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The use of data in education policies in Portugal: teacher grades in the presence of external assessment

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Motivation

- Research has been focused on getting people into higher education (**extensive margin**)
- Less attention given to which university and subject they decide to pursue (we will refer as programme)
- Heterogenous returns to **subjects** (Kirkeboen et al 2016) and **institutions** (Zimmerman 2019, Mountjoy 2022). Also, large variation in student abilities and learning style
- **Teacher grades** in high school are used as an **allocation criteria** to allocate students to higher education. They gain particular relevance in degrees with high returns (associated to higher entrance grades)

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Institutional Setting: general upper education

Educational Components	Subjects	
General	❑ Portuguese (3 years , 10th/11th/12th grades) ❑ Foreign Language (I, II or III) (2 years, 10th/11th grades) ❑ Philosophy (2 years, 10th/11th grades) ❑ Sport (3 years, 10th/11th/12th grades)	
Specific Subjects	Common core	One triennial (3 years, 10th/11th/12th grades) Two biennial (2 years, 10th/11th grades)
	Subject Specifics	Two annual (1 year, 12th grade)

- ❑ Subjects per track (where 4 had national exams in the past)
- ❑ Tracks: Arts, Languages and Humanities, Socioeconomics, Science and Technology
- ❑ High school GPA was an unweighted average of all subjects at high school
- ❑ (after the revision, it will be now weighted by the duration of the subject)

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Research Question

(i) analyse how teacher grades differ in the present of high-stake assessment;

(ii) Is there heterogeneity of grade assessment according to different factor levels?

- ❑ over time
- ❑ high school type (public/private)
- ❑ high school course
- ❑ SES (level ASE)
- ❑ Region
- ❑ type of HE degree

Why is this relevant?

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March 2020
Covid-19

June 2019 Exams

June 2020 Exams

June 2021 Exams

June 2022 Exams

Discussion and revision

10th February 2023
New Rules Announcement

2025

- 3 mandatory exams to finish HS;
- 2 needed to access HE

2026

HS GPA new formula

Exams were mandatory to complete HS (**dual role**)

Exams no longer needed to complete HS. Only to access HE.

Exams will become mandatory to complete HS (**dual role**)

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Motivation

Pressure for high (teacher) grades is an issue

- **Biases choice** of subjects by students, where they can easily obtain higher grades (Chowdhury, 2018)
- **Skill acquisition:** student learning and lenient grading may be negatively related (Johnson, 2003)
- Grades loose **signaling power**: students overestimate their chances of accessing HE and being successful (Gershenson, 2018)
- Not able to **distinguish students** at the top of the distribution
- **Low effort** (DeFraja & Landeras, 2006), especially by high achieving students (Lackey & Lackey, 2006; Pressman, 2007)
- Difficult to determine **how effective the school** is in imparting knowledge and developing student skills

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Can we learn something from the data?

Let’s compare the period in which national exams were optional with the period in which they were mandatory

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Data

- The source of information used was, for public school students, the data reported by the schools through the Ministry of Education, Science and Innovation's information systems, for private school students the database from the National Secondary School Exams (ENES), compiled by the National Exams Jury (JNE);
- Covered more than 450 public hight schools (+96% of total) and a total of 100 private high schools (+90% of total) in mainland Portugal with students enrolled in scientific-humanistic courses;
- Considered the subjects with a final internal classification for the 11^{th} and 12^{th} grades on a scale of 1 to 20 values in the last six years (2017-2023);
- Not considered the students who had cancelled their enrolment or were excluded due to absences.

To ensure a representation of more than 92% for public schools and 90% for private schools of the universe of students on the scientific-humanistic courses.

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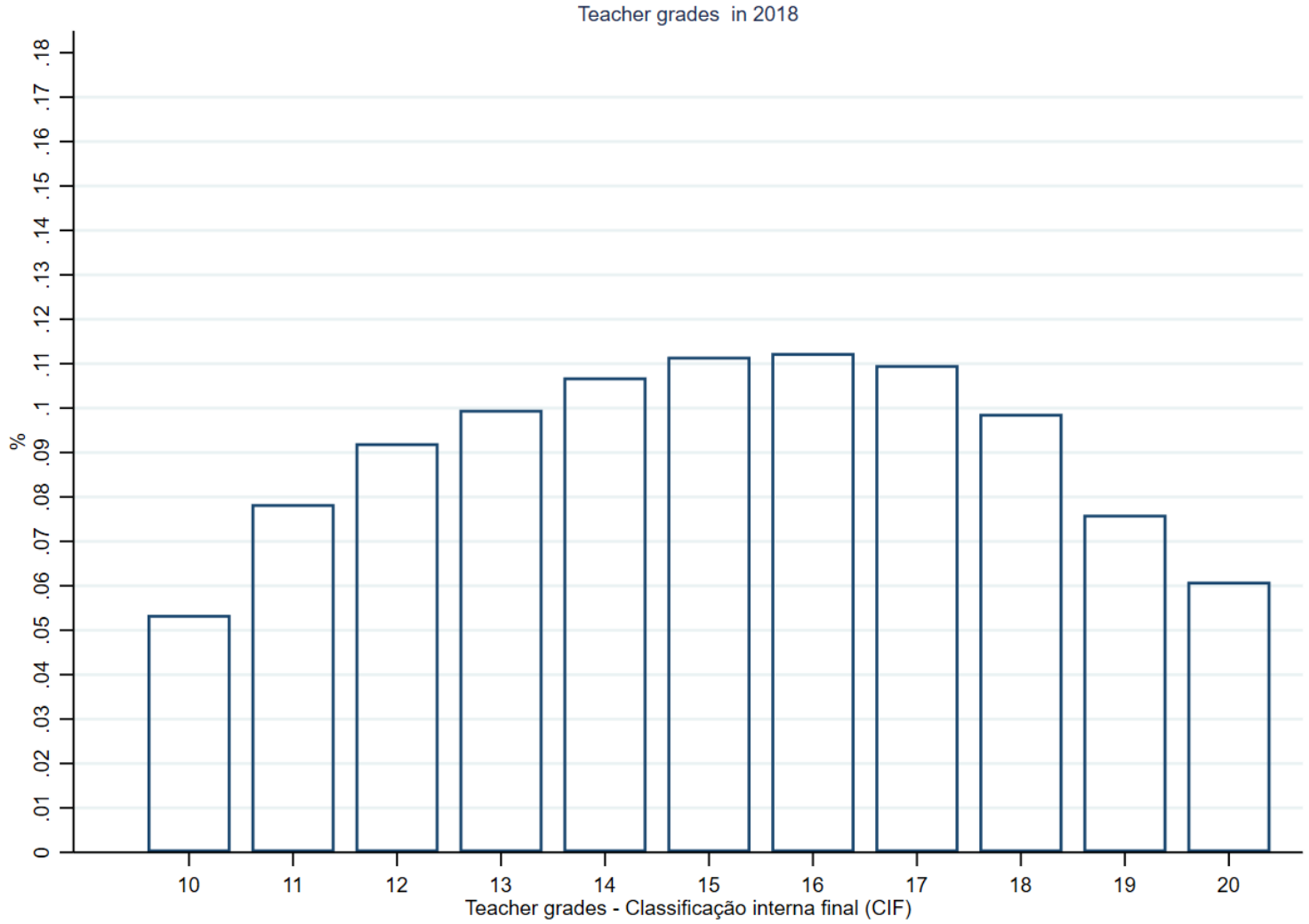
Results: distribution of teacher scores



Source: JNE (DGEEC)

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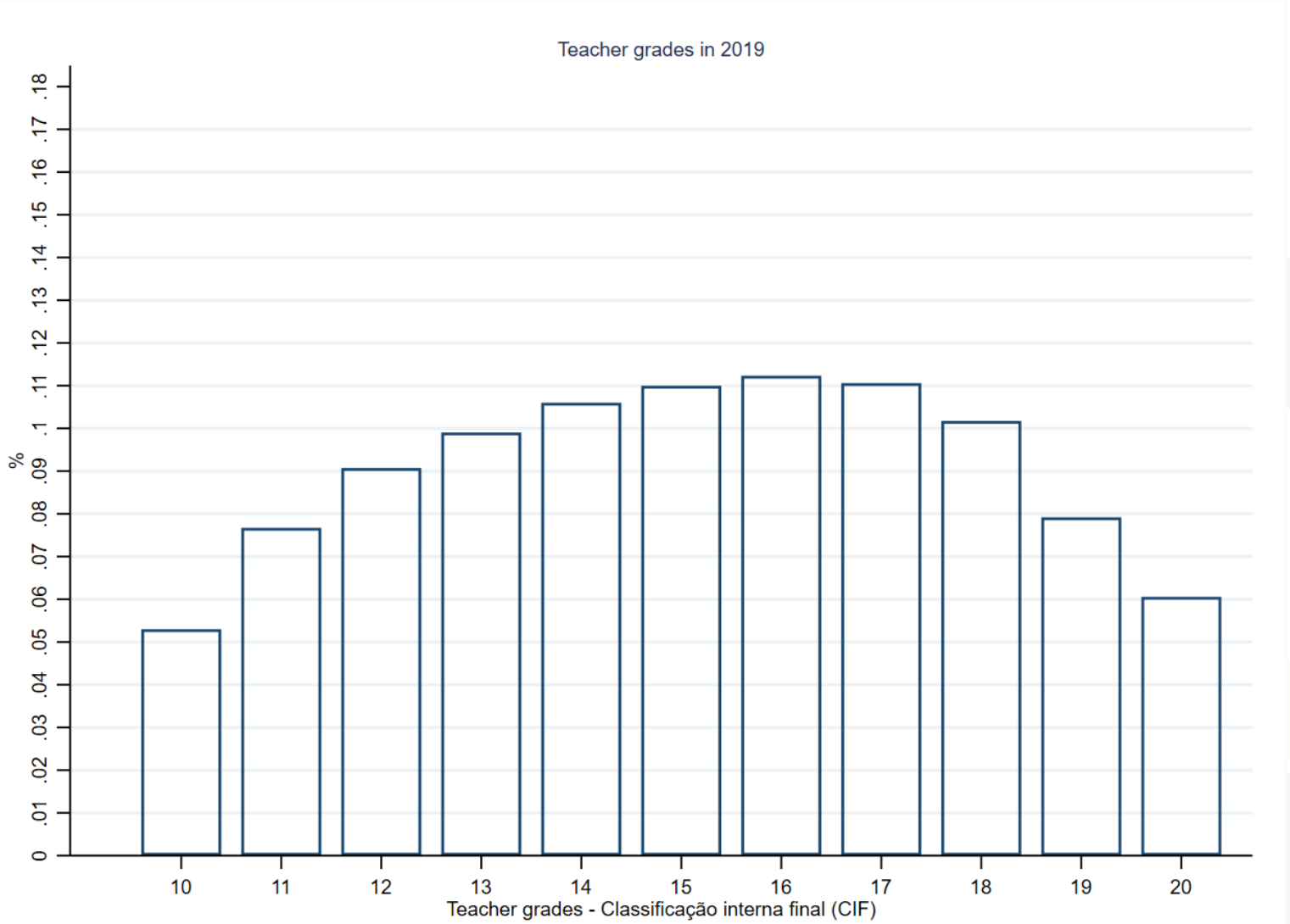

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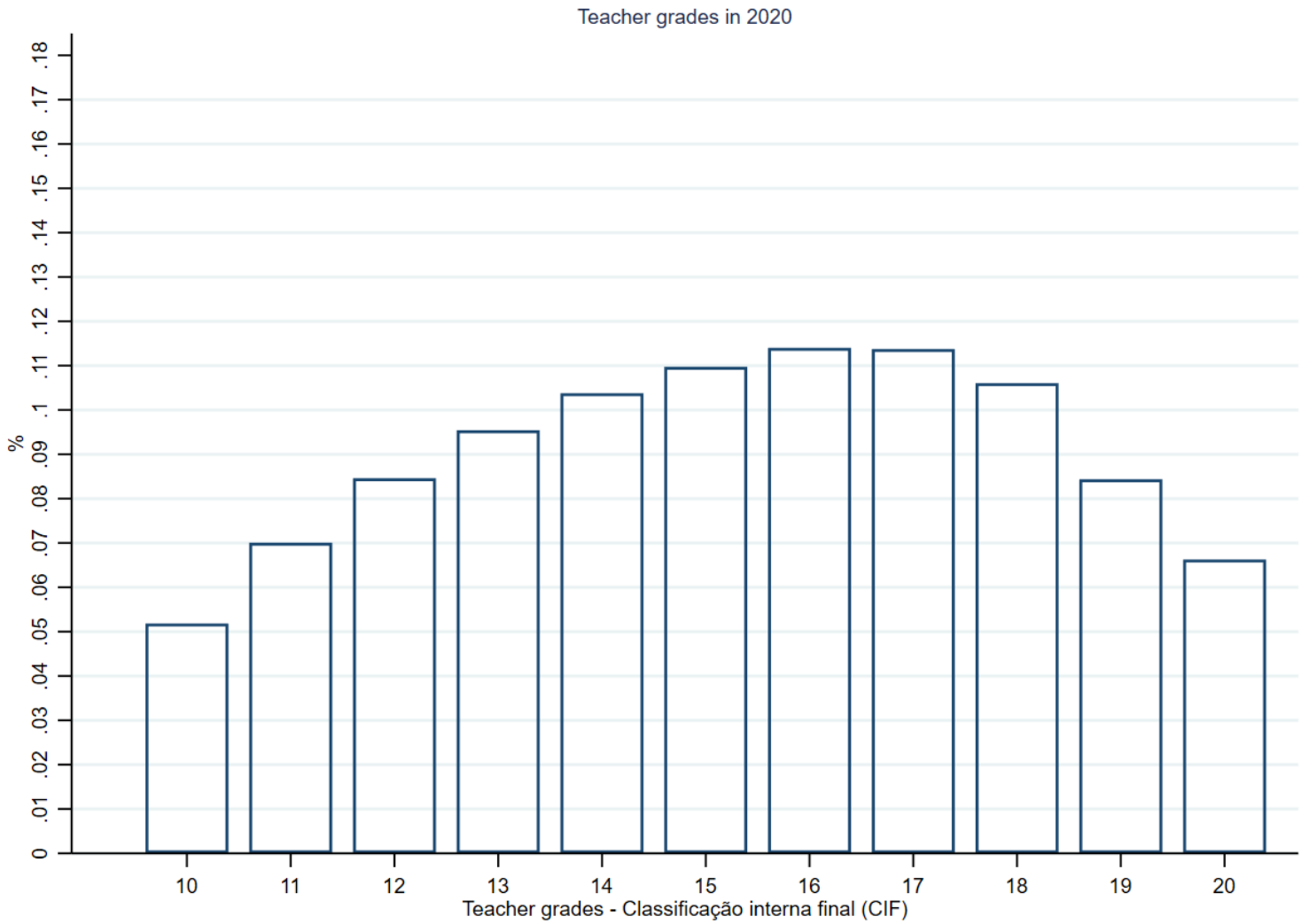

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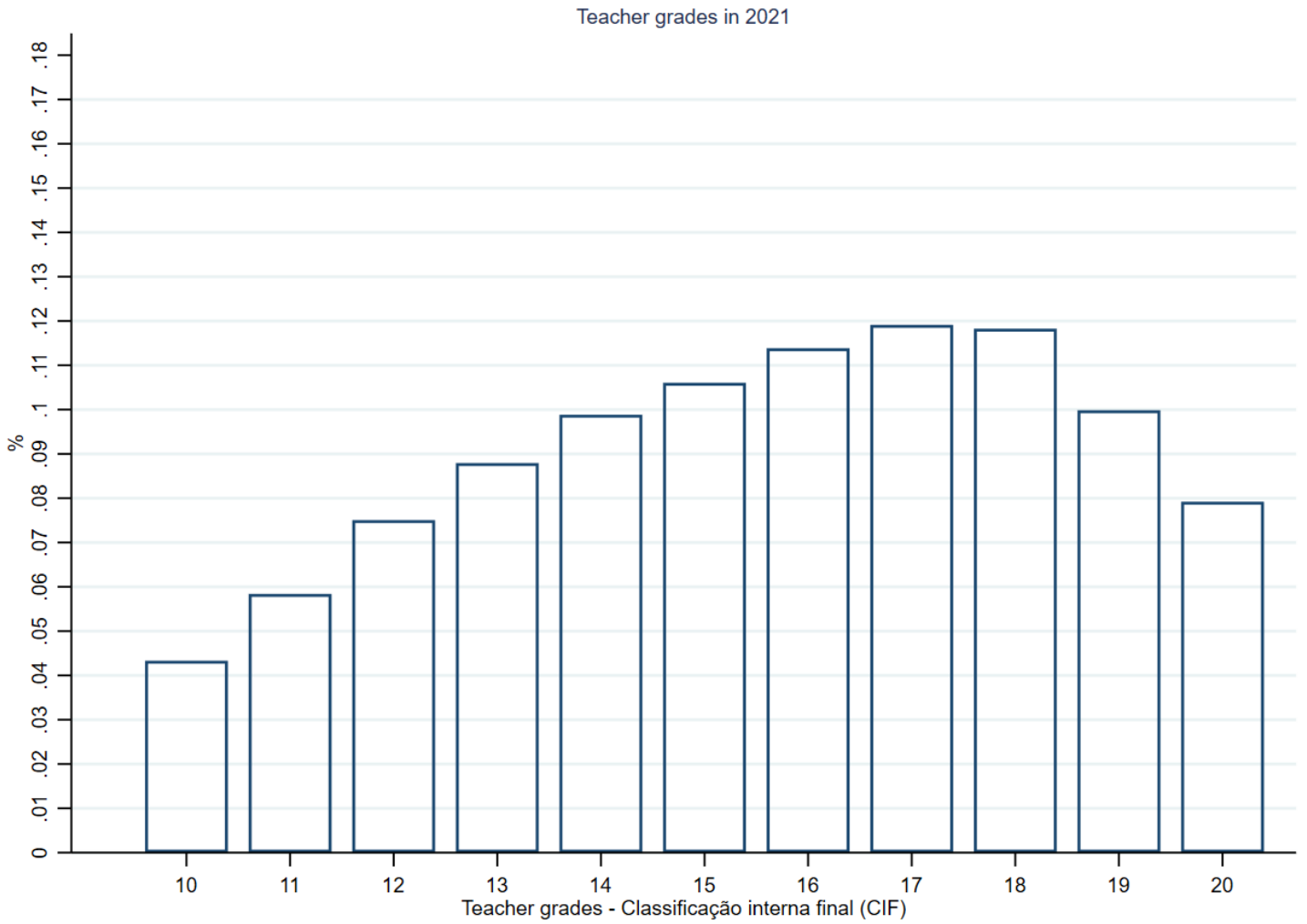

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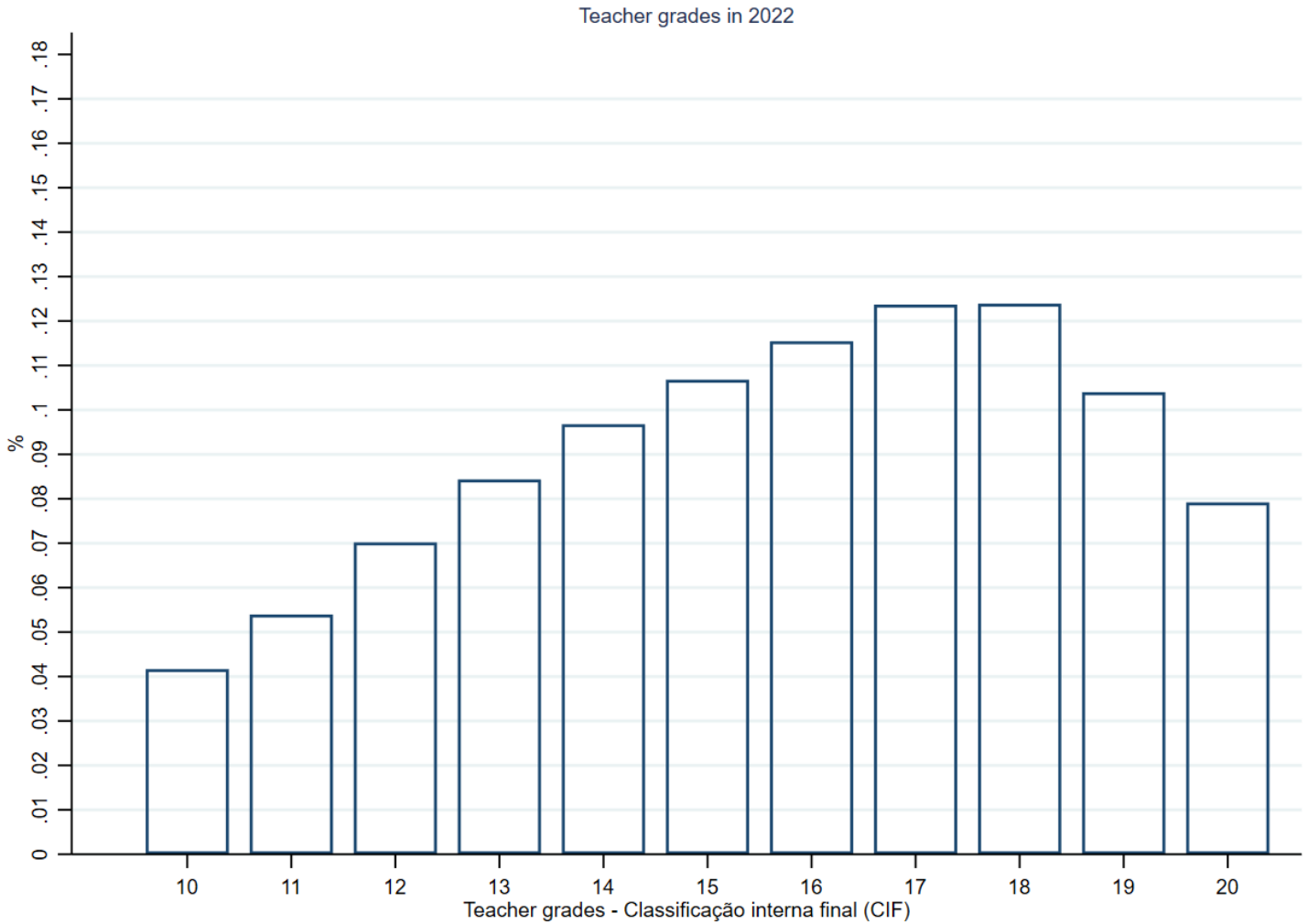

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Is this trend common to all disciplines?

Subjects without associated national exam:
Annual subjects (12th grade)
+ Sport

Subjects with associated national exam:
Triennials and Biennials
(exams taken in the 11th and 12th grades)

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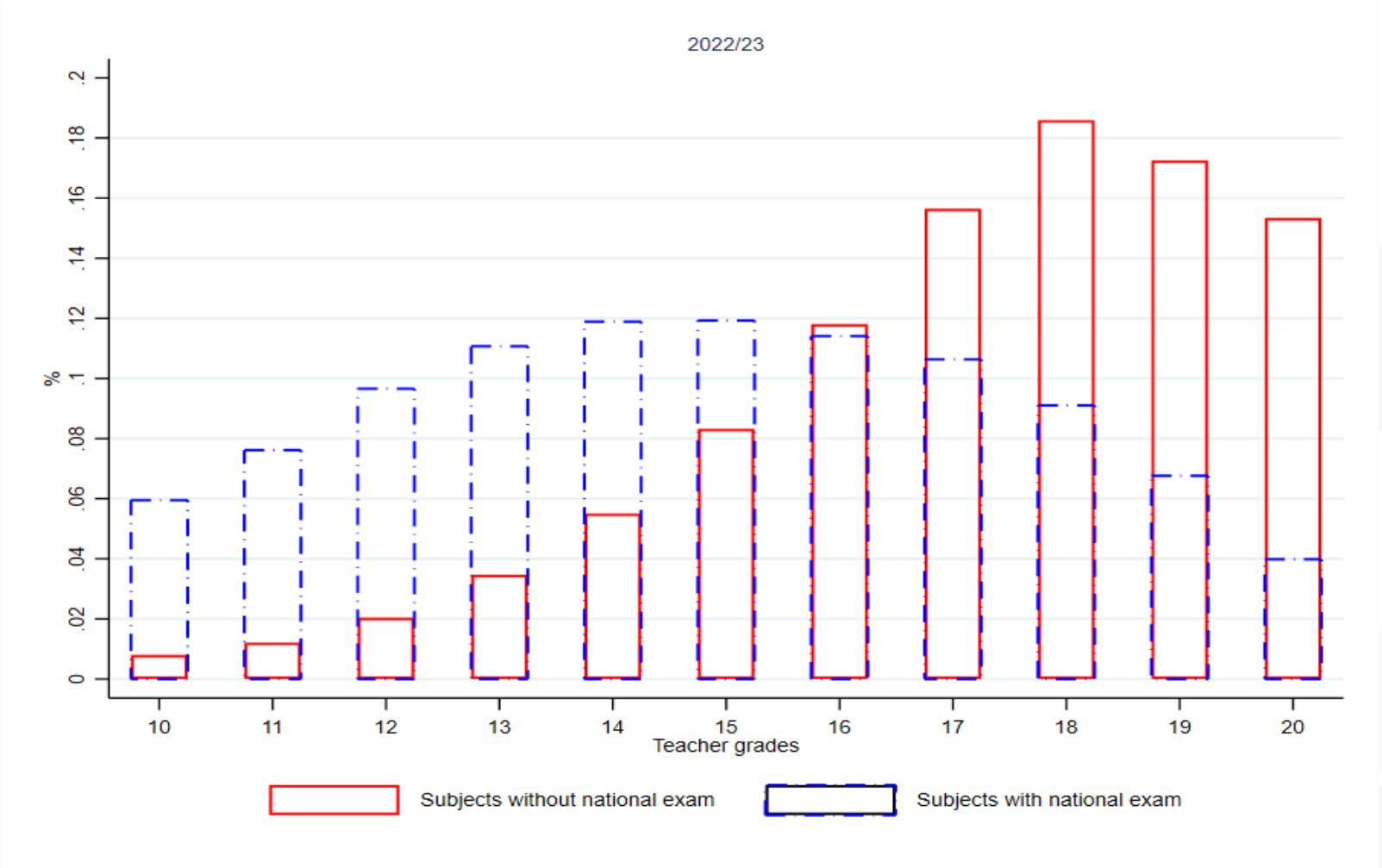
Subjects with and without national exam



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Subjects with and without national exam

	No. Students	No. Students-Subject	Mean score	Mode Score	% Scores 15-17	% Scores 18+	% Scores 15-20
Year	Subjects with national exam associated (2y and 3y courses)						
2017/18	78615	316466	14,3	13	30,0	14,8	44,8
2018/19	77647	313316	14,3	13	29,8	15,4	45,2
2019/20	80349	329764	14,4	13	31,1	16,4	47,6
2020/21	79212	328535	14,7	14	32,9	18,4	51,2
2021/22	76351	320289	14,8	15	34,0	19,8	53,8
2022/23	21691	106968	14,4	14	32,8	15,4	48,2
	Subjects without national exam associated (1y courses and 3y Sport subject)						
2017/18	35609	165050	16,6	17	39,8	40,5	80,2
2018/19	35031	165186	16,6	17	39,9	40,8	80,7
2019/20	33691	162882	16,9	18	39,1	44,4	83,5
2020/21	34652	168410	17,2	18	35,9	51,9	87,8
2021/22	34826	169843	17,2	18	35,8	51,2	87,0
2022/23	34038	166093	17,2	18	35,3	52,3	87,6

Source: JNE (DGEEC)

- ❑ Teacher grades increased over time (on average);
- ❑ Growing concentration in the highest classifications;
- ❑ Very marked differences in the distribution if grades according to the subjects (namely if with or without national exam).

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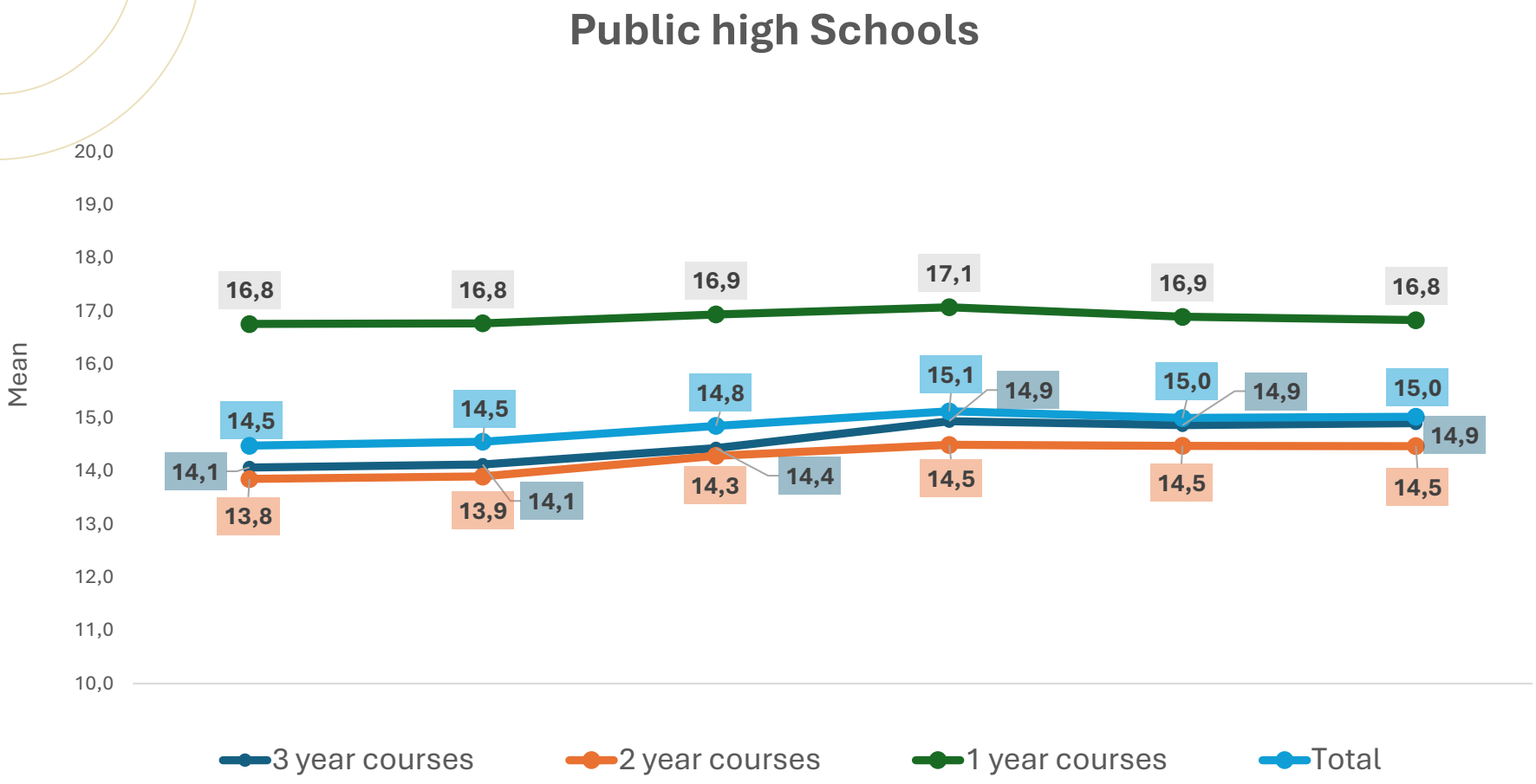
By High School Type



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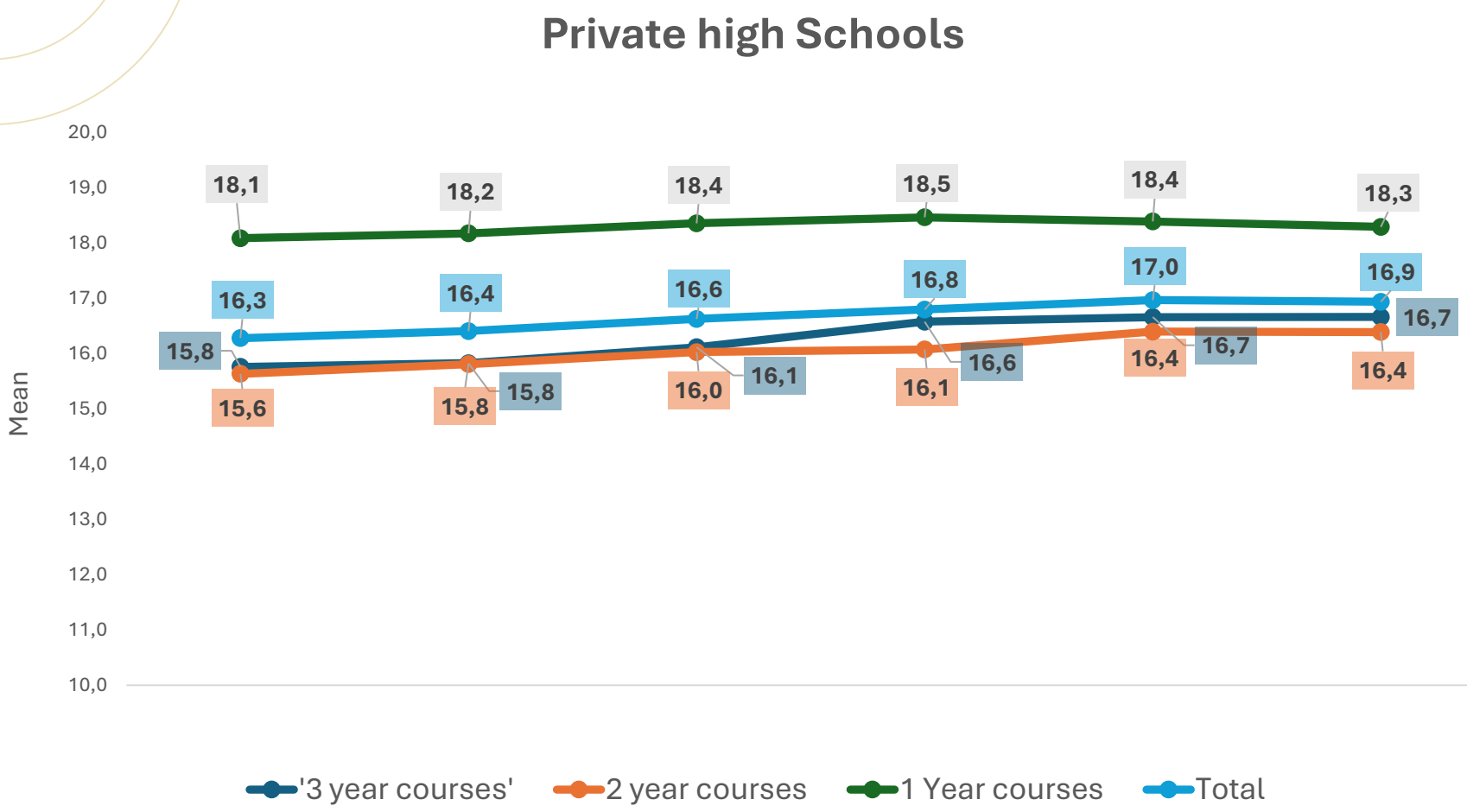
By High School Type



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Type of subject:

Subjects with national exam Triennials and Biennials (exams in the 11th and 12th grades)	Subjects without national exam Annual subjects (12th grade) + Sport
Biology and Geology (11th Grade)	Biology Geology
Economics A (11th grade)	Economics C
Physics and Chemistry A (11th grade)	Physics Chemistry
Geography A (11th grade)	Geography C
Descriptive Geometry A	Informatics
Draw A	Sport
History A (12th grade)	Law
History B (11th grade)	Psychology
History of Culture and Arts (11th grade)	Sociology
Latin A (12th grade)	Arts
Portuguese Literature (12th grade)	
Maths A (12th grade)	
Applied Maths (11th grade)	
Portuguese (12th grade)	
Foreign Language I/II/II	Foreign Language I/II/II

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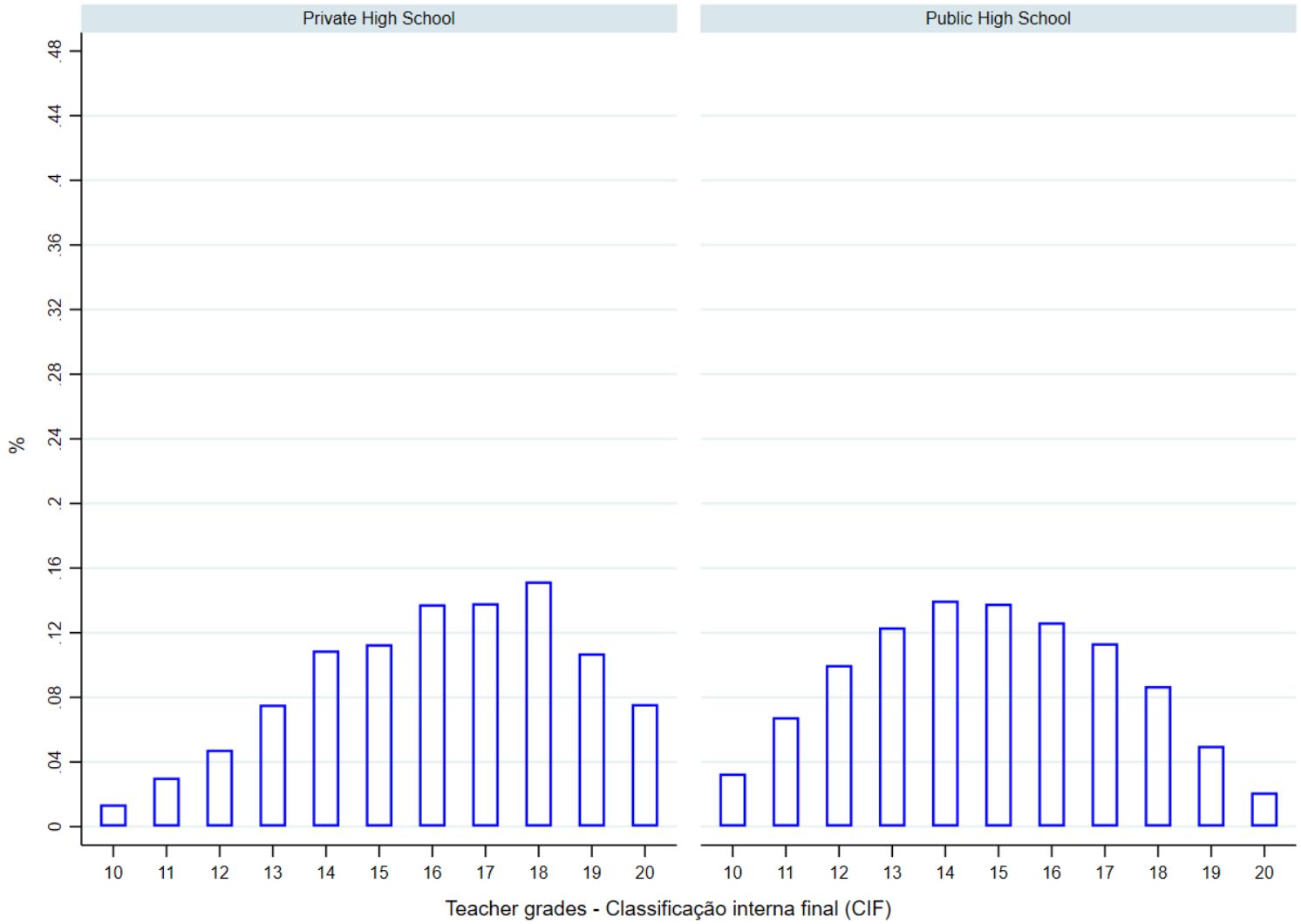
Different type of subjects

Subjects	Type of subjects	Public High Schools						Private High Schools					
		2017 / 2018	2018 / 2019	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023	2017 / 2018	2018 / 2019	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023
Geography A	2 year 10th/11th	12,9	12,8	13,4	13,7	13,7	13,6	14,6	14,5	14,8	14,8	15,5	15,4
Geography C	1 year 12th	16,0	16,0	16,3	16,3	16,1	16,2	17,5	17,6	17,7	18,0	18,0	17,8
Economics A	2 year 10th/11th	13,6	13,7	14,2	14,5	14,6	14,5	15,5	15,5	15,5	15,7	16,2	16,1
Economics C	1 year 12th	16,7	16,8	16,9	17,2	16,9	17,0	18,2	18,1	18,1	18,3	18,3	18,1
Physics and Chemistry A	2 year 10th/11th	13,3	13,2	13,8	13,9	13,9	13,8	15,0	15,2	15,4	15,3	15,6	15,5
Physics	1 year 12th	16,7	16,7	16,9	16,8	16,7	16,6	18,0	18,0	18,2	18,1	17,9	18,0
Chemistry	1 year 12th	17,5	17,4	17,6	17,6	17,5	17,4	18,1	18,3	18,6	18,7	18,4	18,2
Biology and Geology	2 year 10th/11th	13,3	13,3	14,4	14,4	14,4	14,4	15,2	15,4	15,6	15,7	16,1	16,0
Geology	Anual 12.º	17,9	17,9	17,9	18,0	17,9	17,2	-	-	-	-	-	-
Biology	Anual 12.º	16,8	16,8	16,9	17,1	16,9	16,7	18,1	18,2	18,5	18,5	18,4	18,2

Source: JNE (DGEEC)

Biology and Geology (with a national exam associated, 2022)



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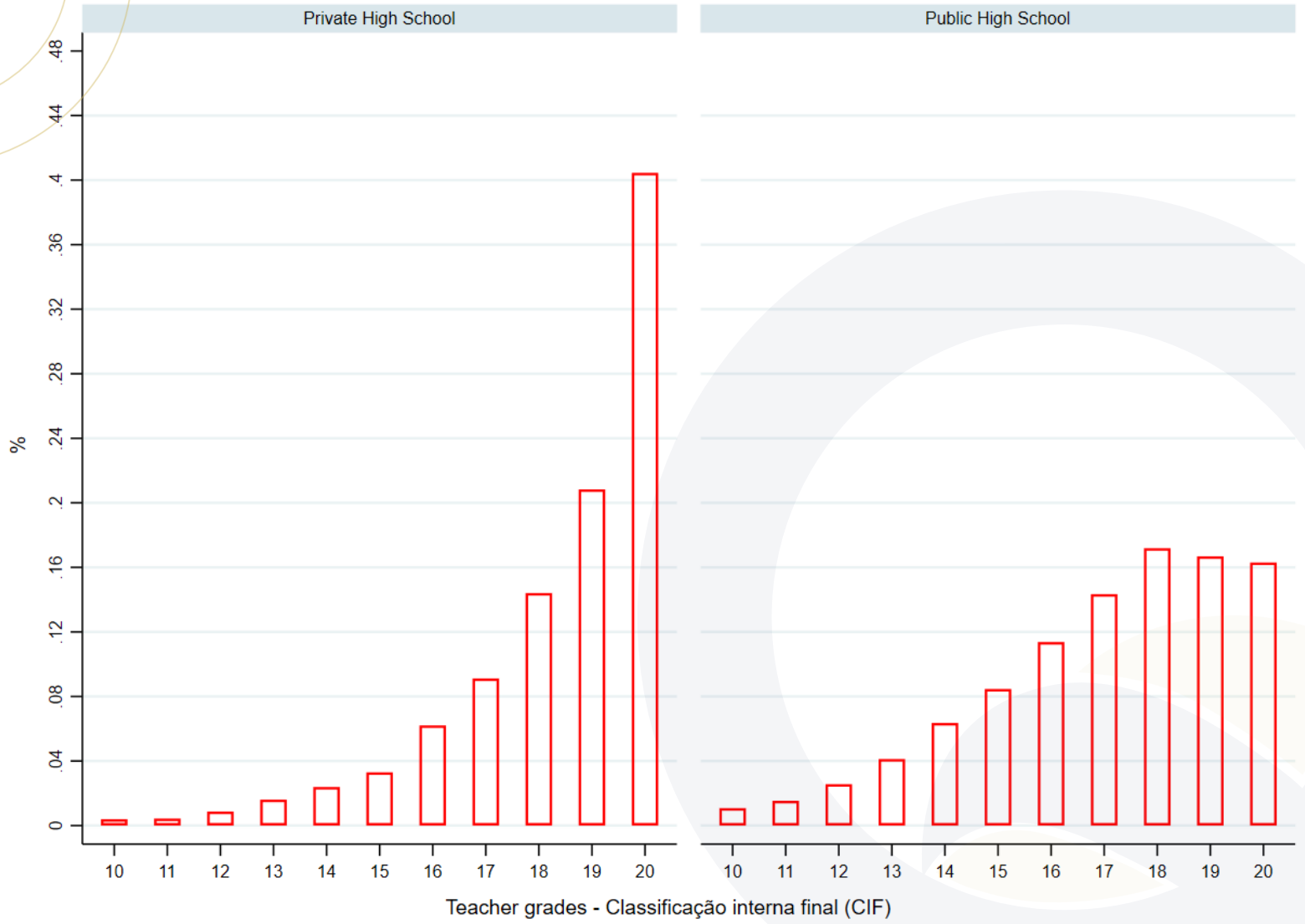
Biology (without a national exam associated, 2022)



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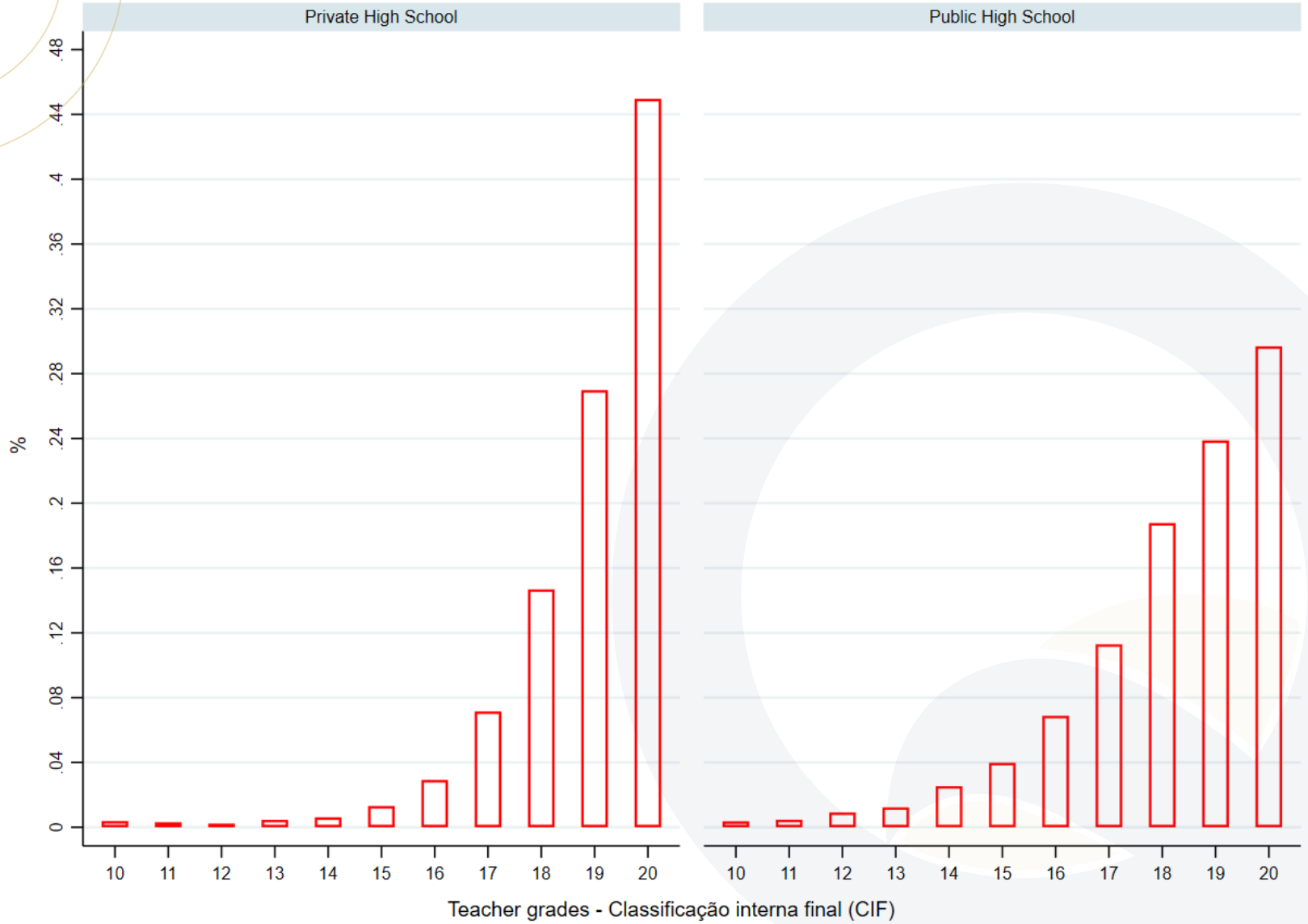
Informatics 2022



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Conclusions

- A **growing concentration** of students in the highest classifications

- Very **marked differences in the distribution of teacher grades** between subjects with and without an associated national exam in all years

  – Subjects without national exams: 87% grades above 15 (2022)
  – Subject with national exams: 54% grades above 15 (2022)
  – True for both public and private schools, and all high school courses

- The **modal classification** in the distribution of internal classifications of **subjects without a national exam** is often **20 values**

- Relevant indications that there was grade inflation in the period analyzed

- This work was crucial to inform Portuguese policymakers. By recognizing the implications of this disparity on educational equity and accuracy, the government was prompted to undertake a policy intervention*:

- formula of high school GPA calculation was changed and the weights given to the annual 12th grade courses in high school were reduced (those where concentration of high grades is prevalent).

*Ordinance no.278/2023, September 8.

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Obrigado!

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