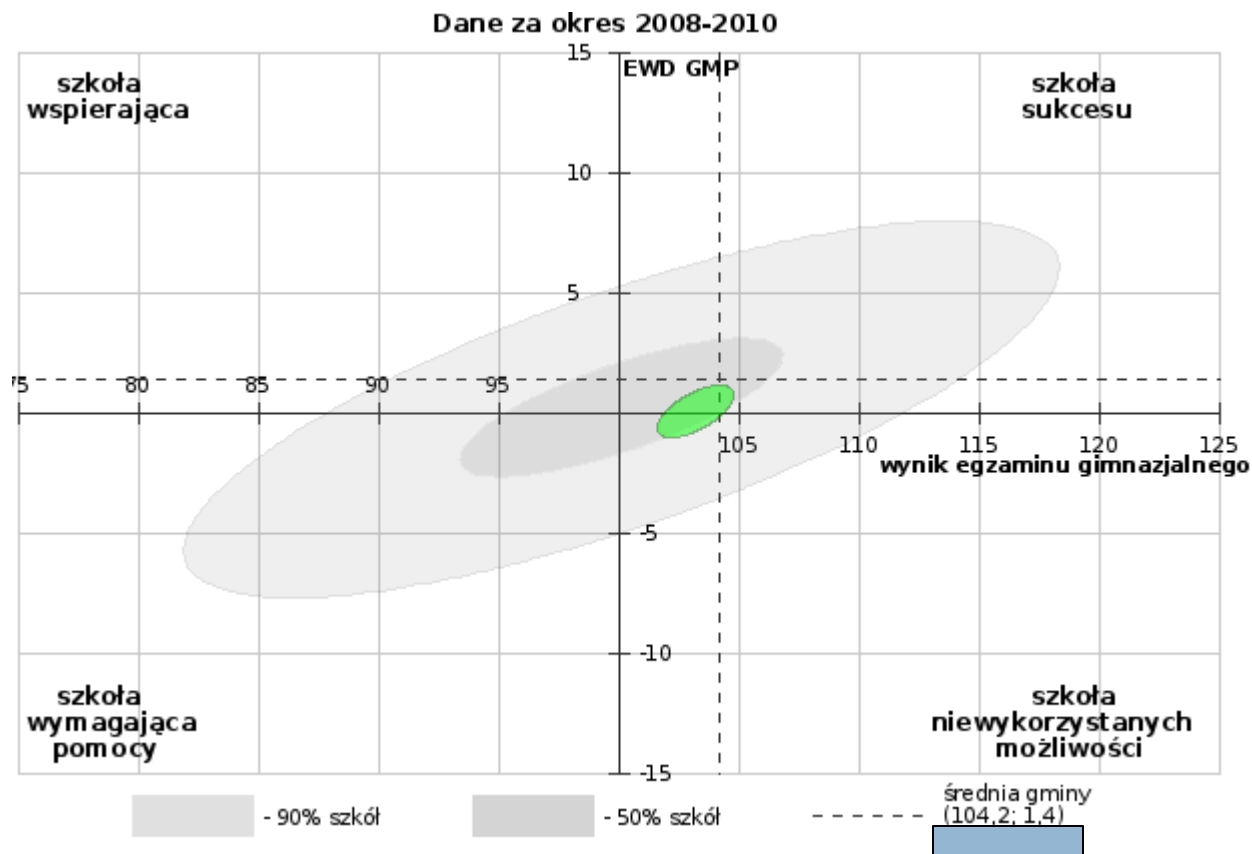
Dodaj tę szkołę
do listy modułu
Analizy porównawczej

Moduł
Analizy porównawczej
(obecnie 0 szkół)



District

Additional frames of reference



Wskaźniki dla okresu:

- ☒ 2008-2010
- ☐ 2007-2009
- ☐ 2006-2008

wyrysuj średnią dla:

(res)

województwa

powiatu

gminy

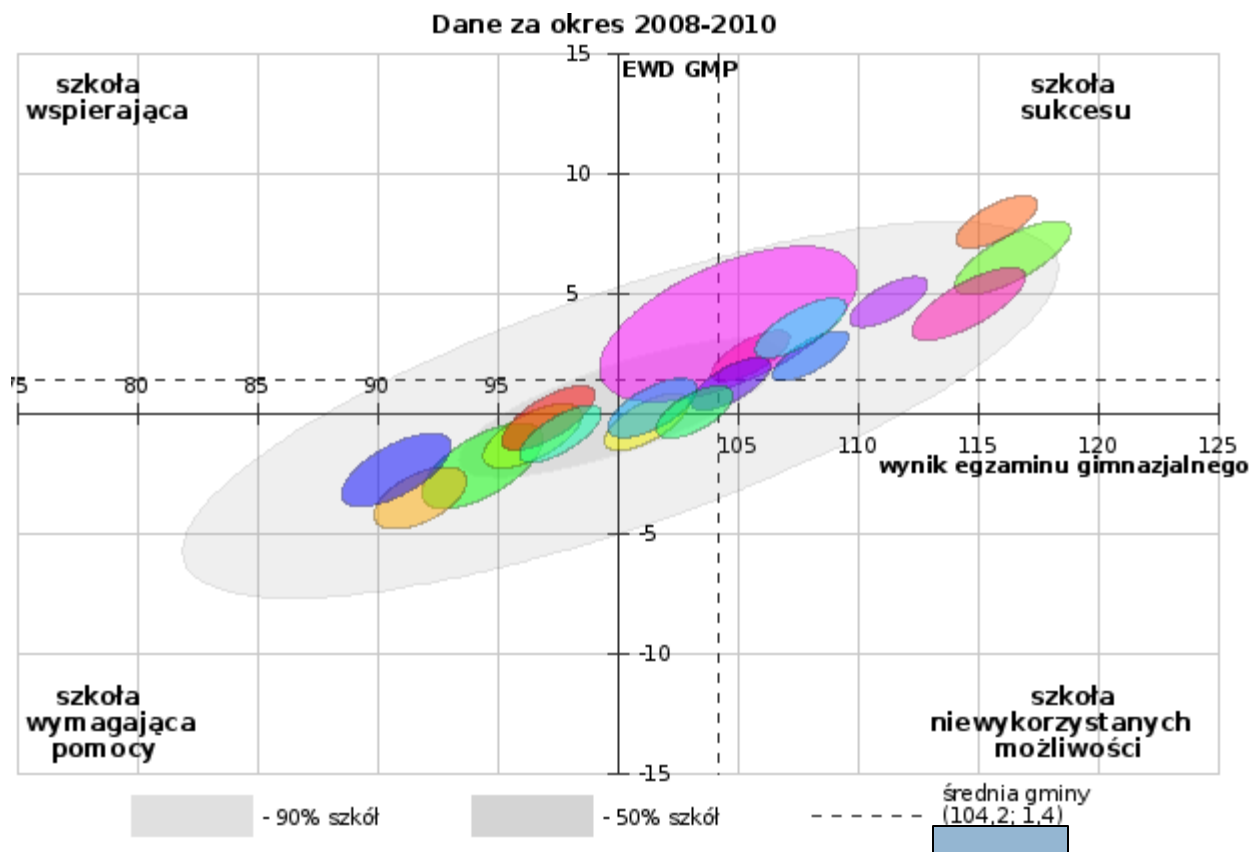
Dodaj tę szkołę
do listy modułu
Analizy porównawczej

Moduł
Analizy porównawczej
(obecnie 0 szkół)



County (gmian)

Schools comparisons



Wskaźniki dla okresu:

☒ 2008-2010

☐ 2007-2009

☐ 2006-2008

wyrysuj średnią dla:

(tylko gdy jeden okres)

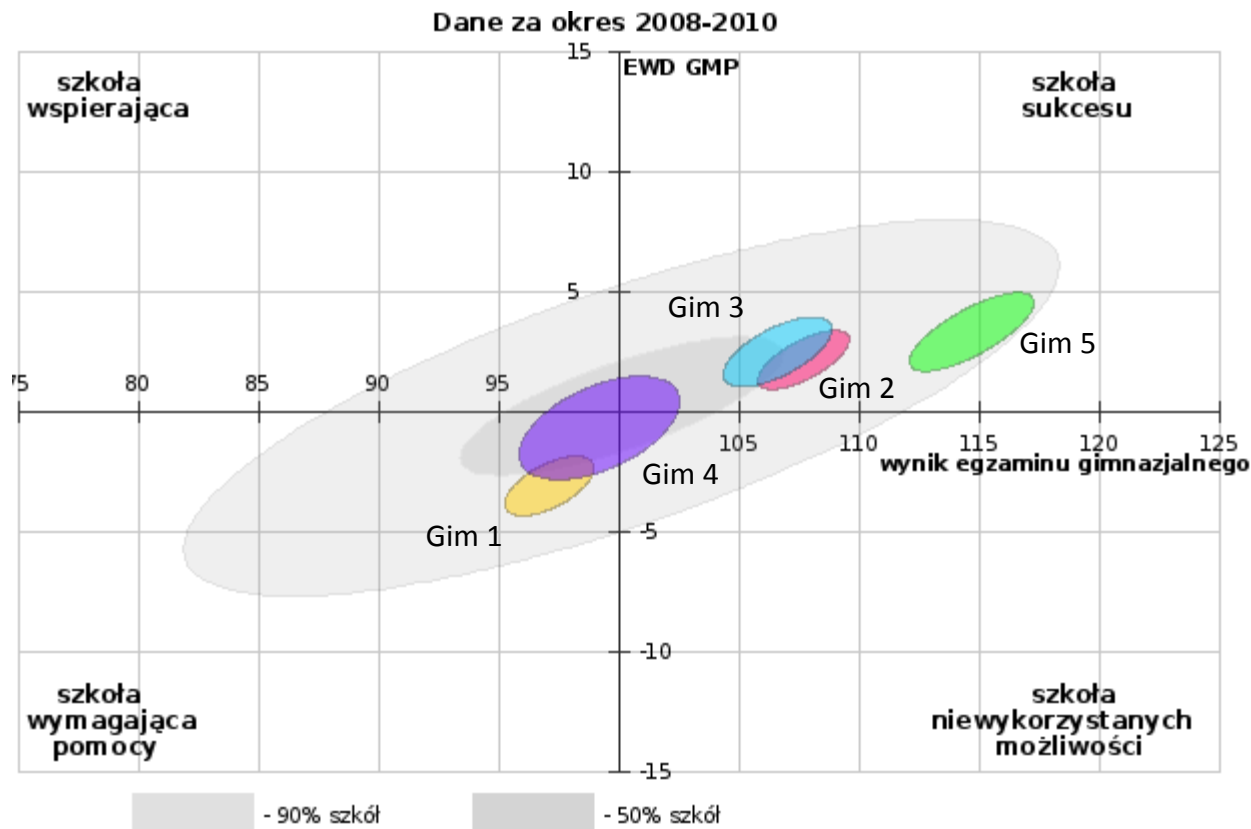
Pokaż

Usuń tę szkołę
z listy modułu
Analizy porównawcze

Moduł
Analizy porównawcze
(obecnie 18 szkół)



Schools comparisons



Wskaźniki dla okresu:

☒ 2008-2010

☐ 2007-2009

☐ 2006-2008

wyrysuj średnią dla:

(tylko gdy jeden okres)

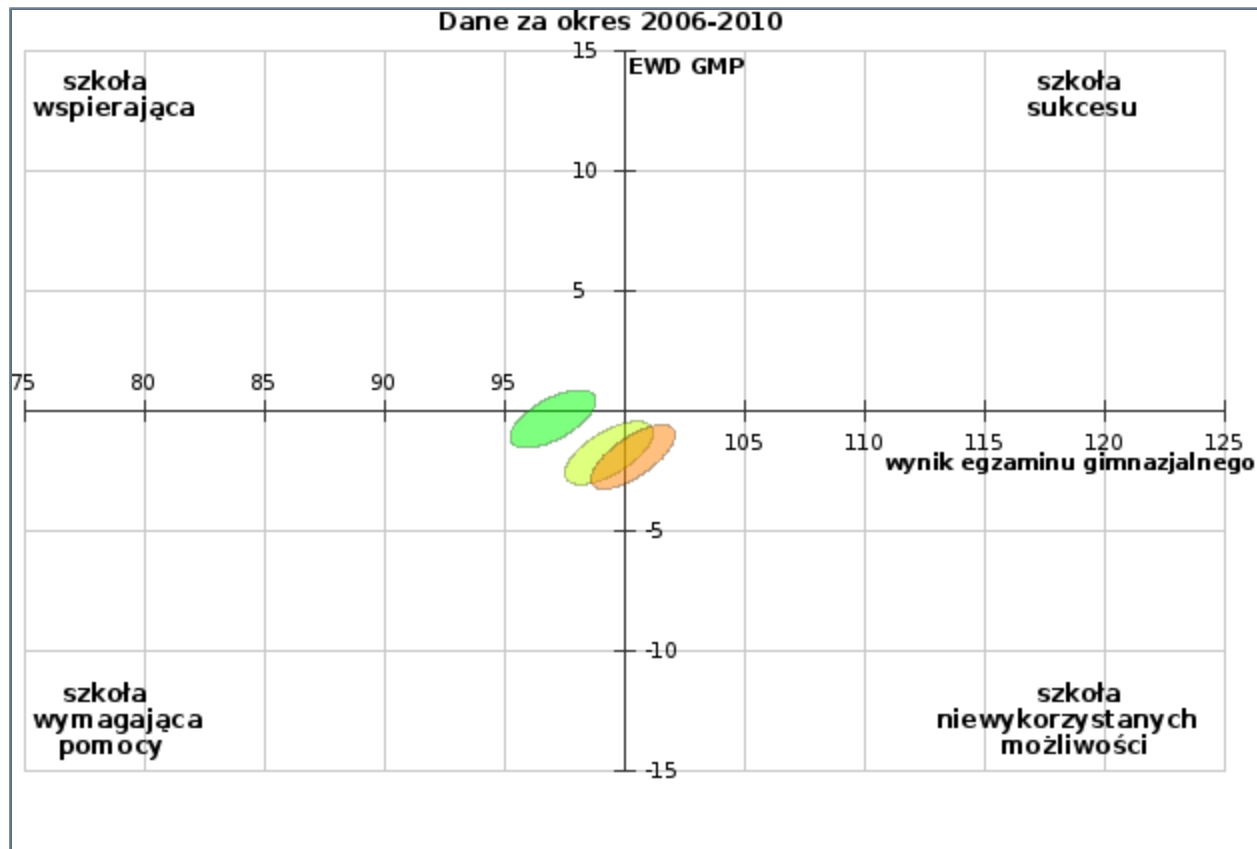
Pokaż

Usuń tę szkołę
z listy modułu
Analizy porównawcze

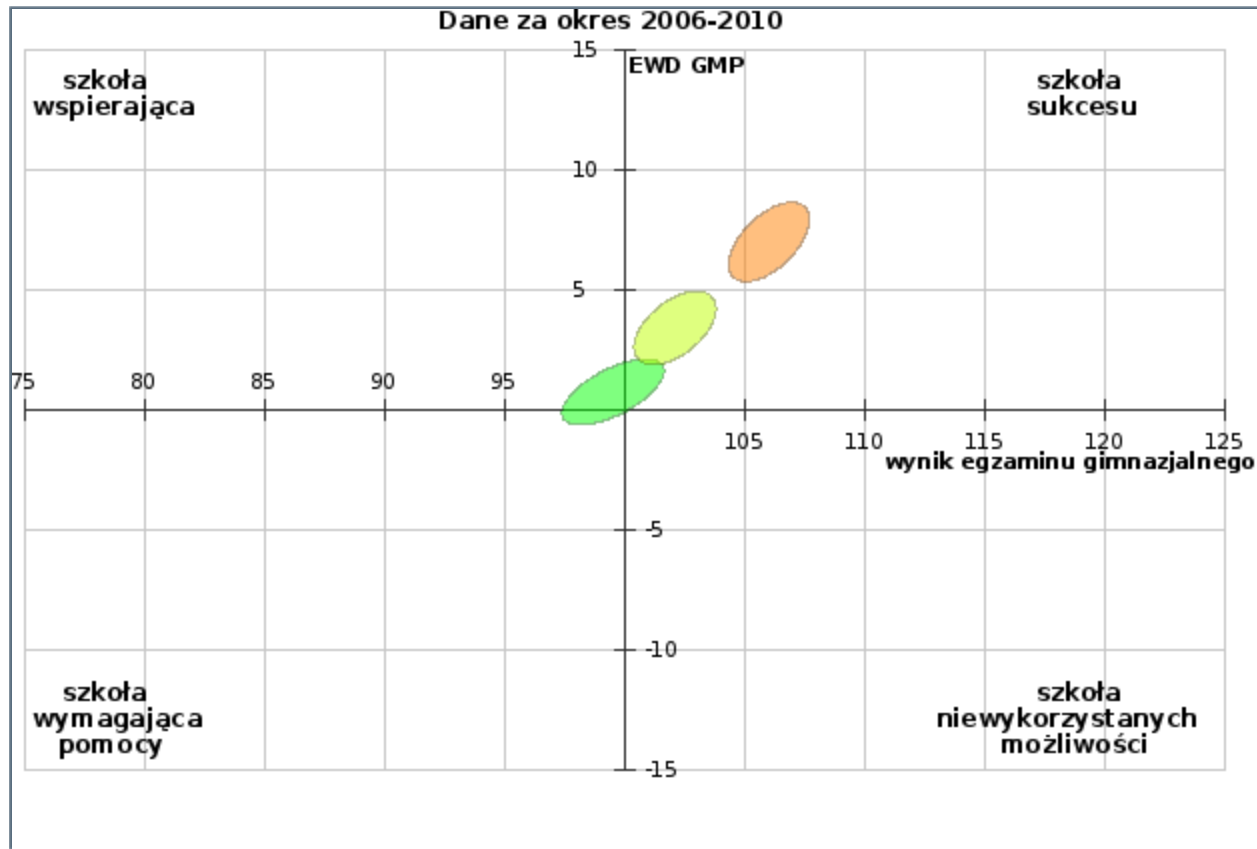
Moduł
Analizy porównawcze
(obecnie 5 szkół)



School comparisons over time



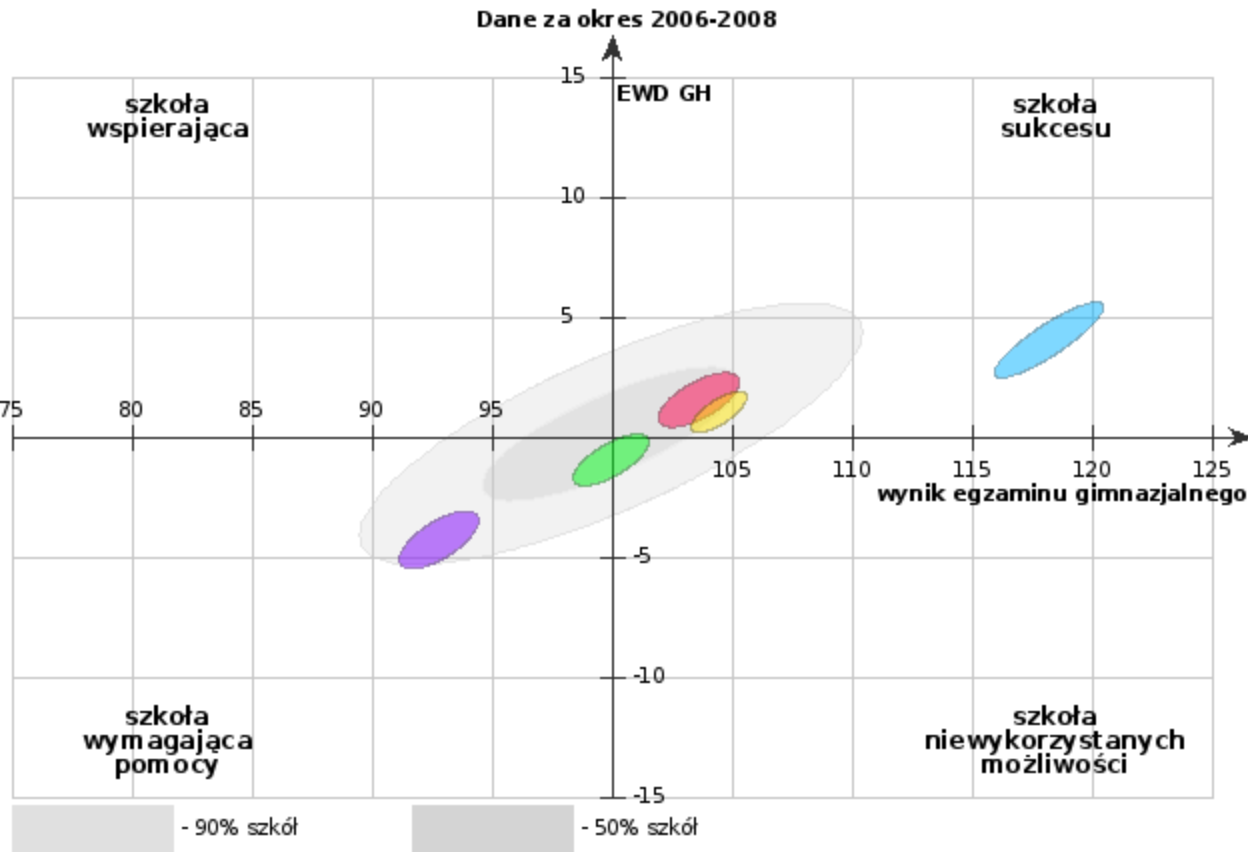
School comparisons over time



Differentiation processes at local level

- To see what opportunities to the local authority to monitor the process of differentiation of the schools look at the available on-line examination results for the selected city.
- The case of a strong and increasing differentiation at the local system lower secondary schools

Town X, graphically presented three-year moving indicators of end exam results and educational value added, period 2006 - 2008

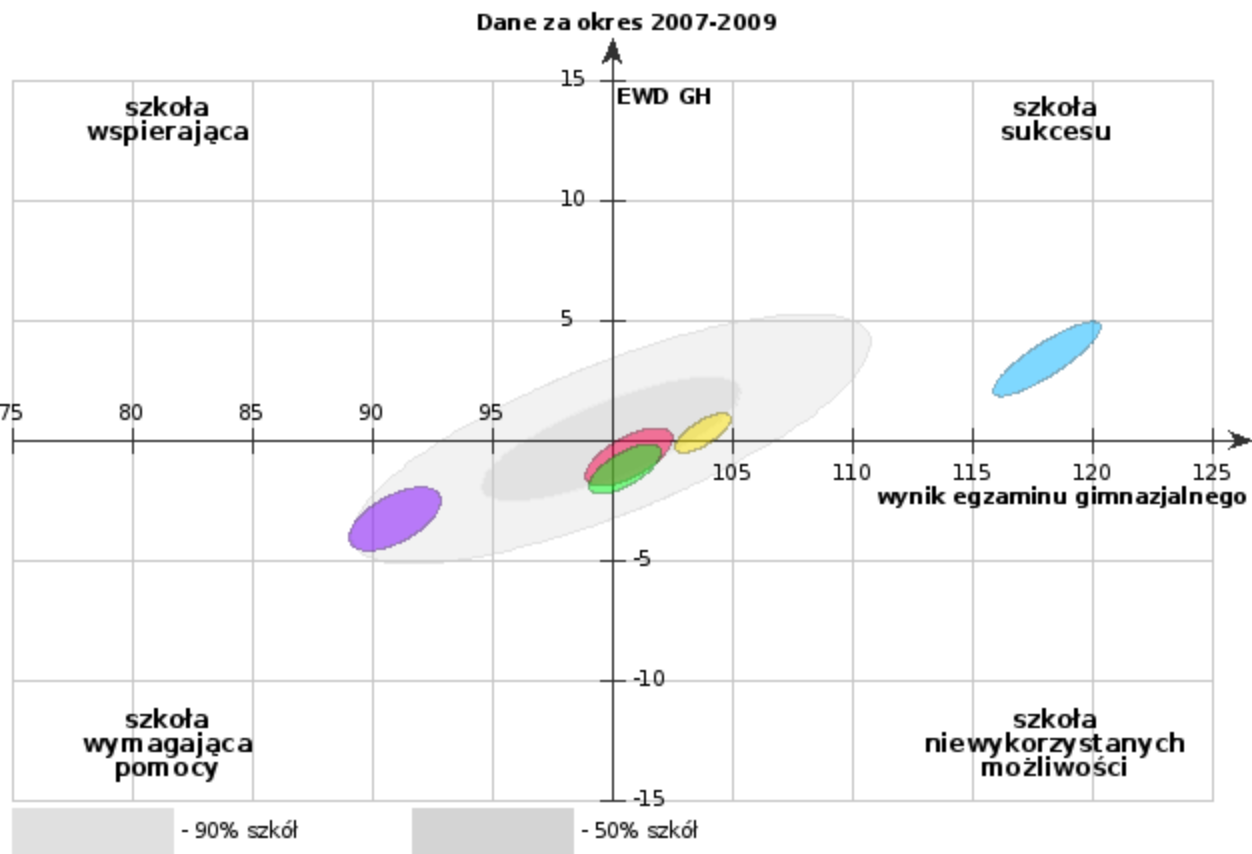


The town has five schools. Indicators for the first analyzed period shows their differentiation.

The final exam result gap between a violet school and a blue school is about 25 points

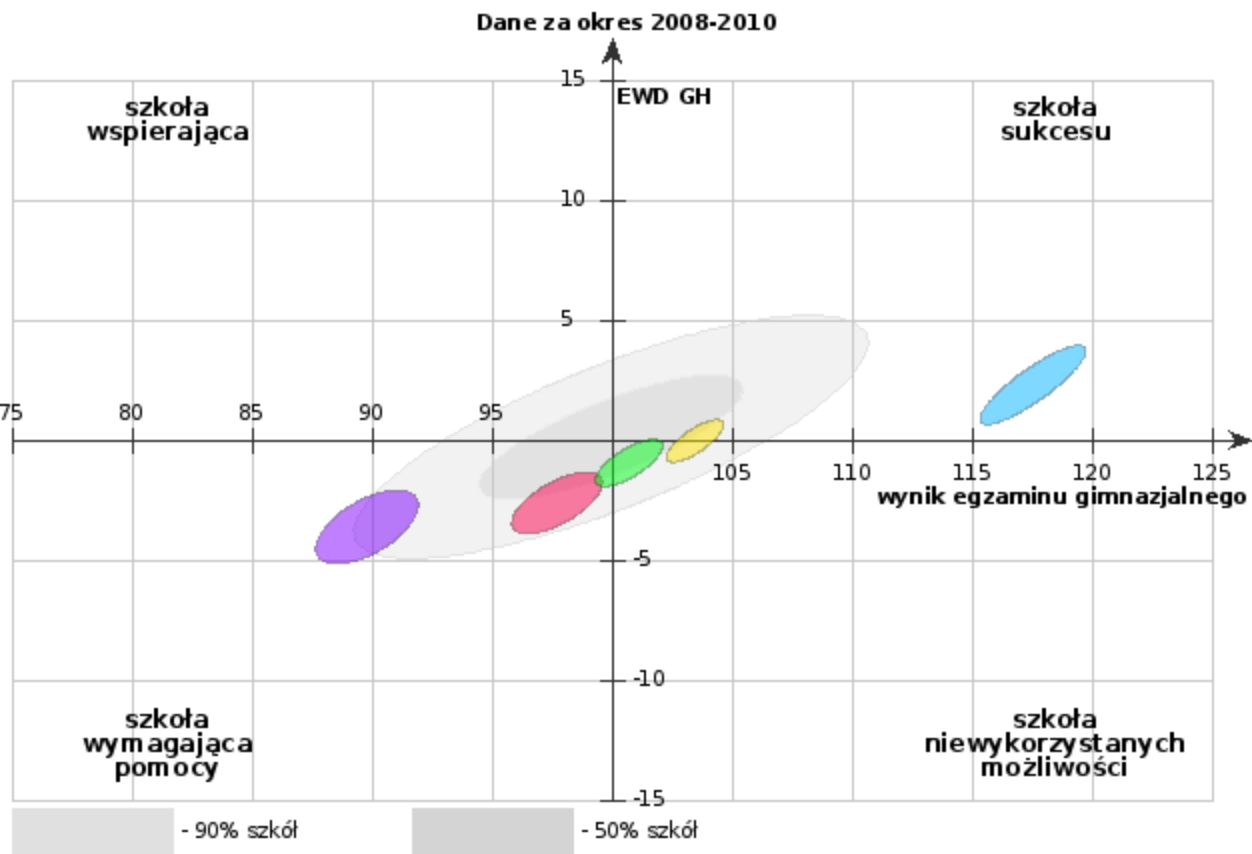
The effectiveness gap between these schools is 7 points

Town X, graphically presented three-year moving indicators of end exam results and educational value added, period 2007 - 2009



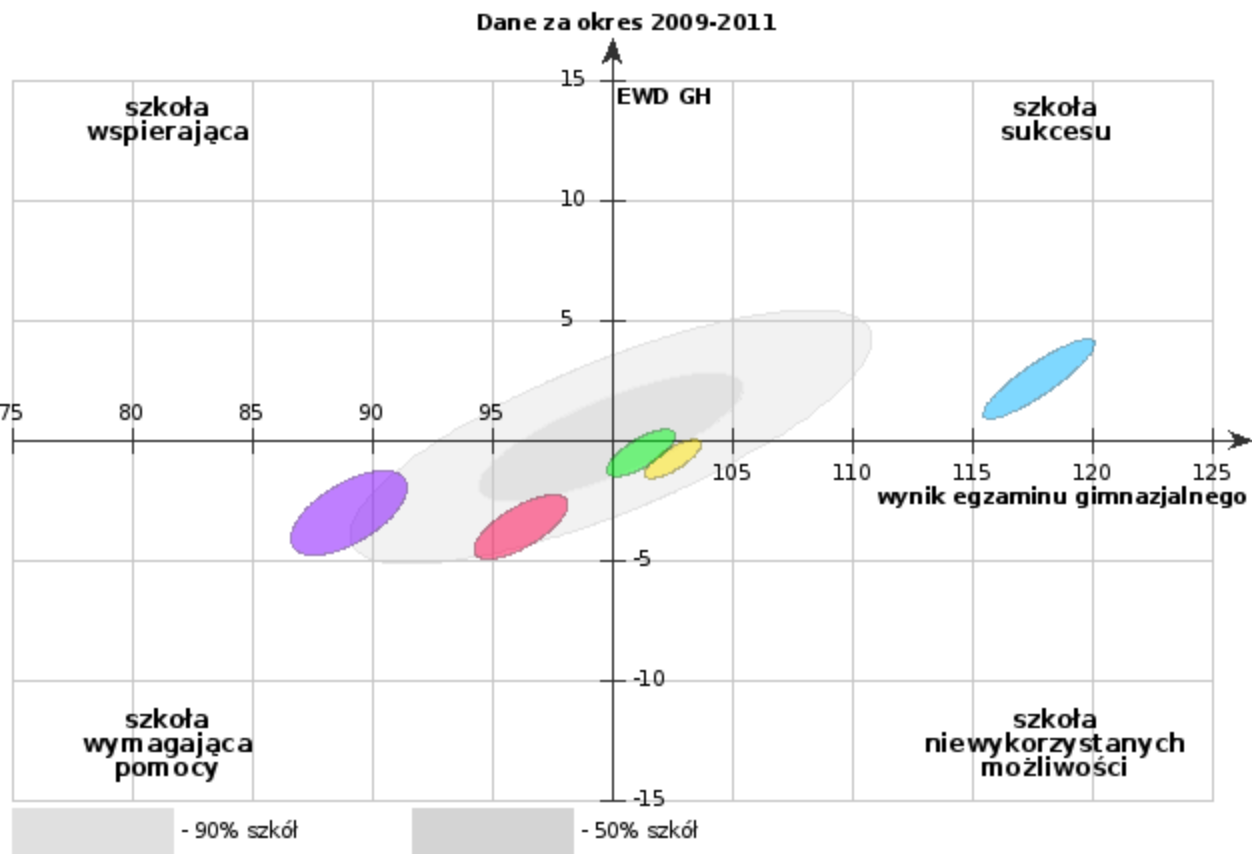
A year later, three-years indicators show a decrease results in the red school.

Town X, graphically presented three-year moving indicators of end exam results and educational value added, period 2008 - 2010



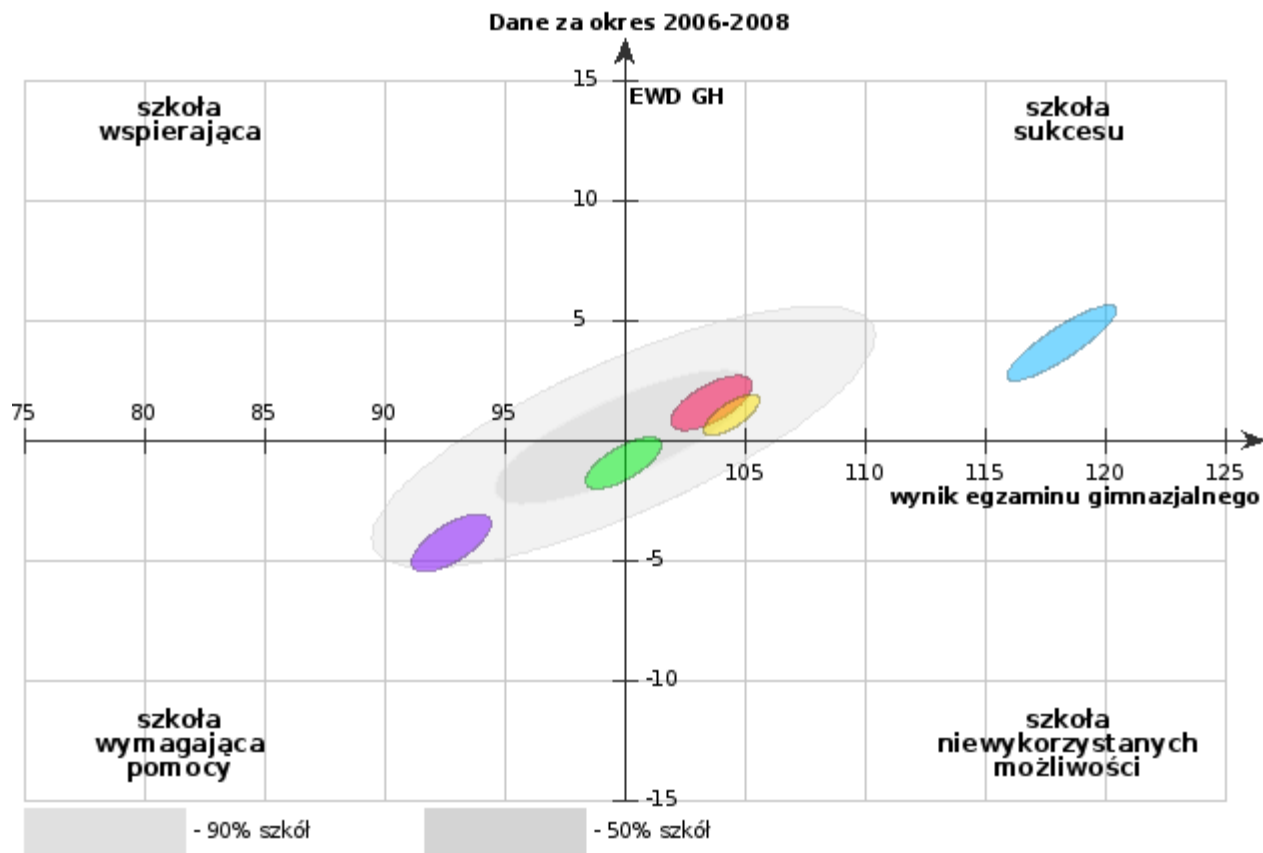
The following year, again we note a significant decrease in performance at the red school and a slight decrease in overall performance in all schools.

Town X, graphically presented three-year moving indicators of end exam results and educational value added, period 2009 - 2011

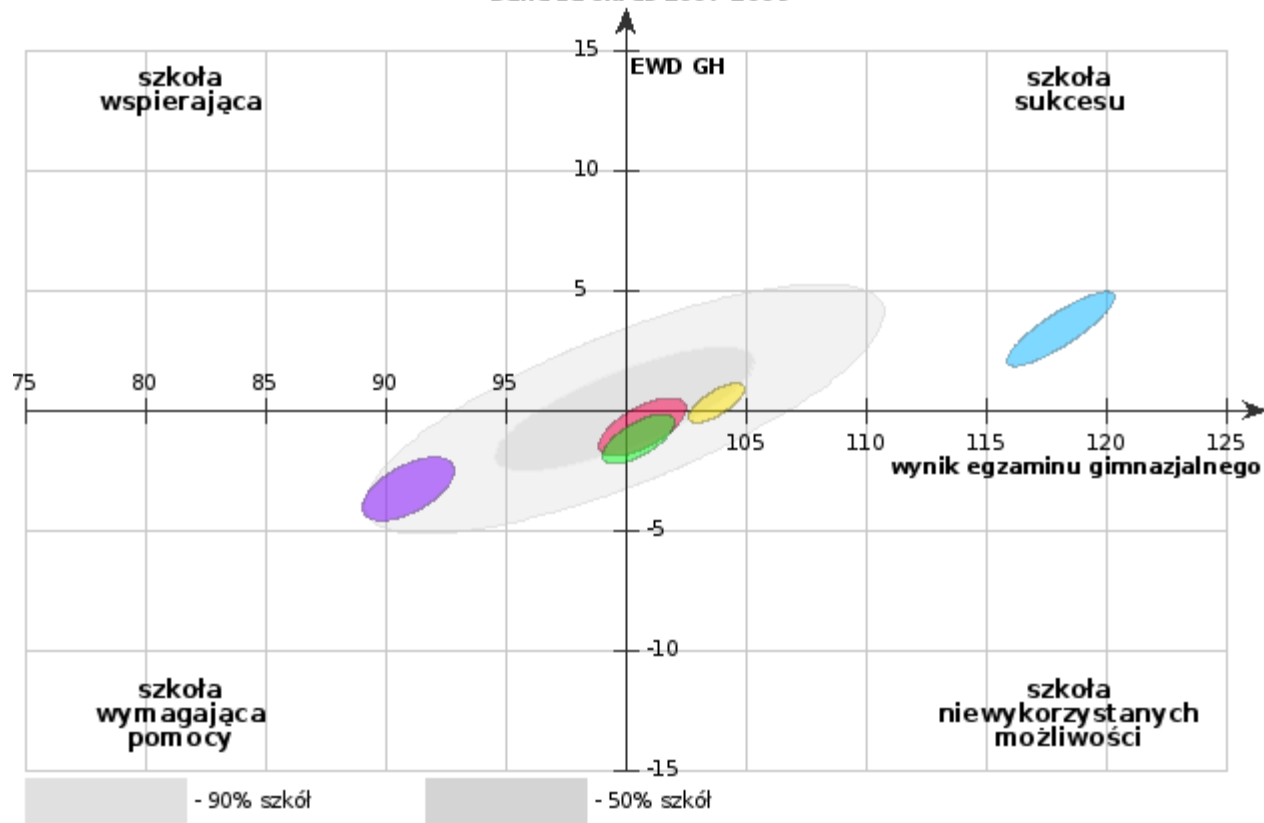


Finally schools in center part of the graph spread

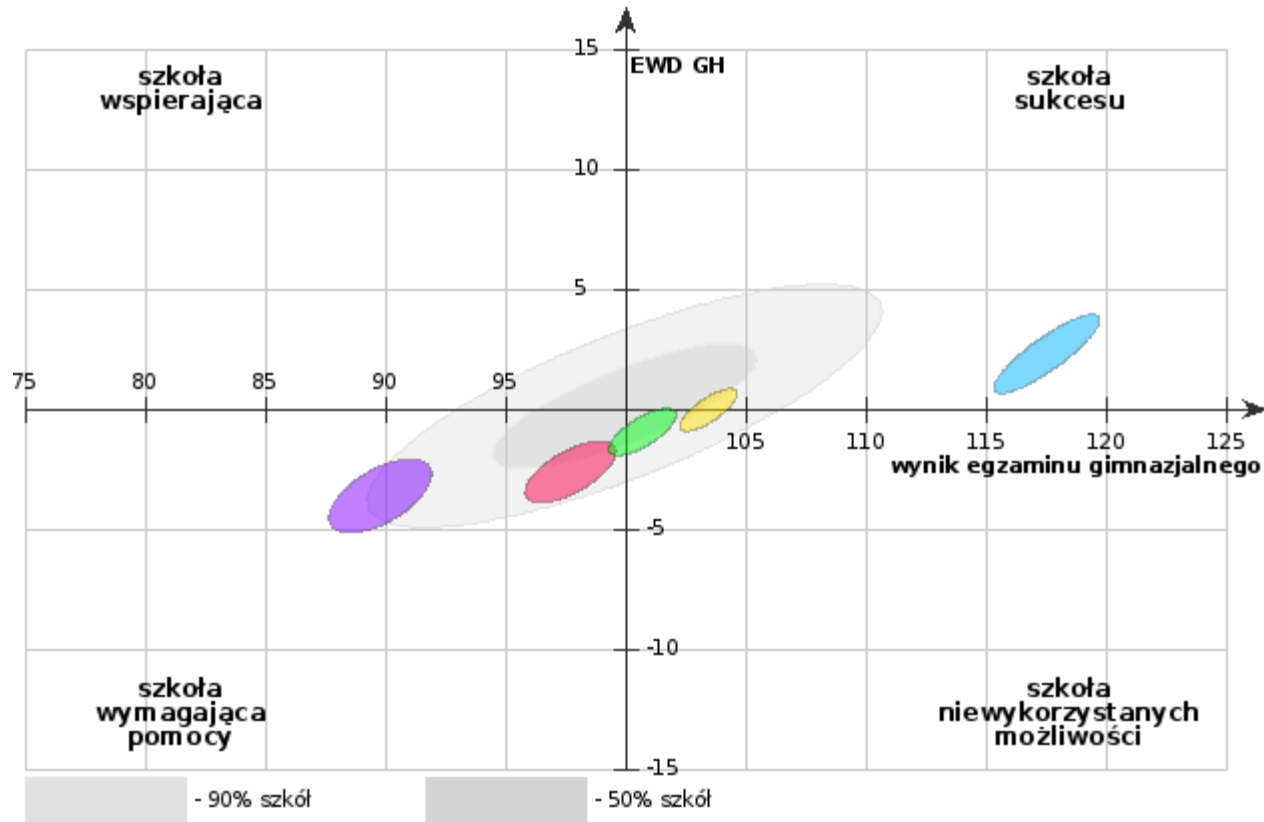
Start of the movie



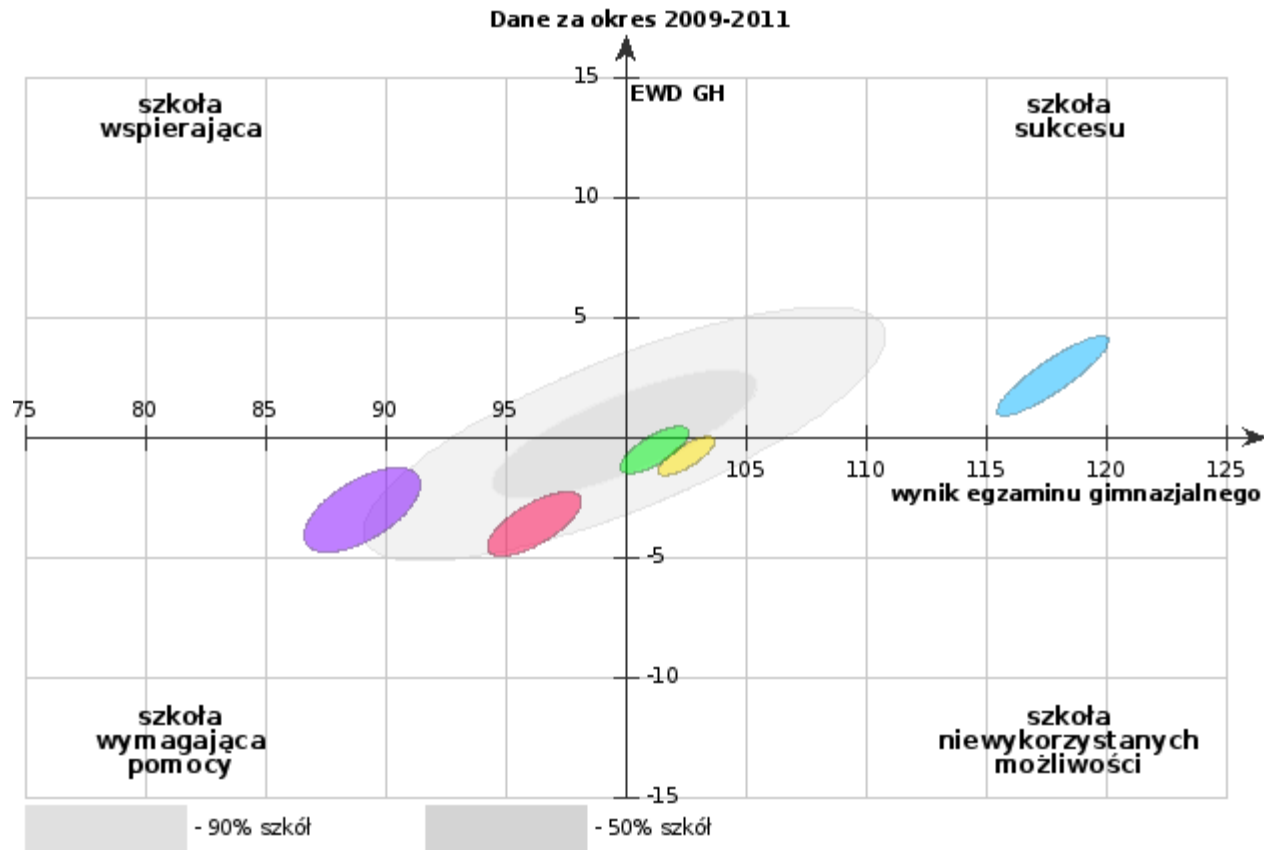
Dane za okres 2007-2009



Dane za okres 2008-2010

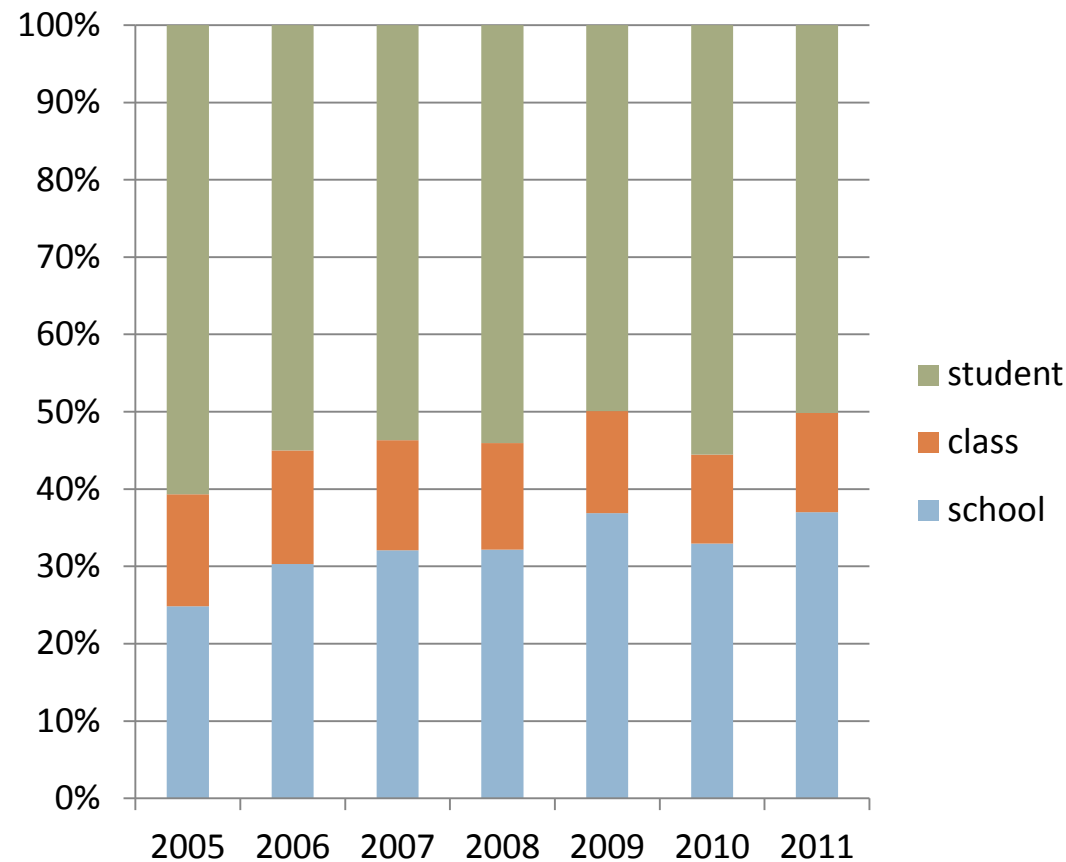


End of the movie



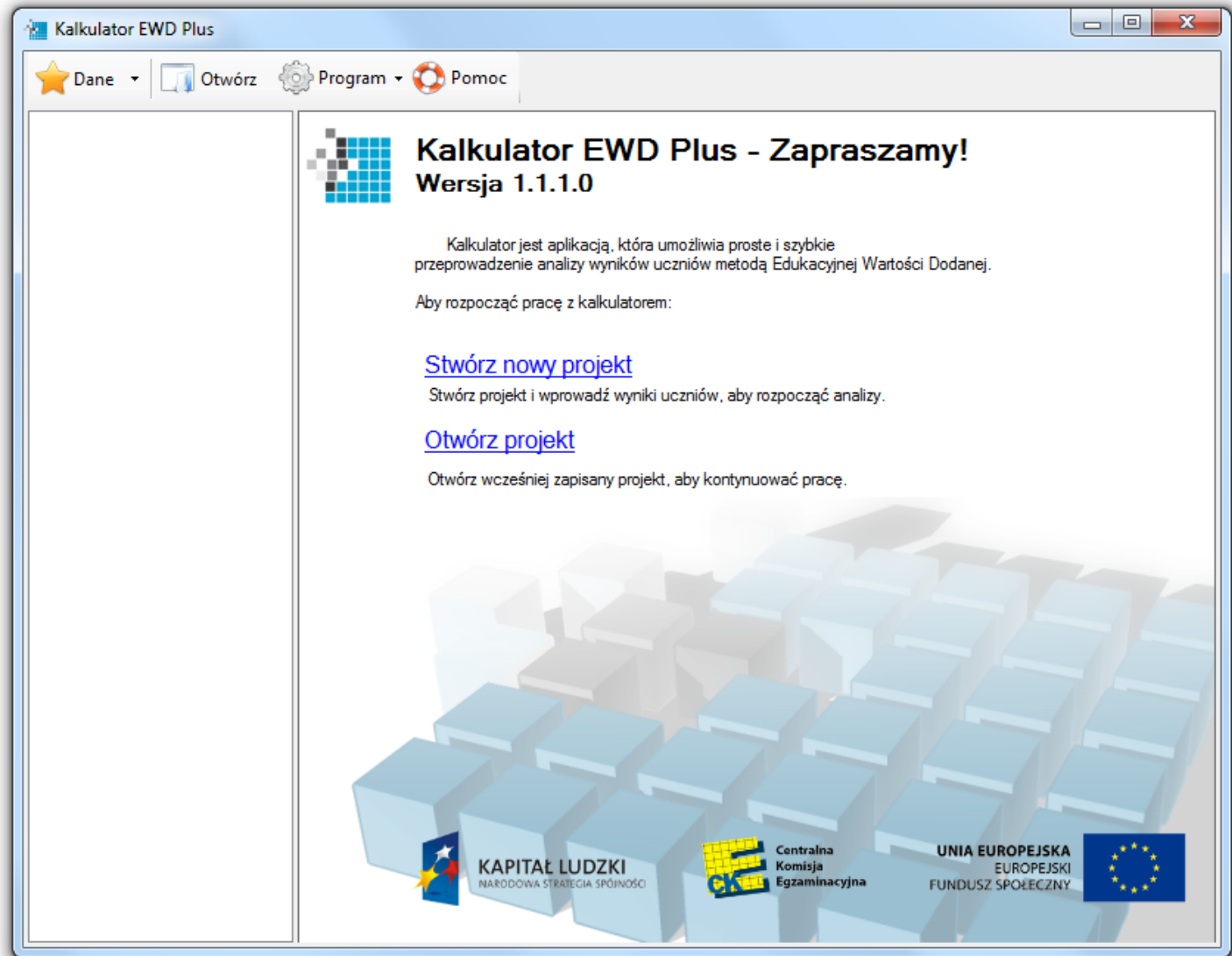
Differentiation processes at school level

Decomposition of the variance of the results of exam for between-school, between-class and individual variance, lower secondary school in the big cities



- The variance between classes is relatively stable and accounts for approximately 12-14% of the total variance.
- The variance between classes is much lower than the variance between schools but is significant
- Schools need a simple tool to track the effects of different ways to divide students into classes.

Calculator of Educational Value Added Plus



Input interface

The screenshot shows the 'Kalkulator EWD Plus' application window. The main window has a menu bar with 'Dane', 'Analiza', 'Raport', 'Otwórz', 'Zapisz', 'Program', 'Pomoc', 'Importuj', and 'Cofnij'. Below the menu bar is a tree view on the left with 'Absolwenci 2008 (2005 - 2008)' selected. The main area is titled 'Edycja danych' and shows a table with columns: 'Kod ucznia', 'Płeć', 'Dysleksja (sp)', 'Dysleksja (gim)', 'Wynik sprawdzianu', and 'Wynik GH'. A red arrow labeled '1' points to the tree view. A red arrow labeled '2' points to the 'Importuj' button in the menu bar. A red arrow labeled '3' points to the '2008' option in the 'Import ze skróty' dialog box. A red arrow labeled '4' points to the 'Dodaj pozostałe kolumny' section in the dialog box.

Import ze skróty

Dostępne arkusze: 2008, 2009, 2010

Powiąż:

- Kod ucznia → Kod ucznia
- Płeć → płeć
- Dysleksja (sp) → dysleksja_sp
- Dysleksja (gim) → dysleksja_g
- Wynik sprawdzianu → wynik SP
- Wynik GH → wynik GH

Dodaj pozostałe kolumny:

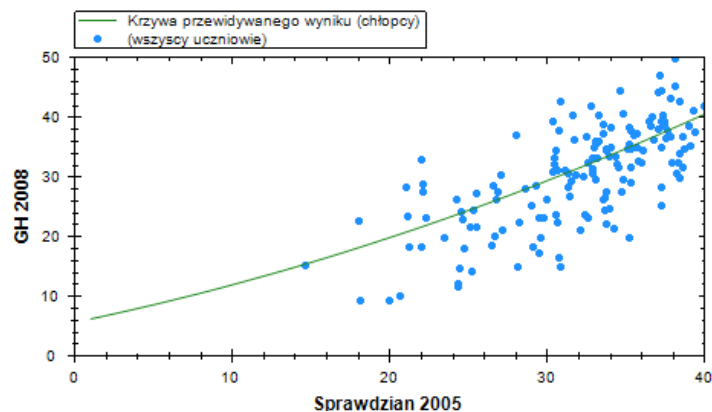
- ☐ polski
- ☐ matematyka

Pobrane dane

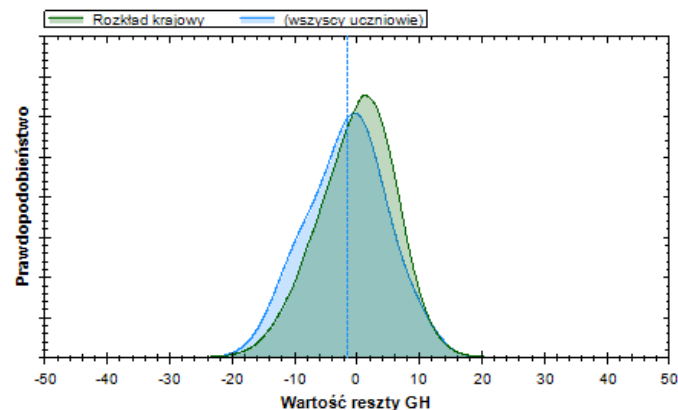
Kod ucznia	płeć	dysleksja_sp	dysleksja_g
A01	1	0	0
A02	1	0	0
A03	1	0	0
A04	1	0	0
A05	1	0	0
A06	0	1	1
A07	0	0	0
A08	0	0	0
A09	1	0	0
A10	1	0	0
A11	0	0	0
A12	1	0	0

Anuluj Importuj

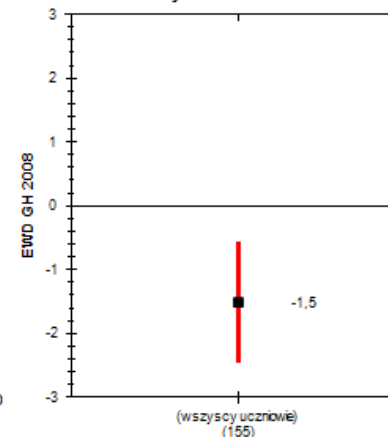
Wykres rozrzutu GH 2008



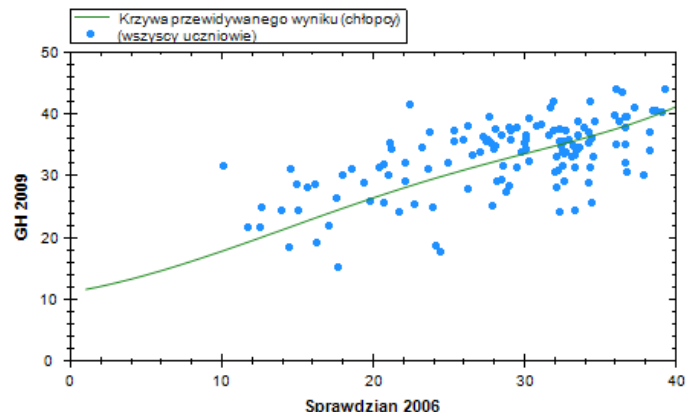
Rozkład reszt GH 2008



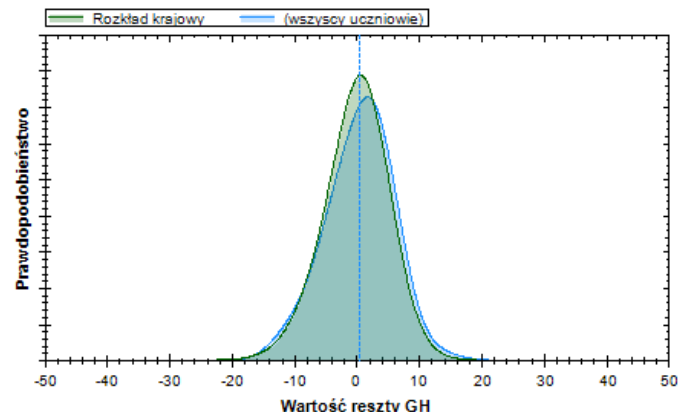
Przedziały ufności EWD GH 2008



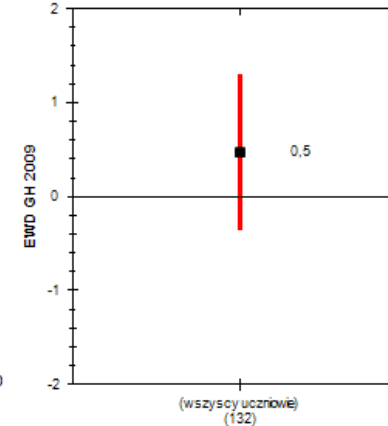
Wykres rozrzutu GH 2009



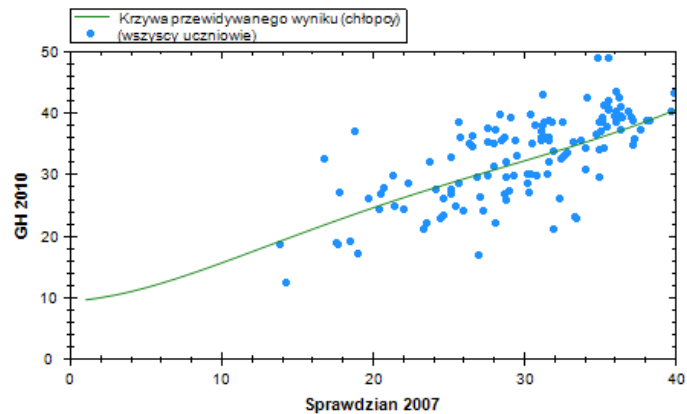
Rozkład reszt GH 2009



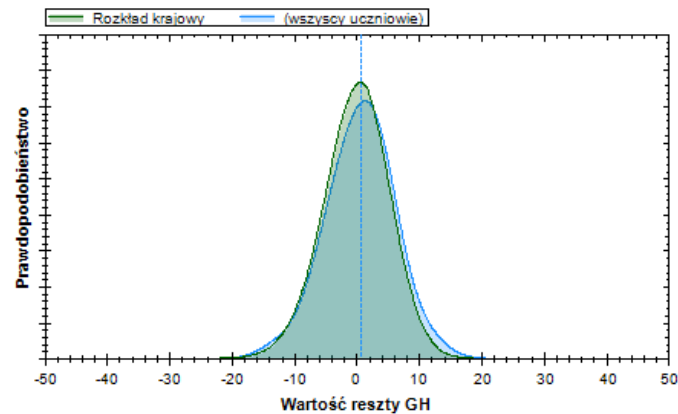
Przedziały ufności EWD GH 2009



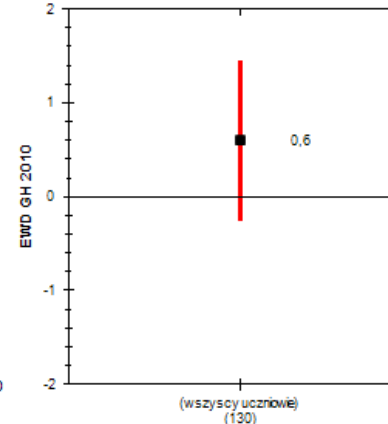
Wykres rozrzutu GH 2010



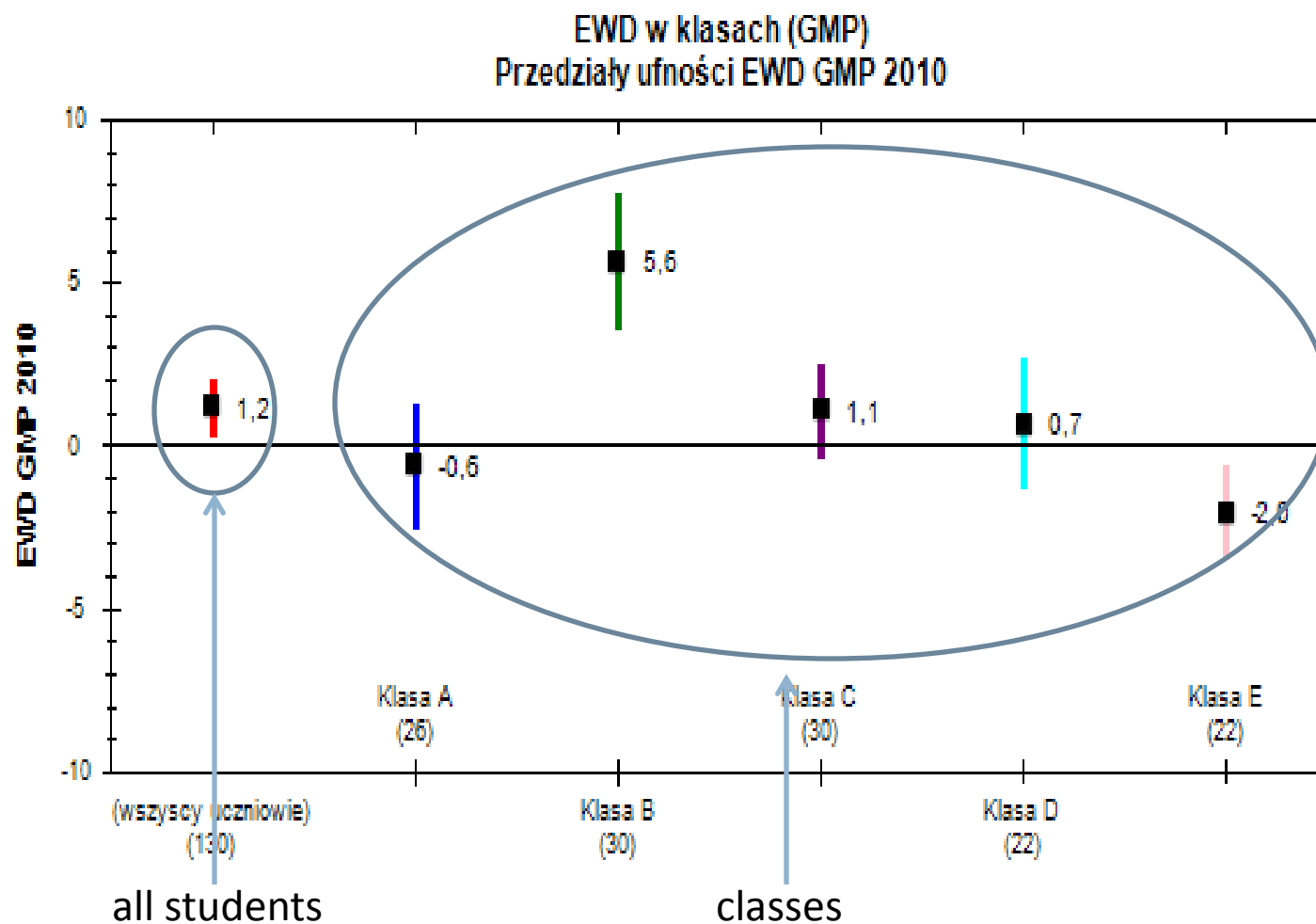
Rozkład reszt GH 2010



Przedziały ufności EWD GH 2010



Analysis of the classes within the school



Summary and conclusions

- The national system of examination provides good data for monitoring and evaluation of different educational processes.
- A good example of analytical potential inherent in exam data is the analysis of the process of differentiation of lower secondary school in Poland.
- The process of differentiation of the schools can be monitored at national level.
- The process of differentiation of the schools can be monitored and evaluated at the local level. Local authorities in Poland have access to useful exam indicators for school.
- In the end, the schools themselves can track the effects of different strategies to divide students into class. The described *Calculator of Educational Value Added Plus* is a good tool for data analysis of exam data for evaluation within schools.
- At the moment the key problem is to generate knowledge capital necessary for the competent use of the tools discussed.

IBE



entuzjaści
edukacji

QUALITY AND EFFECTIVENESS OF EDUCATION
STRENGTHENING OF INSTITUTIONAL RESEARCH CAPABILITIES

po

Thank you for your attention

dolata58@gmail.com



artur.pokropek@gmail.com

