Achievement in boys' schools 2013-2016

Dr Michael Johnston
Faculty of Education
Victoria University of Wellington

Introduction

This report compares the performance of young men in Years 11-13 at single-sex schools with those at coeducational schools, in respect of the achievement of qualifications, University Entrance and New Zealand Scholarship from 2013 to 2016. The data plots and comparisons reported here, as well as the ordering of the analyses are, with minor modifications, the same as those in an earlier report by the New Zealand Council for Education Research[1]. This was done largely to serve comparability over time. The data were collated for all male students at single-sex boys' schools and coeducational schools in New Zealand over the time frame covered by the report.

The overall picture that emerges is that young men at single-sex schools gain NCEA qualifications, University Entrance and New Zealand Scholarship passes in greater proportions than their counterparts at coeducational schools. The analyses do not unequivocally demonstrate that this higher performance is attributable to single-sex education *per se*. It is possible, for example, that a selection effect is in play such that parents with high aspirations for their sons are more likely to send them to single sex schools than other parents, and that it is this aspirational attitude that drives the higher performance observed here. Other explanations are also possible.

Even so, the single-sex advantage is quite striking across nearly the full range of data considered and certain potential confounds, such as socioeconomic variables and choice of assessment type are shown not to be plausible explanations for the demonstrated single-sex advantage. In the opinion of the author, the analyses presented here suggest that, notwithstanding other potential explanations, it is likely that attending single sex schools *does* work to the academic advantage of at least some young men. While, as noted above, the data do not *prove* this to be the case, they do show a tendency for the single-sex schooling advantage to be greatest for students from demographics with below average performance in a national context – for Māori and for students at low decile schools in particular.

Furthermore, the evidence presented here shows that, if anything, typical assessment programmes at single sex schools are *more* challenging than those at coeducational schools; they entail higher proportions of external assessment, which at a national level, show lower rates of achievement than internal assessment. It is these factors that convince the author that a genuine advantage of single-sex schooling is at least partially responsible for the higher performance evident in the analysis presented here. At a minimum, the analyses presented here, which agree in substance with the early NZCER report, suggest that investigation ought to be undertaken by the Ministry of Education as well as by independent researchers, to gain further insight into the single-sex advantage which is, as a phenomenon, unequivocal.

Thanks is due to Marian Loader and her team at the Ministry and to Hamsa Lilley and her team at NZQA for their kind assistance with producing the data files that formed the basis of this report.

[1] http://www.nzcer.org.nz/research/publications/achievement-boys-schools

Comparisons of school leavers' qualifications achievement at single-sex and coeducational schools

Table 1 compares young men from single-sex schools with those from coeducational schools for the median percentages[2] leaving school with no qualifications, with a qualification at Level 2 of the New Zealand Qualifications Framework[3] (NZQF) or higher, and with University Entrance (UE), from 2013, to 2016. In all three years, the median percentages of NZQF qualifications and UE attainment were higher for single-sex schools than for coeducational schools, while median percentages of students leaving with no qualifications were lower. The difference between the school types is particularly marked for UE, with median attainment rates at single-sex schools 20-24 percentage points higher than those at coeducational schools in the years represented in the table. The relative volatility of the median UE percentages for coeducational schools is likely to be attributable to the presence of a substantial number of these schools having very low roll numbers, meaning that small fluctuations in the numbers of students attaining UE correspond to relatively large fluctuations in the associated percentages.

Across the time span of the data in Table 1, the percentages of students attaining UE were relatively stable. Although there was a downturn for young men at coeducational schools in 2014, this was largely reversed in 2015. At both single sex and coeducational schools, the percentages of young men gaining qualifications at NZQF Level 2 or higher rose by five percentages points between 2013 and 2015, and the percentages leaving schools with no qualifications fell by three percentage points. By 2015, a median 90% of young men left single-sex schools with at least a Level 2 qualification, a median of very nearly half with UE, and a median of just 3% with no qualification.

Table 1. Comparison of median percentages of male school leavers at boys' and co-educational schools attaining University Entrance, a minimum of a Level 2 qualification and no qualification.

Qualification	Year	Boys' schools (n = 49[4])	Co-ed schools (n = 448[5])
University Entrance	2013	47	30
	2014	49	25
	2015	48	28
	2016	48	21
At least NCEA Level 2 (or equivalent)	2013	85	73
	2014	90	77
	2015	90	78
	2016	91	77
No qualification	2013	6	13
	2014	4	11
	2015	3	10
	2016	3	9

[2] Median percentages are the middle-ranked values on rank-orderings of the percentages for individual schools in each category

[3] Note that a very large majority of NZQF qualifications gained by secondary school students are levels of NCEA.

[4] For 2016 data, n = 48 (all tables)

[5] For 2016 data, n = 347 (all tables)

Table 2 compares the performance of young men at single-sex schools with those at coeducational schools in New Zealand scholarship, from 2013 to 2015. Specifically, the table shows the percentage of all school leavers at each category of school who left with at least three passes in New Zealand Scholarship. Again, in all three years a considerably greater proportion of young men in single-sex schools than in coeducational schools attained at least three scholarship subjects, although this percentage fell somewhat over the time span at single sex schools and rose at coeducational schools. Even so, by 2015 the rate of three-subject attainment at single-sex schools was three times that at co-educational schools.

Table 2. Comparison of percentages of male school leavers at boys' and co-educational schools attaining scholarship passing grades in at least three subjects.

Year	Boys' school leavers		Co-ed school male leavers	
	n	% of boys' school leavers	n	% of male co-ed. school leavers
2013	109	1.37	51	0.22
2014	112	1.40	46	0.21
2015	89	1.06	74	0.34
2016	116	1.38	58	0.27

A limitation of the data in Table 1, showing higher median qualifications attainment rates for boys at single-sex schools than for those at coeducational schools, is that the decile distribution of single-sex schools is different – and has a higher median – than that of coeducational schools. This means that, on average, students attending single-sex schools are socio-economically better off than students at co-educational schools. Because the socio-economic resources of students' families correlate with their qualifications achievement, it is therefore possible that the higher achievement at single-sex schools is attributable to socio-economic variables rather than to the nature of single-sex schooling *per se*. The data in Table 3 partially address this possibility, comparing the median percentages of young men attaining UE at single-sex and coeducational schools, disaggregated into four decile groups, from 2013 to 2016.

Table 3 shows that socio-economic variables are unlikely to be solely causal of the single-sex advantage evident in Table 1; in all three years represented in the table and for all four decile groups, the median UE attainment rate was greater for boys in single-sex schools than in coeducational schools. Neither is there any clear tendency for the difference for the single-sex advantage to vary with decile group, although in two of the three years represented, the advantage was greatest for Decile 9-10 schools.

Table 3. Comparison of median percentages of male school leavers at boys' and co-educational schools attaining University Entrance, disaggregated by school decile group.

		Median percentage of male school leavers	
Year	Decile Group	Boys' schools (n = 49)	Co-ed schools (n = 448)
2013	1-4	30	17
	5-6	39	27
	7-8	50	42
	9-10	74	52
2014	1-4	29	15
	5-6	37	17
	7-8	44	36
	9-10	66	52
2015	1-4	32	15
	5-6	33	23
	7-8	46	40
	9-10	75	54
2016	1-4	36	10
	5-6	35	23
	7-8	45	36
	9-10	74	48

To investigate in more detail the differences young men's attainment of UE at single-sex and coeducational schools, Figures 1-4 depict box-and-whisker plots, which illustrate entire distributions of attainment rates, rather than just the medians. In these plots, the central bars depict the medians, the upper bars of the boxed regions, the upper quartiles, the lower bars of the boxed regions, the lower quartiles, and the end-bars on the upper and lower 'whiskers', the 95th and 5th percentiles respectively. Points above or below the whiskers represent outliers.

Figure 1 compares the distributions of UE attainment at single-sex and coeducational schools in the Decile 1-4 group, from 2013 - 2016. The differences are marked; in all four years, the lower quartile for single-sex schools has a similar value to the upper quartile for coeducational schools. This means that only the highest-attaining quarter of coeducational schools have UE attainment in the range occupied by three quarters of single-sex schools.

It is unclear why the range of attainment percentages for single-sex schools is so much narrower in 2013 than in the other three years depicted. To speculate, it might be in some way related to the fact that 2013 was the first year of new, more challenging requirements for UE. If this were the case however, it might be expected that the distribution for coeducational schools would be similarly narrower, which it isn't. In any event, the apparent volatility of the single-sex distribution is likely to be attributable to the fact that there are not many single-sex schools in this decile group.

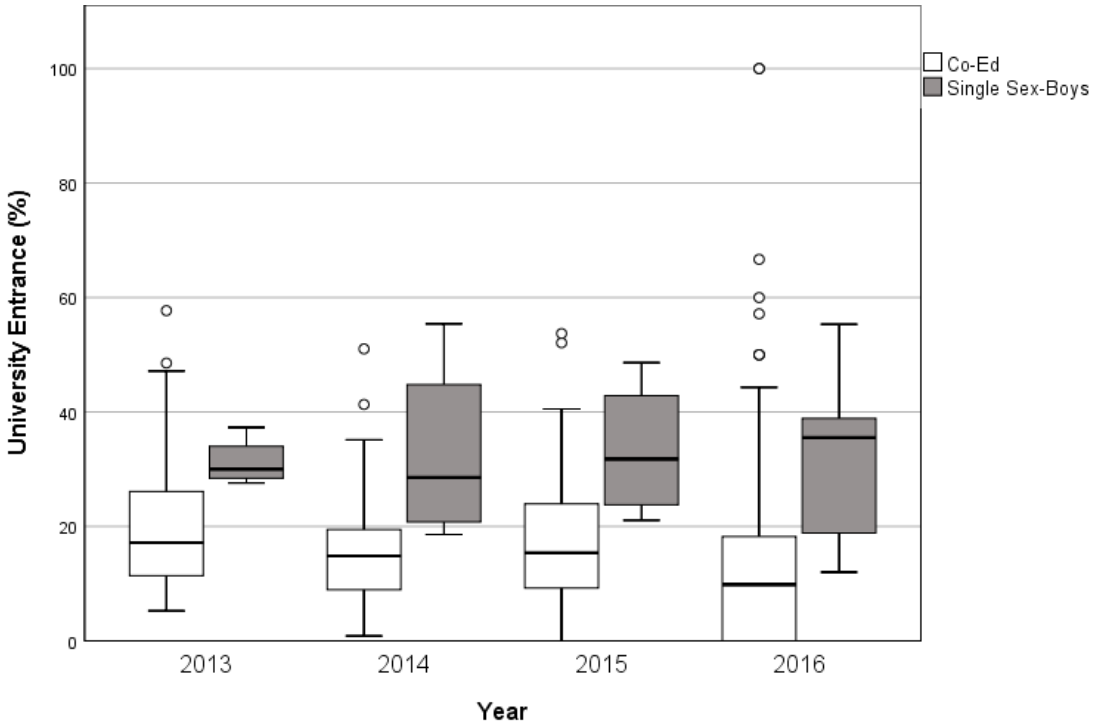

Figure 1. Comparative distributions of male school leavers at decile 1-4 boys' and co-educational schools attaining University Entrance

Figure 2 compares the distributions of UE attainment of boys at single-sex and coeducational schools in the Decile 5-6 group, from 2013 - 2016. For 2013 and 2014, but not for 2015 or 2016, the differences are even more marked than they are for Decile 1-4 schools (Figure 1). In 2013, almost the entire range of attainment rates for single-sex schools is in the upper-quartile range for coeducational schools and, in 2014, the two distributions are almost entirely separate. In 2015 and 2016 however, the upper quartiles for coeducational schools are slightly higher than the lower quartiles for single-sex schools.

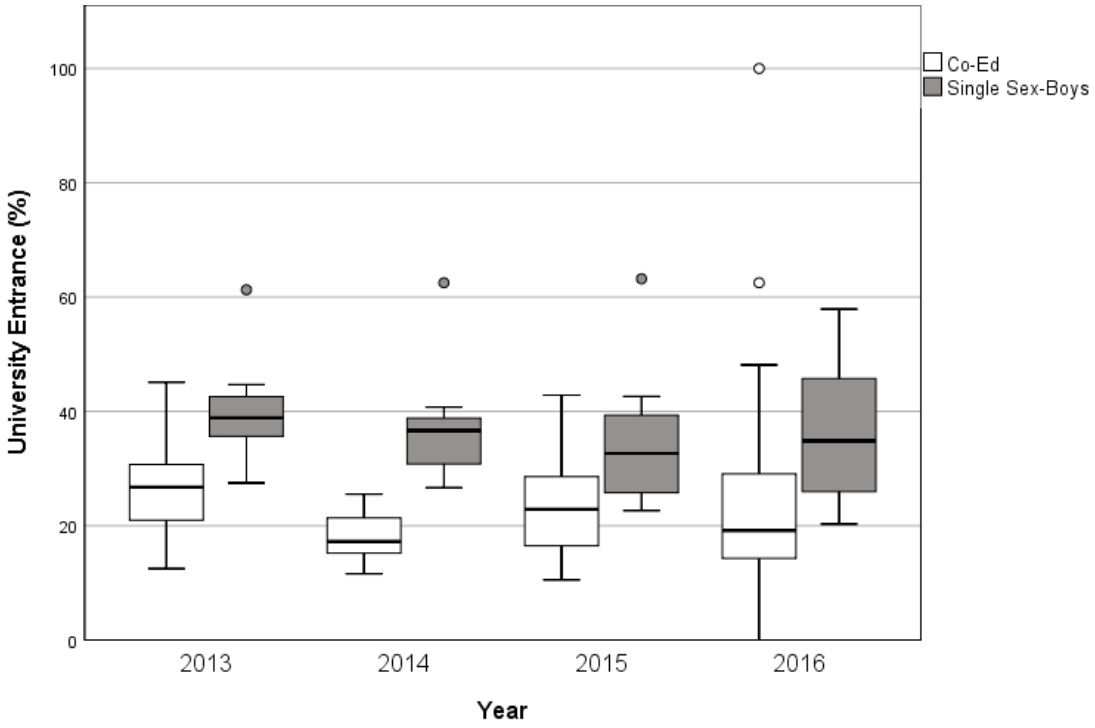

Figure 2. Comparative distributions of male school leavers at decile 5 and 6 boys' and co-educational schools attaining University Entrance

Figure 3 compares the distributions of UE attainment of boys at single-sex and coeducational schools in the Decile 7-8 group, from 2013 - 2016. While there is still a clear advantage to single-sex schools in this decile group, it is much less marked than it is for the Decile 1-4 (Figure 1) or Decile 5-6 (Figure 2) groups. In 2013 and 2014, the medians for coeducational schools were somewhat higher than the lower quartiles for single-sex schools, whereas in 2015 and 2016 the coeducational medians were slightly lower than the single-sex lower quartiles.

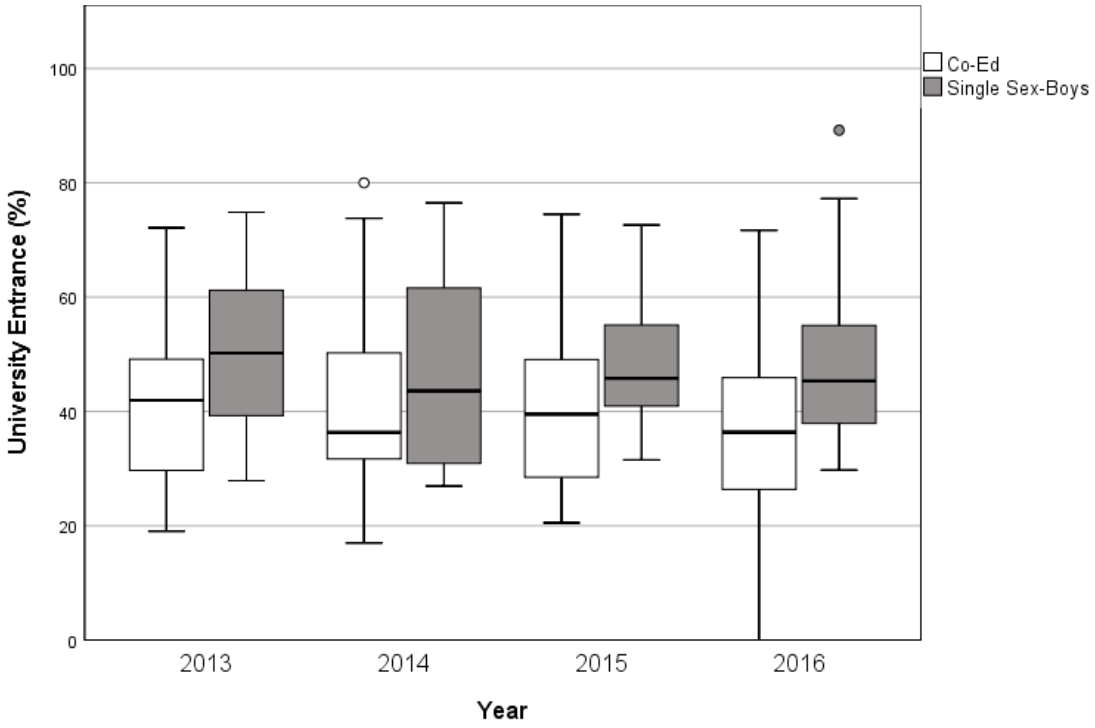

Figure 3. Comparative distributions of male school leavers at decile 7 and 8 boys' and co-educational schools attaining University Entrance

Figure 4 compares the distributions of UE attainment of boys at single-sex and coeducational schools in the Decile 9-10 group, from 2013 - 2016. Except for 2013, which shows the coeducational median slightly below the single-sex lower-quartile, the differences here are as marked as they are for Decile 5-6 (Figure 2); in 2014, 2015 and 2016, the coeducational upper-quartile is below the single-sex lower quartile.

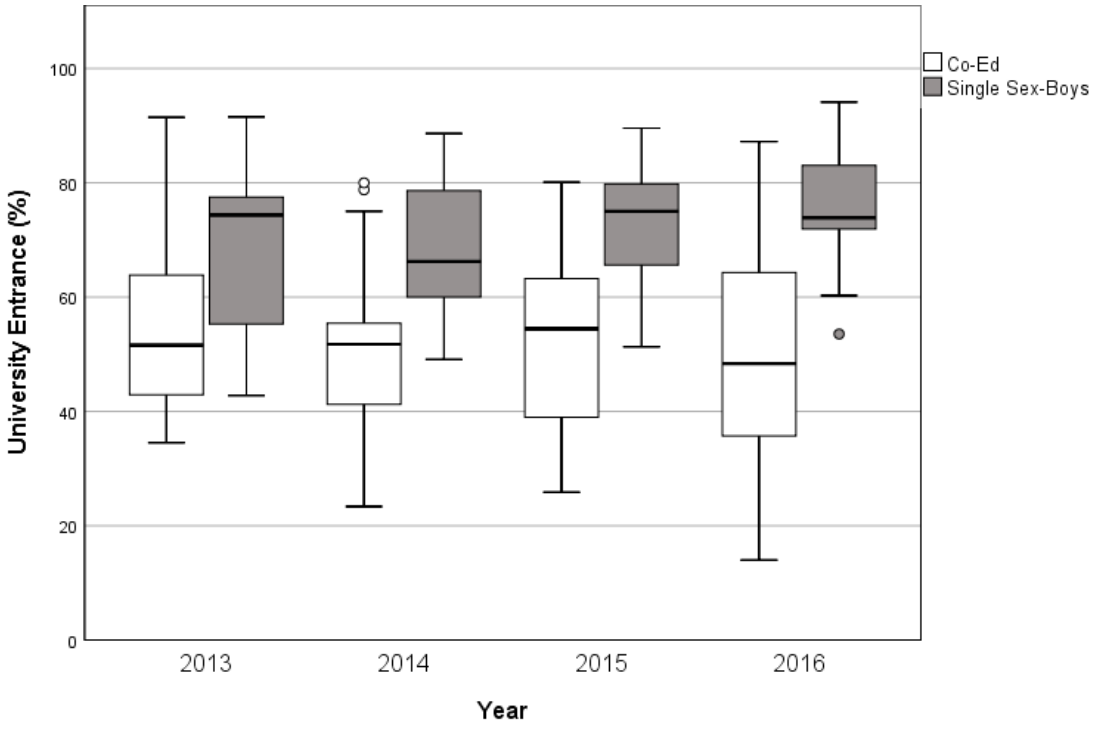

Figure 4. Comparative distributions of male school leavers at decile 9 and 10 boys' and co-educational schools attaining University Entrance

Comparisons across the decile range

Table 4 shows similar information to Table 3 – it compares attainment of boys at single-sex and coeducational schools across different decile groups – but for qualifications at Level 2 or higher rather than for UE. In general the differences in median attainment of qualifications at Level 2 or higher are smaller than the differences for UE, although there remains a clear advantage for single-sex schools in all three years and for all decile groups. There is no clear trend over time in the magnitude of the single-sex advantage. In all four years the difference was most pronounced for low-decile (1-4) schools, with the other three decile groups showing comparable differences, on average.

Table 4. Comparison of median percentages of male school leavers at boys' and co-educational schools attaining at least a Level 2 qualification, disaggregated by school decile group.

		Median percentage of male school leavers	
Year	Decile Group	Boys' schools	Co-ed schools
2013	1-4	76	62
	5-6	78	71
	7-8	86	77
	9-10	93	86
2014	1-4	81	68
	5-6	80	71
	7-8	90	80
	9-10	94	86
2015	1-4	81	69
	5-6	77	75
	7-8	90	84
	9-10	95	90
2016	1-4	81	68
	5-6	80	78
	7-8	91	82
	9-10	96	88

Figures 5-8 examine differences between single-sex and coeducational schools in terms of boys' attainment of qualifications at Level 2 or higher for each of the four decile groups, just as Figures 1-3 compared the attainment of UE. Figure 5 compares the attainment rates at Level 2 or higher of young men at single-sex and educational schools in the decile 1-4 range. Like UE, there is a marked difference between the distributions for the two school types, with the upper quartile for coeducational schools below the fifth percentile for single-sex schools, for all four years. Also like UE, the range of values for single-sex schools in 2013 is very narrow.

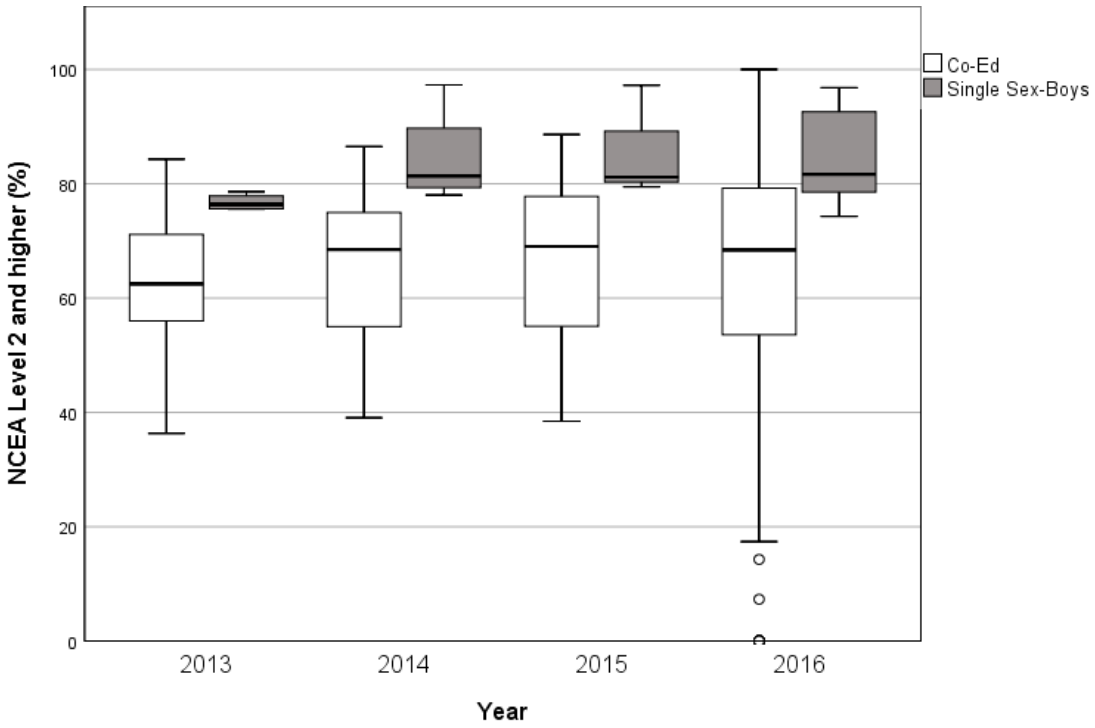

Figure 5. Comparative distributions of male school leavers at decile 1-4 boys' and co-educational schools attaining at least a Level 2 qualification

Figure 6 compares boys' attainment rates at Level 2 or higher at single-sex and educational schools with deciles of 5 and 6. For UE (Figure 2), this decile group showed a greater difference between school types than any other decile group. Figure 6, however, shows much less marked differences for attaining qualifications at Level 2 or higher, and there appears to be a trend towards the differences diminishing over the three-year span. In 2015 and 2016 the medians were only marginally different.

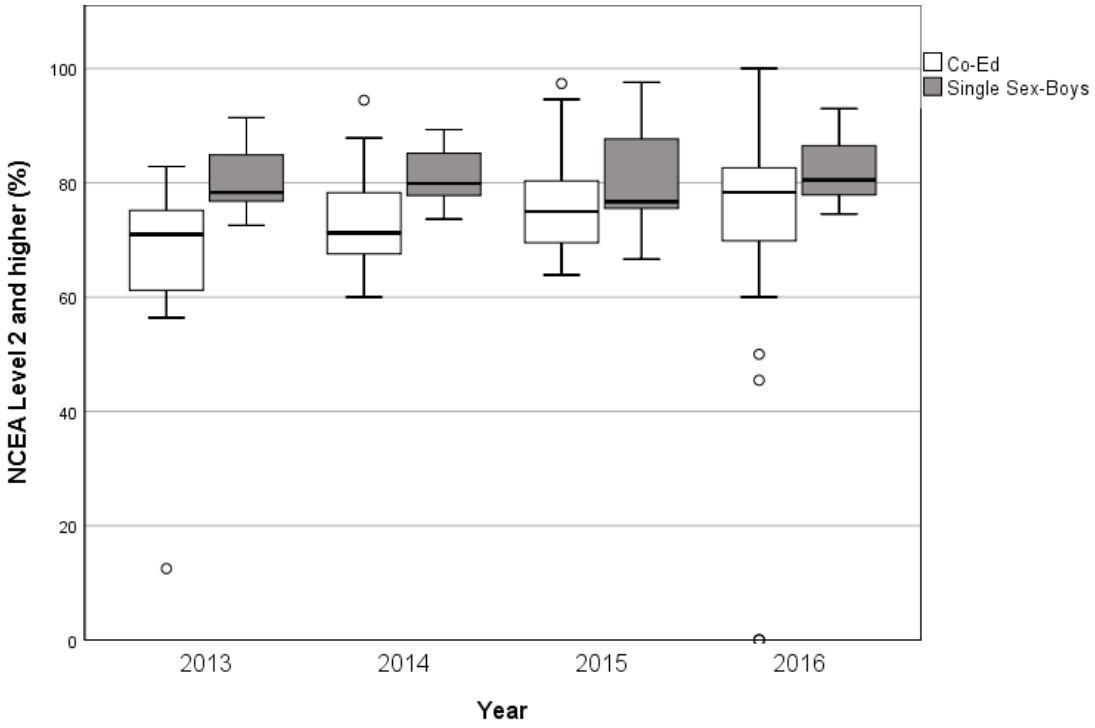

Figure 6. Comparative distributions of male school leavers at decile 5 and 6 boys' and co-educational schools attaining at least a Level 2 qualification

Figure 7 compares boys' attainment rates at Level 2 or higher at single-sex and educational schools with deciles of 7 and 8. This decile group showed the most modest differences in UE attainment of any of the decile groups, and the differences in attainment of qualifications at Level 2 or higher are similarly modest. Even so, for all three years, the upper quartile for coeducational schools is below the median for single-sex schools.

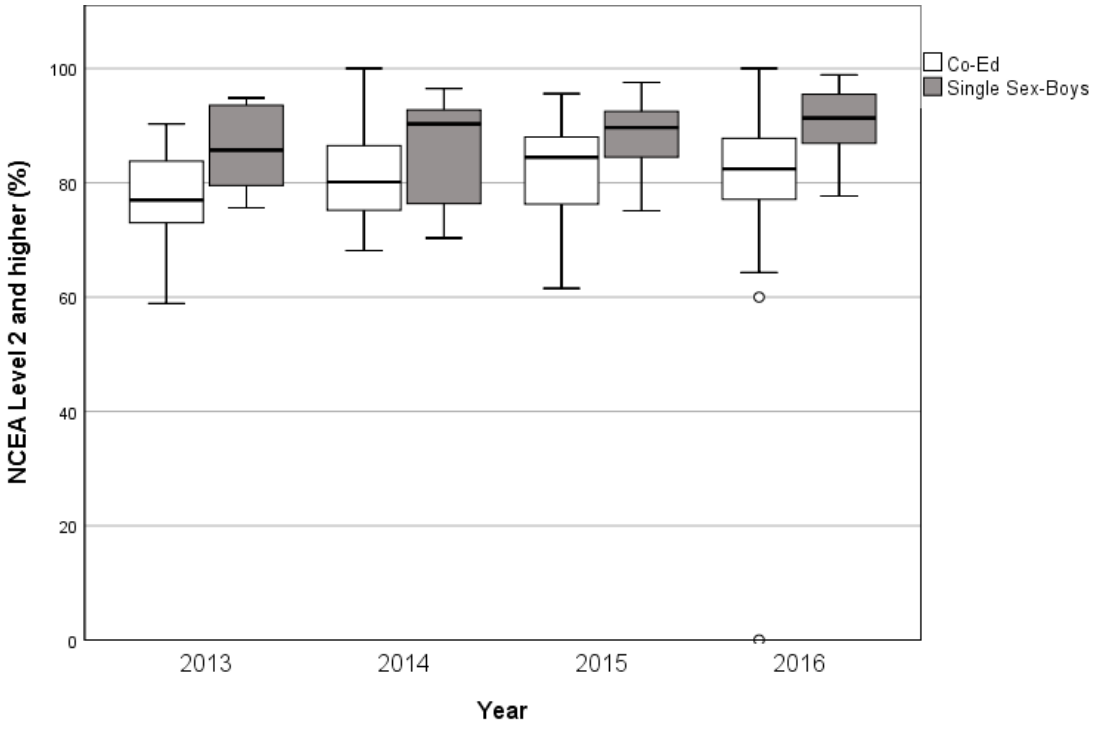

Figure 7. Comparative distributions of male school leavers at decile 7 and 8 boys' and co-educational schools attaining at least a Level 2 qualification

Figure 8 compares boys' attainment rates at Level 2 or higher at single-sex and educational schools with deciles of 9 and 10. Single-sex schools in this decile group have very high levels of qualification attainment indeed, to such an extent that the data range is highly compressed; it is impossible to have an attainment rate above 100%, so the near-ubiquitous high attainment results in a relatively narrow range of values. The distribution ranges for coeducational schools are somewhat greater, with upper quartiles very close to the lower quartiles for single-sex schools in all three years represented in the data.

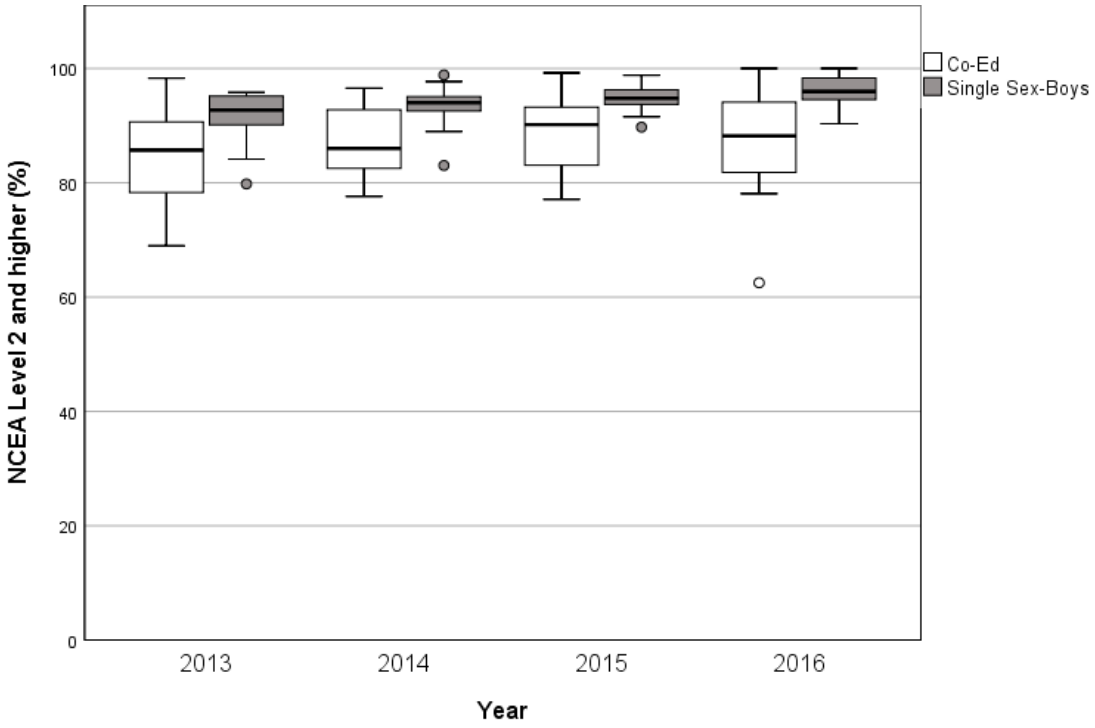

Figure 8. Comparative distributions of male school leavers at decile 9 and 10 boys' and co-educational schools attaining at least a Level 2 qualification

Table 5 compares single-sex and coeducational schools for negative outcomes – the median percentages of young men leaving school with no qualifications – in each of the decile groups. For both types of school, in all four decile groups these medians fell over the four-year time span represented in the data. In most cases, in each decile group, the median rate of failure to attain qualifications at single-sex schools was around half the rate at coeducational schools.

Table 5. Comparison of median percentages of male school leavers at boys' and co-educational schools with no qualifications, disaggregated by school decile group.

		Median percentage of male school leavers	
Year	Decile Group	Boys' schools	Co-ed schools
2013	1-4	11	21
	5-6	8	19
	7-8	6	10
	9-10	3	6
2014	1-4	8	20
	5-6	8	14
	7-8	6	8
	9-10	3	5
2015	1-4	7	16
	5-6	9	12
	7-8	3	8
	9-10	2	5
2016	1-4	7	15
	5-6	9	9
	7-8	2	7
	9-10	1	4

Figures 9-12 compare the distributions of single-sex boys' and coeducational schools in terms of the relative percentages of school leavers without qualifications, in each of the decile groups. Figure 9 shows this comparison for decile 1-4 schools. Like the similar plots comparing single-sex and coeducational schools for the attainment of UE and qualifications at Level 2 or higher, there is a clear advantage to single-sex schools, with narrow distributions low on the scale. There is a trend from 2013 to 2015 for the gap to close somewhat; this is entirely due to improvement in qualifications attainment at coeducational schools; there is small improvement for single-sex schools between 2013 and 2014, but with the non-attainment rate being as low as it is, there is less room for further improvement. In 2016 the gap at the median slightly increases again and, more strikingly, the proportion of schools with high levels of non-attainment increases markedly.

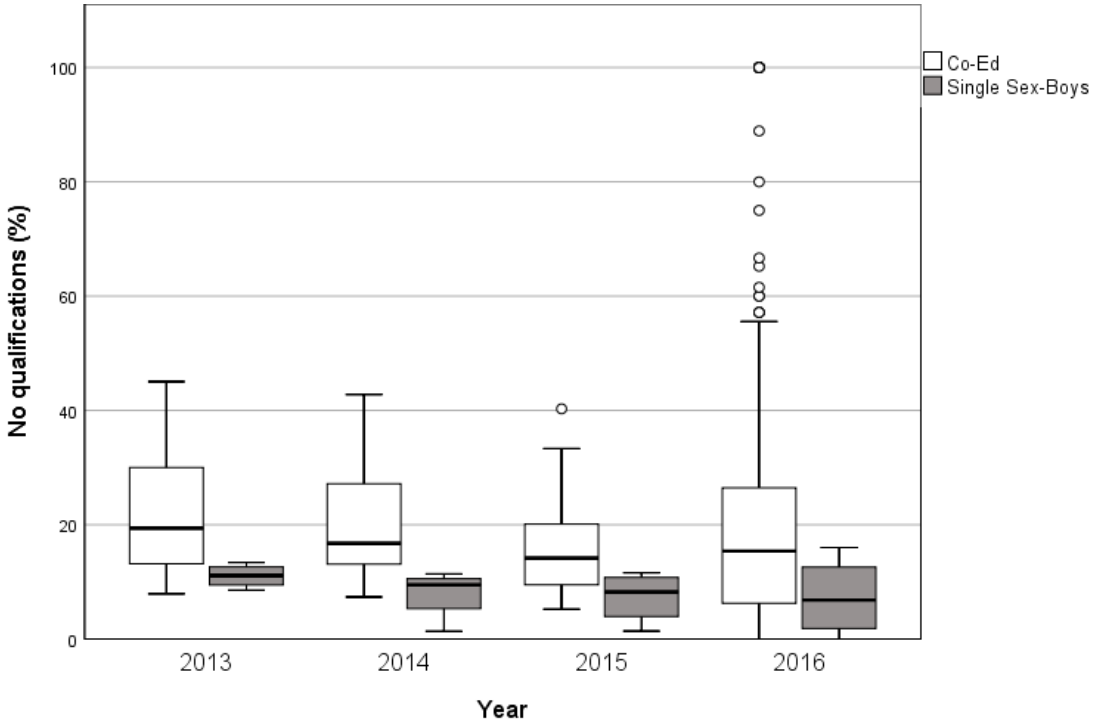

Figure 9. Comparative distributions of male school leavers at decile 1-4 boys' and co-educational schools with no qualifications

Figure 10 compares the distributions of boys' non-attainment rates at single-sex and coeducational schools at deciles 5 and 6. Again, the non-attainment rate at single-sex schools is consistently very low across the three year span. The rate for coeducational schools is somewhat higher in 2013, but falls over the three year span and in 2015 and 2016, there is little difference in between the two distributions. Again, the diminution of the difference over time is almost entirely attributable to improved qualifications attainment at coeducational schools, with single-sex schools having little scope for improvement.

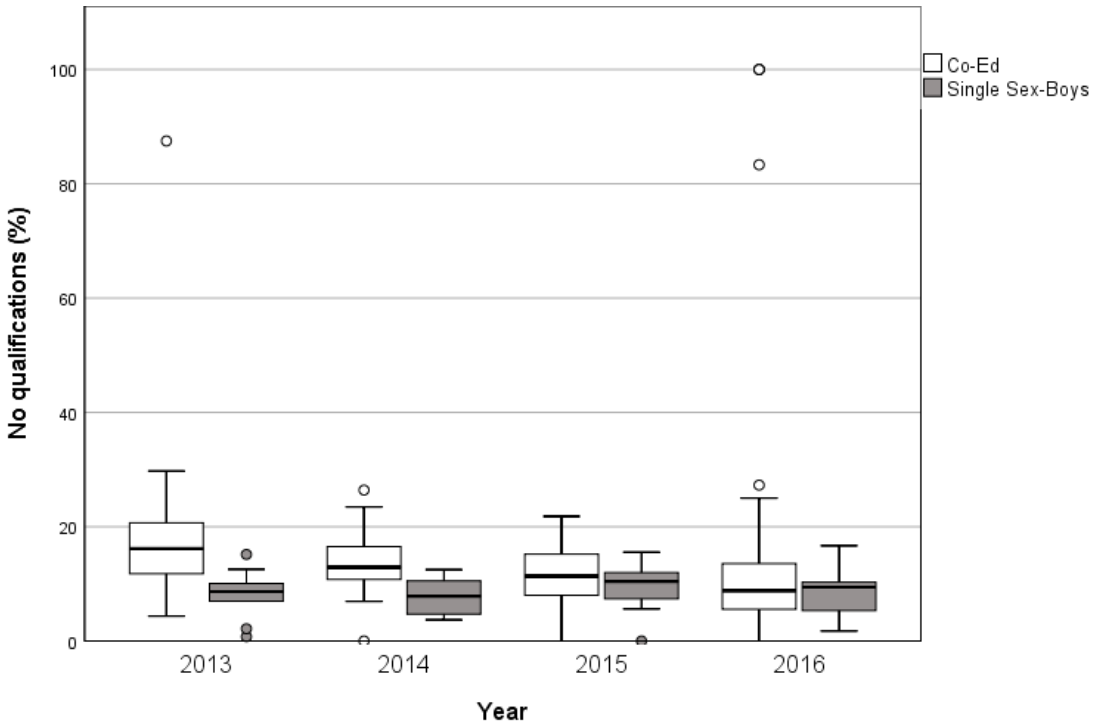

Figure 10. Comparative distributions of male school leavers at decile 5 and 6 boys' and co-educational schools with no qualifications

Figure 11 compares the distributions of non-attainment rates of boys at single-sex and coeducational schools at deciles 7 and 8. The non-attainment rates at these schools are low for both school types, with no medians across the three-year span being higher than ten percentage points. Even so, there remains a clear advantage for single-sex schools, with upper quartiles below the medians for coeducational schools in all four years.

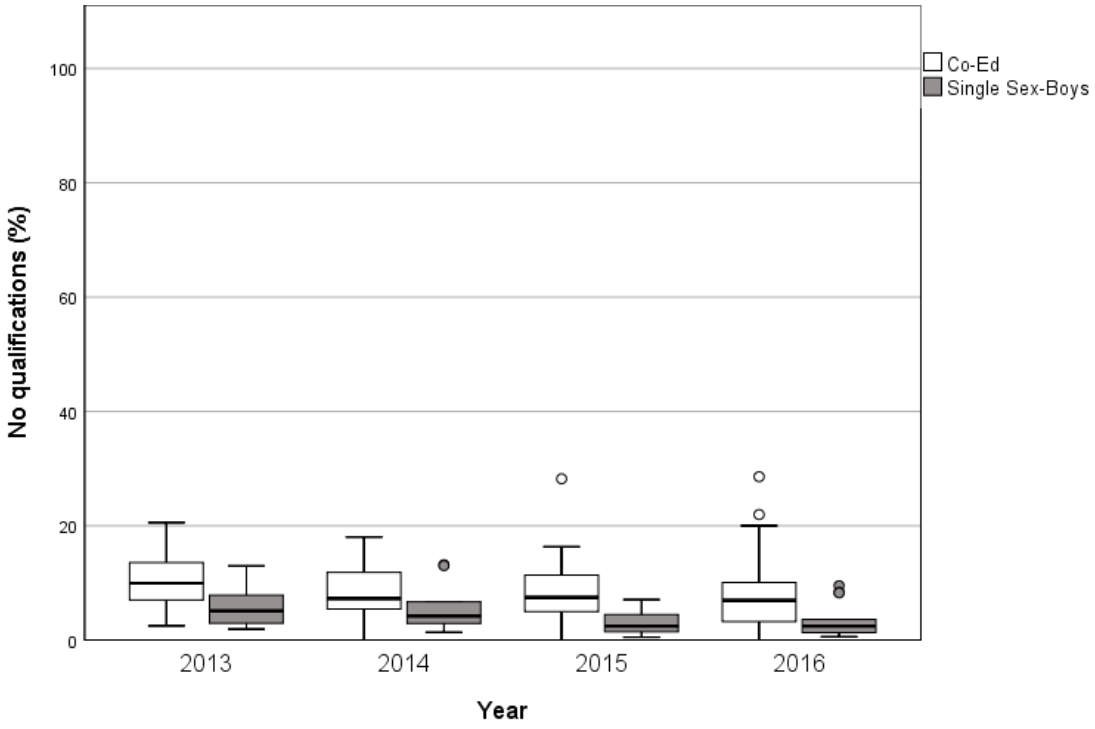

Figure 11. Comparative distributions of male school leavers at decile 7 and 8 boys' and co-educational schools with no qualifications

Figure 12 compares the distributions of non-attainment rates of boys at single-sex and coeducational schools at deciles 9 and 10. Unsurprisingly in light of the correlation between socioeconomic variables and educational attainment, both single-sex and coeducational schools in this decile range showed very low non-attainment levels, with all upper quartiles well below 10%. Even at this high end of the decile range however, non-attainment rates were lower at singles-sex schools than at coeducational schools, although the gap did diminish over the three years. In 2013 the lower quartile for coeducational schools was commensurate with the upper quartile for single-sex schools but in 2015 and 2016 the median for coeducational schools was commensurate with the upper quartile for single-sex schools.

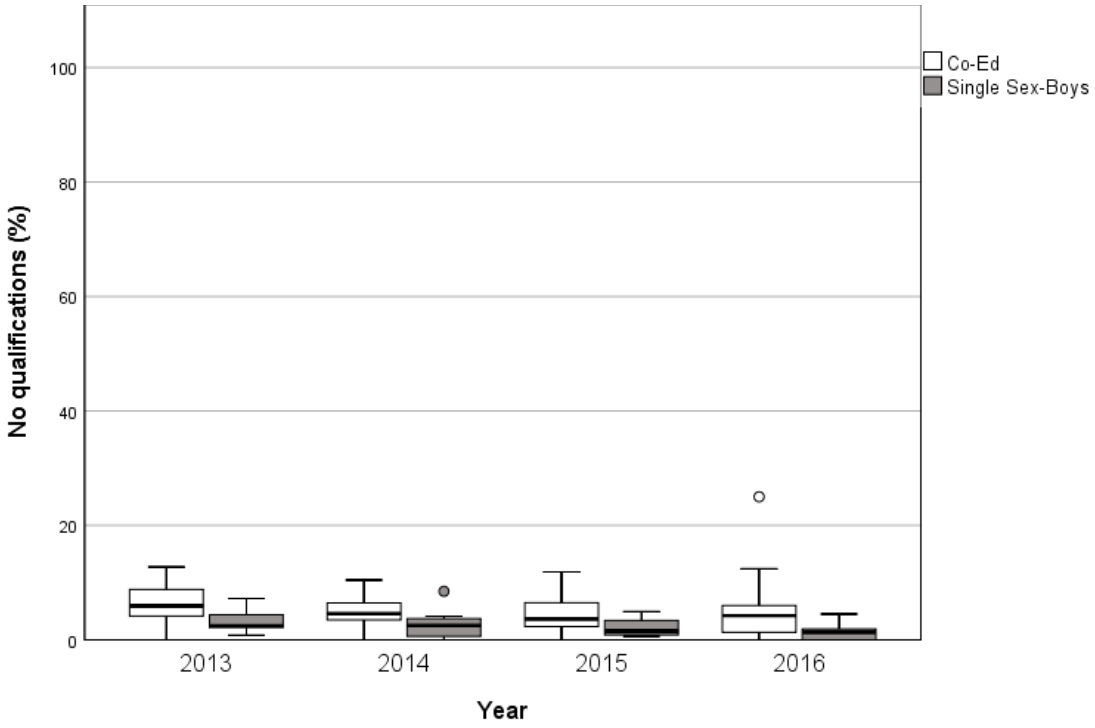

Figure 12. Comparative distributions of male school leavers at decile 9 and 10 boys' and co-educational schools with no qualifications

Comparative achievement of students of different ethnicities at single-sex and coeducational schools

Tables 6 - 9 turn to comparisons of the achievement of various ethnic groupings in rates of attaining NCEA qualifications and UE.

Table 6 compares the median Māori, Pasifika, Asian and European school leavers from boys' schools in 2016, in terms of their attainment of UE and of a Level 2 qualification or higher, and also the proportions of each of these groups who leave school with no qualifications. There are stark contrasts between ethnic groups in respect of UE attainment, with just over one quarter of Māori and Pasifika students leaving school with UE, compared with somewhat more than half of European students and more than three quarters of Asian students. The contrasts are less stark for qualifications at Level 2 or higher, but follow a similar pattern; Māori have the lowest attainment, followed by Pasifika and European students, with Asian students showing the highest rate of attainment. Notwithstanding the differences, more than three quarters of Māori students leaving boy's schools in 2015 did so with at least a Level 2 qualification. The converse pattern is evident for students leaving with no qualifications. Māori showed the highest rate of non-attainment, followed by Pasifika. European and Asian students showed very low rates of non-attainment.

Table 6. Median percentages of 2016 school leavers at boys' schools attaining University Entrance, a minimum of a Level 2 qualification and no qualifications, disaggregated by ethnicity.

		Boys' school leavers	
Qualification	Ethnicity	n	%
UE	Māori	408	28.8
	Pasifika	226	30.4
	Asian	743	77.6
	European	2,830	56.3
NCEA Level 2 or higher	Māori	1,106	78.1
	Pasifika	628	84.5
	Asian	907	94.8
	European	4,588	91.2
No qualification	Māori	146	10.3
	Pasifika	47	6.3
	Asian	25	2.6
	European	168	3.3

A complication of ethnic comparisons is that ethnicity is correlated with socioeconomic circumstances; Māori and Pasifika students come from families that are, on average, less wealthy then the families of European and Asian students, and they are commensurately more likely to attend low-decile schools. As shown in Table 5 and in Figures 9-12, socioeconomic variables are a strong predictor of qualifications achievement. It is therefore important to take these variables into account in any analysis that might be interpreted in terms of the relative benefit to students of the various ethnicities of attending one or another type of school. Therefore, in Tables 7, 8 and 9, which respectively compare single-sex and coeducational male school leavers for UE attainment, for the attainment of qualifications at Level 2 or higher and for non-attainment of qualifications across the

same four ethnic groupings as those compared in Table 6, the data are disaggregated by decile grouping.

Table 7 compares the 2016 attainment of UE by male school leavers from single-sex and coeducational schools, across four ethnic groupings and four decile groupings. In all decile groups and for all ethnicities, attainment was higher at single-sex schools than at coeducational schools. The rate of UE attainment by Māori in decile 1-4 single-sex schools, while still very low in a national context, was approximately triple the corresponding rate in coeducational schools, and the rate for European students leaving single-sex schools in this decile range was approximately double that of European students leaving coeducational schools. At decile 9-10 schools, both Māori and European attainment rates more than 20 percentage points higher at single-sex than coeducational schools. It should also be noted that some of the comparisons in Table 7 are based on very low numbers of students.

Table 7. Comparison of median percentages of male school leavers at boys' and co-educational schools attaining University Entrance in 2016 disaggregated by school decile group and ethnicity.

		Boys' school leavers		Co-ed school male leavers	
Decile group	**Ethnicity**	**n**	**%**	**n**	**%**
1-4	Māori	99	22.8	240	8
	Pasifika	73	22.1	182	11
	Asian	35	66	340	45.8
	European	105	42.3	514	21.9
5-6	Māori	76	19.8	103	11.1
	Pasifika	25	20.5	20	9.6
	Asian	86	62.8	148	44.3
	European	489	38	753	25.9
7-8	Māori	121	31.9	142	22.4
	Pasifika	79	44.6	56	23.5
	Asian	141	68.4	316	57.1
	European	897	52	1,150	39.7
9-10	Māori	112	50.9	61	23.5
	Pasifika	49	43.4	24	33.8
	Asian	481	85.7	415	71.2
	European	1,339	75.6	1,444	51.1

Table 8 make the same comparisons as Table 7, but for qualifications at Level 2 or higher, rather than for UE in 2016. Like attainment of UE, higher proportions of young men leaving single-sex schools than of those leaving coeducational schools had qualifications at Level 2 or higher. In general however, the differences here were much more modest than for UE and, in some cases, negligible, especially taking into account some very small numbers of students. Some of the most appreciable differences were at decile 1-4 schools, with Māori attainment of qualifications at Level 2 or higher some 15 percentage points higher at single-sex schools than at coeducational schools. Differences for Asian students and for students at decile 9-10 schools are supressed by a 'ceiling' effect; the attainment rates at both school types are very high so there is little room for any single-sex school effect to be expressed.

Table 8. Comparison of median percentages of male school leavers at boys' and co-educational schools attaining a minimum of a Level 2 qualification in 2016, disaggregated by school decile group and ethnicity.

		Boys' school leavers		Co-ed school male leavers	
Decile group	**Ethnicity**	**n**	**%**	**n**	**%**
1-4	Māori	338	77.9	1,879	62.3
	Pasifika	269	81.3	1,155	69.7
	Asian	51	96.2	647	87.1
	European	226	91.1	1,719	73.4
5-6	Māori	259	67.4	633	68.1
	Pasifika	102	83.6	155	74.2
	Asian	121	88.3	282	84.4
	European	1,077	83.7	2,300	79.1
7-8	Māori	309	81.5	446	70.2
	Pasifika	156	88.1	189	79.4
	Asian	194	94.2	505	91.3
	European	1,591	92.2	2,427	83.8
9-10	Māori	200	90.9	198	76.2
	Pasifika	101	89.4	55	77.5
	Asian	541	96.4	540	92.6
	European	1,694	95.7	2,511	88.9

Table 9 compares single-sex and coeducational schools for the percentages of the four ethnic groupings in each of the four decile ranges for the percentages of young men leaving school with no qualifications in 2016. Once again, an advantage for single-sex schools is evident for all four ethnicities in all four decile groupings, with the exception of Māori at decile 5 and 6 schools, where the non-attainment rate was slightly (1.4 percentage points) higher at boys' schools than at co-educational schools. Like the attainment of qualifications at Level 2 or higher, the greatest advantages are evident for low-decile (1-4) schools, especially for Māori. Note again however that the numbers here are very small; just one Asian student, 6 European students, 24 Pasifika and 47 Māori students left boys' schools without qualifications – so these were percentages of small populations. Even so, the picture that emerges from these analyses is that young men at single-sex schools, regardless of their socioeconomic or ethnic backgrounds are very likely to leave school with a qualification, with a substantial majority, even at low decile schools, attaining at Level 2 or higher.

Table 9. Comparison of median percentages of male school leavers at boys' and co-educational schools attaining no qualifications in 2016, disaggregated by school decile group and ethnicity.

		Boys' school leavers		Co-ed school male leavers	
Decile group	**Ethnicity**	**n**	**%**	**n**	**%**
1-4	Māori	47	10.8	636	21.1
	Pasifika	24	7.3	281	16.9
	Asian	1	1.9	35	4.7
	European	6	2.4	316	13.5
5-6	Māori	65	16.9	144	15.5
	Pasifika	11	9.0	29	13.9
	Asian	8	5.8	33	9.9
	European	90	7.0	261	9.0
7-8	Māori	27	7.1	90	14.2
	Pasifika	7	4.0	19	8.0
	Asian	7	3.4	31	5.6
	European	39	2.3	187	6.5
9-10	Māori	7	3.2	23	8.8
	Pasifika	5	4.4	7	9.9
	Asian	9	1.6	26	4.5
	European	33	1.9	129	4.6

Comparative choice of assessment format at single-sex and coeducational schools

A factor, other than pedagogy, that could plausibly drive the apparent attainment advantage for young men at single-sex schools is the type of assessment they undertake for qualifications. NZQA data[6] show that attainment rates for internally-assessed standards are typically substantially higher than those for externally-assessed standards. If single-sex schools were to be using internally-assessed standards in greater proportions than coeducational schools, this would at least partly explain the differences observed here. Figures 16, 17 and 18 canvass this possibility for Levels 1, 2 and 3 respectively, comparing the proportions of assessed results for young men at single-sex and coeducational schools that are conducted for each of externally-assessed achievement standards, internally-assessed achievement standards and unit standards (which are all internally assessed). The comparisons are made for each decile group separately because, as the NZQA report footnoted below also shows, low decile schools conduct a higher proportion of their assessment using internally-assessed standards than high decile schools.

Figure 13 confirms the tendency for low decile schools to conduct a higher proportion of assessment internally than higher decile schools at Level 1. It also shows that, at Level 1, single-sex schools conduct *lower* proportions of their assessment internally than coeducational schools in corresponding decile bands.

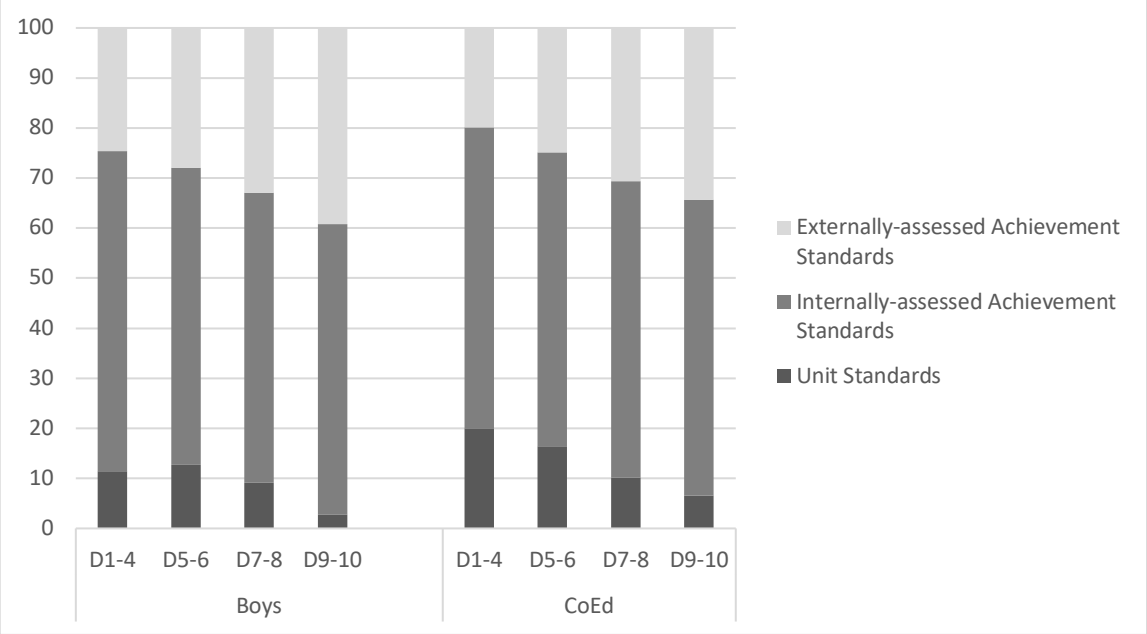

Figure 13. Externally- and internally-assessed achievement standards and unit standard as percentages of all Level 1 standards undertaken by boys in 2016 at boys' and co-educational schools, disaggregated by School decile band (decile 1-4, decile 5-6, decile 7-8 and decile 9-10).

[6] http://www.nzqa.govt.nz/assets/About-us/Publications/stats-reports/ncea-annualreport-2016.pdf

Figure 14 shows the same decile-related trend as Figure 13, but for Level 2 rather than Level 1. It also shows once again that, at Level 2, single-sex schools conduct lower proportions of their assessment internally than coeducational schools in corresponding decile bands. In fact the differences here are more striking than they were at Level 1, especially at high-decile schools.

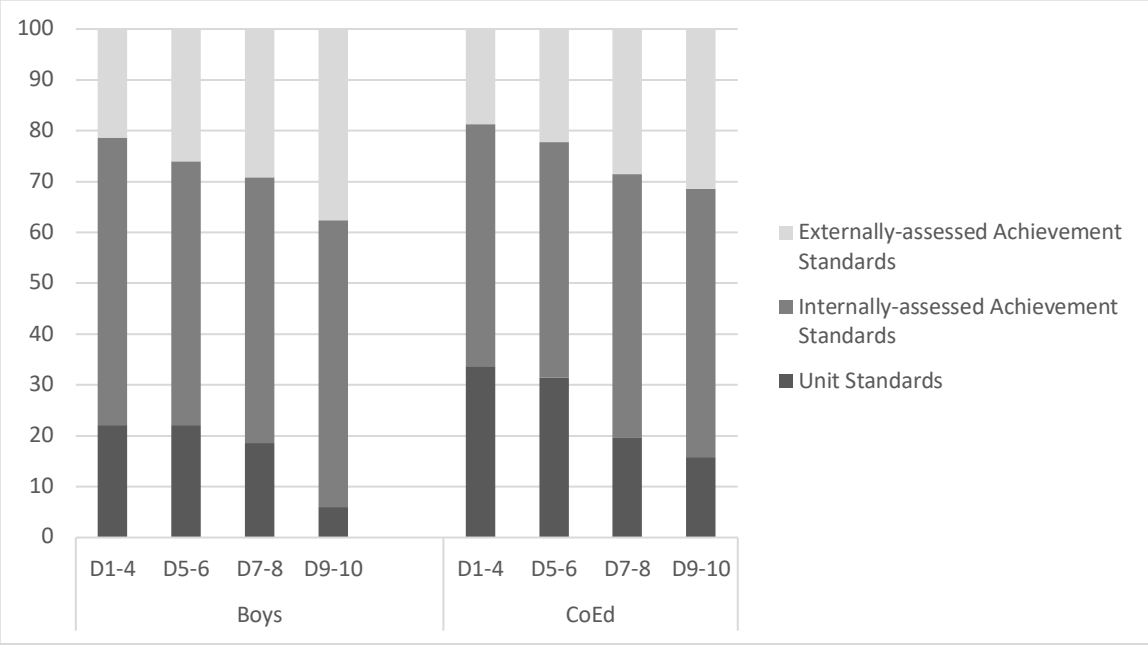

Figure 14. Externally- and internally-assessed achievement standards and unit standard as percentages of all Level 2 standards undertaken by boys in 2016 at boys' and co-educational schools, disaggregated by School decile band (decile 1-4, decile 5-6, decile 7-8 and decile 9-10).

Figure 15 compares the usage of the three types of standards at Level 3 between single-sex and coeducational schools, across the decile range. The decile-related trend towards internal assessment in lower decile schools is evident as it was in Figures 16 and 17, although there are some nuances for single-sex schools. In particular, the tendency for single-sex schools to conduct higher proportions of assessment externally, which was the case across the decile range in Figures 16 and 17, is really only evident at decile 1-4 schools and decile 9-10 schools at Level 3. For schools in the decile 5-6 and 7-8 ranges, the relative proportions of internal and external assessment are very similar at single-sex and coeducational schools. Even so, in none of Figures 16-18 is there any evidence that a greater proportion of assessment at single-sex schools than at coeducational schools is conducted internally; indeed in most comparisons the opposite is the case. This, assessment type is not a plausible explanation for the generally higher rates of qualifications attainment by young men at single-sex schools compared with those at coeducational schools.

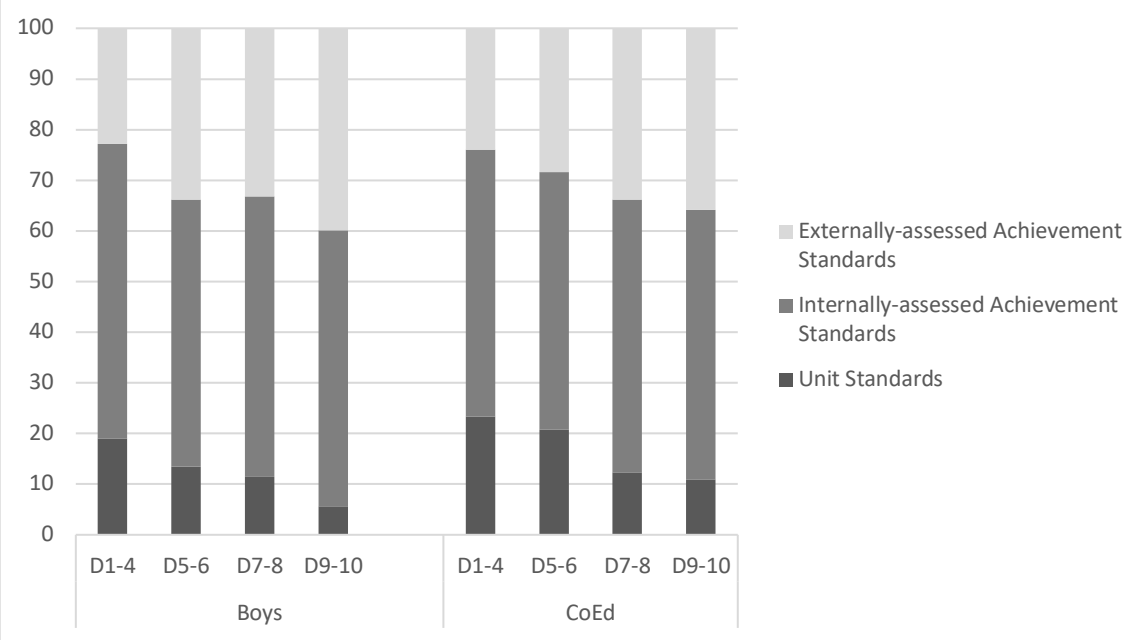

Figure 15. Externally- and internally-assessed achievement standards and unit standard as percentages of all Level 3 standards undertaken by boys in 2016 at boys' and co-educational schools, disaggregated by School decile band (decile 1-4, decile 5-6, decile 7-8 and decile 9-10).

Comparison of full distributions of achievement at single-sex and coeducational schools across the decile range

In a final set of analyses, Figures 19, 20 and 21 respectively compare distributions of attainment rates for UE, attainment rates for qualifications at Level 2 or higher, and rates of non-attainment, for school leavers from single-sex and coeducational schools in 2016. Each of these figures separately compares these distributions within each of the four decile groups considered elsewhere in this report.

Figure 16 shows the distributions of UE attainment rates at single sex and coeducational schools in each decile group. Both types of school show a correlation between decile and the proportions of students attaining UE. For all four decile groups, the single-sex distributions are higher than the coeducational ones, especially for decile 1-4 and decile 9-10.

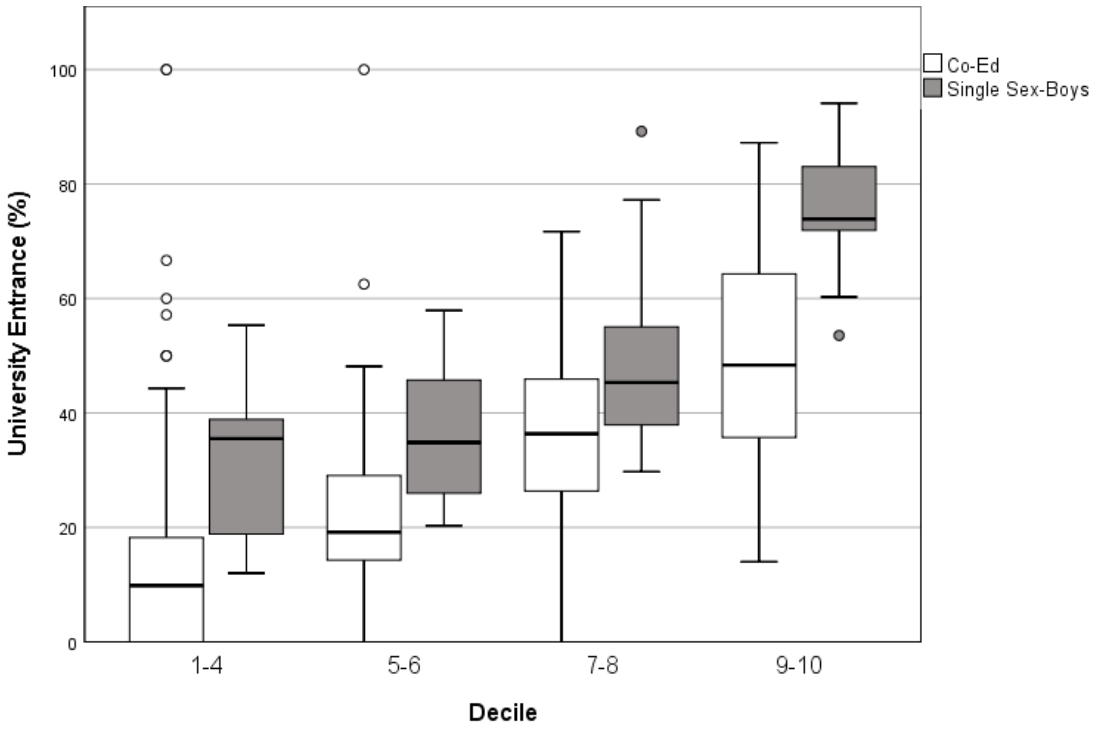

Figure 16. Comparative distributions of male school leavers at boys' and co-educational schools attaining University Entrance, disaggregated by school decile group

Figure 17 shows the distributions of rates of attainment of qualifications at Level 2 or higher, at single sex and coeducational schools in each decile group. Like the UE data in Figure 16, both types of school show a correlation between decile and the proportions of students attaining. The correlation is much more pronounced for coeducational schools than for single-sex schools. This is attributable to the greatest single-sex-school advantage being for decile 1-4 schools. Indeed, while the single-sex distributions for decile 1-4 and decile 5-6 are comparable, the median, lower quartile and 5th percentile are actually higher for the former decile group than for the latter. As is the case elsewhere in this report however, this comparison ought to be interpreted cautiously because of the small number of single-sex schools in the low decile ranges.

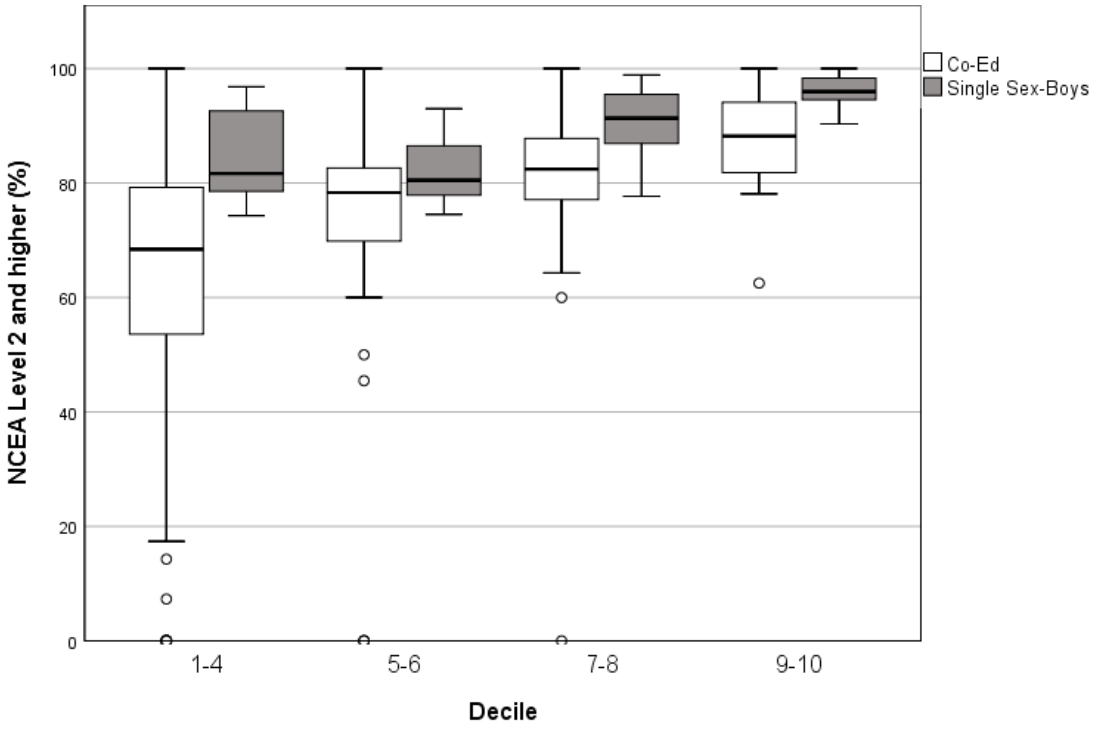

Figure 17. Comparative distributions of male school leavers at boys' and co-educational schools attaining at least a Level 2 qualification, disaggregated by school decile group

Figure 18 shows the distributions of percentages of students leaving single-sex and coeducational schools without qualifications. The pattern is similar to that evident in Figure 16 (UE) and Figure 17 (qualifications at Level 2 or higher). There is a decile-related gradient which is greater for coeducational schools than for single-sex schools and the greatest single-sex advantage is for low-decile schools. This is, in part, attributable to a 'floor' effect; at high-decile schools of both types, rates of non-attainment are very low, and there is therefore less room for a single-sex advantage to manifest in the data.

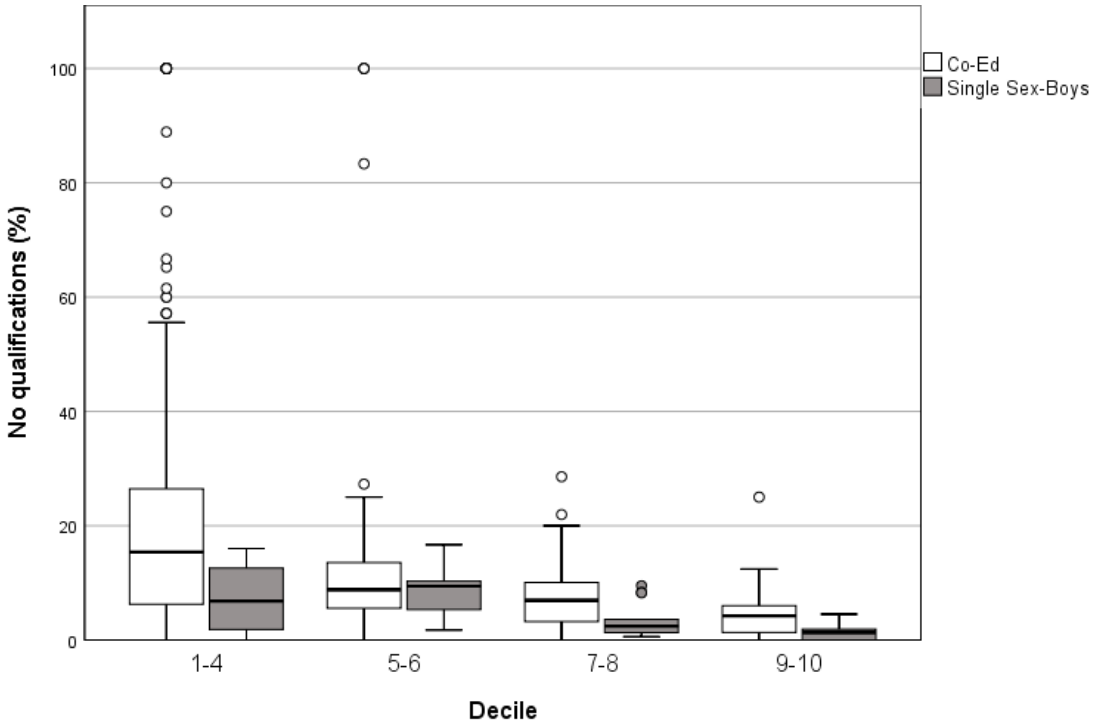

Figure 18. Comparative distributions of male school leavers at boys' and co-educational schools with no qualifications, disaggregated by school decile group