Appendix I: Inclusion Criteria, Evidence Acquisition, Methods

Inclusion/Exclusion Criteria

To be included in this review, a study must be conducted in a high-income economy ((http://econ.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20421402~menuPK:64133156~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html#High_income)); published in English in a journal or government report; evaluate the effect of year-round schooling on an outcome of interest: academic achievement, cognition, social or emotional skills, or delinquent behaviors; and have a concurrent comparison group or before-after comparison;. Studies were excluded if they assessed an exclusively special needs population.

Evidence Acquisition

Detailed systematic review methods used for the Community Guide have been published.(22) For detailed search information see (https://www.thecommunityguide.org/findings/health-equity-year-round-schooling).

Assessing and Summarizing the Body of Evidence of Effectiveness

Study Abstraction and Quality Assessment. Information on study methods, results, and interpretation was abstracted following standard Community Guide criteria.(23)

Primary outcomes of interest. Education achievement was collected as a primary outcome measured by changes in standardized achievement test scores. No studies reported on social, emotional, cognition, or behavioral outcomes.

Analysis and synthesis of results. When metrics allowed, effect estimates from individual studies were pooled to calculate a median. Otherwise, effect estimates were calculated using relative percent change

or absolute percentage point change. When at least five independent effect estimates were available, interquartile intervals (IQIs) were calculated to measure variation; otherwise, the range of estimates was indicated. Studies without metrics or data to allow direct comparison with other studies were narratively summarized. Analyses were conducted in 2016–2017.

Search strategy. The Community Preventive Services Task Force finding is based on evidence from a systematic review published in 2003 (Cooper et al., search period through March 2002) and a Community Guide update (search period March 2002-August 2016). To update the search, the review team used the search strategy listed below.

The following databases were searched for English-language papers that evaluated the impact of modified school time programs:

- ERIC
- PsycINFO

The literature search covered interventions modifying school time by rearranging school calendar to create year-round schooling without expanding school time. Community Guide staff limited the search to databases used by Cooper et al (except for Dissertation Abstracts, which was excluded because we did not include dissertations in the update).

Following are the search strategies used for this review.

Database: ERIC (PROQUEST)
Date Searched: 8/4/2016

Limits applied – after March 2002, English only, exclude dissertations/theses

- S15
  1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14
- S14
  "lengthening the school year"
- S13
  "lengthen the school year"
- S12
  "lengthened school year"
- S11
  "longer school year"
- S10
  "extended school year"
- S9
  "extended school calendar"

- S8
  "year round education" OR "year-round education"
- S7
  “modified school calendar”
- S6
  "alternative calendar" OR "alternative calendars" OR "alternative school calendar" OR "alternative school calendars”
- S5
  “year round school”
- S4
  "twelve month calendar"
- S3
  "extended school year"
- S2
  SUBJECT.exact("Year Round Schools")
- S1
  "12 month school" OR "twelve month school"

Database: PsycINFO (OVID)
Date Searched: 8/4/2016

- 1
  (alternative calendar or modified school calendar or year-round school).mp.
- 2
  (year-round education or 12 month school or twelve month school or extended school calendar*).mp.
- 3
  (longer school year or extended school year or lengthened school year or lengthen the school year).mp.
- 4
  (lengthening the school year or alternative school calendar).mp.
- 5
  (lengthening school year or lengthen* the school year or alternative school calendar*).mp.
- 6
  (200204* or 200205* or 200206* or 200207* or 200208* or 200209* or 20021*).up.
- 7
  (2003* or 2004* or 2005* or 2006* or 2007* or 2008* or 2009* or 2010* or 2011* or 2012* or 2013* or 2014* or 2015* or 2016*).up.
- 8
  6 or 7
- 9
  or/1-5
- 10
  8 and 9

Appendix II: Evidence Synthesis

Search Yield

Search results are shown in Figure 2/Appendix. The meta-analysis (Cooper 2003) included 47 studies of 39 school districts. Six studies (15-19, 21, 24) from the update search were included, for a total of 53 studies in the current review. One study (24) did not distinguish effects of single- and multi-track programs and was excluded. Detailed summary of the included studies is available at [https://www.thecommunityguide.org/sites/default/files/assets/SET-year-round-school.pdf.

Results are presented separately for single- and multi-track systems. Cooper and colleagues distinguish effects of single- and multiple-track programs, but do not stratify the remainder of meta-analytic results separately by track format.

Study and Intervention Characteristics

In the Cooper and colleagues review, all included studies came from the U.S., and most studies were cross-sectional or before-after with concurrent comparison group Table 2/Appendix. Studies reported interventions in urban school districts (n=18), elementary schools (n=23), and single-track schools (n=15). Intersession was mentioned in 15 studies without specifying program format. Cooper and colleagues graded the strength of evidence on YRSCs as weak.

Studies in the update included prospective cohort, panel, and cross-sectional designs. The most common quality of execution limitation was inadequate description of the intervention. Two interventions were in mixed urban/suburban and rural settings.(16, 25) Two studies reported on multi-track schools (19, 21), one on multi-track and single-track schools(15), and two on single-track schools.(16, 18) Half were in elementary or middle schools.(18, 19, 21)

Only one study (16) from the update search mentioned intersession--a study of single-track YRSCs in Virginia, reporting that all schools offered intersession classes 4 hours/day and that a median of 80% of students attended. Intersessions were often mandatory for students who were having difficulty with school, but were optional for students who wanted to expand their knowledge.

Population Characteristics

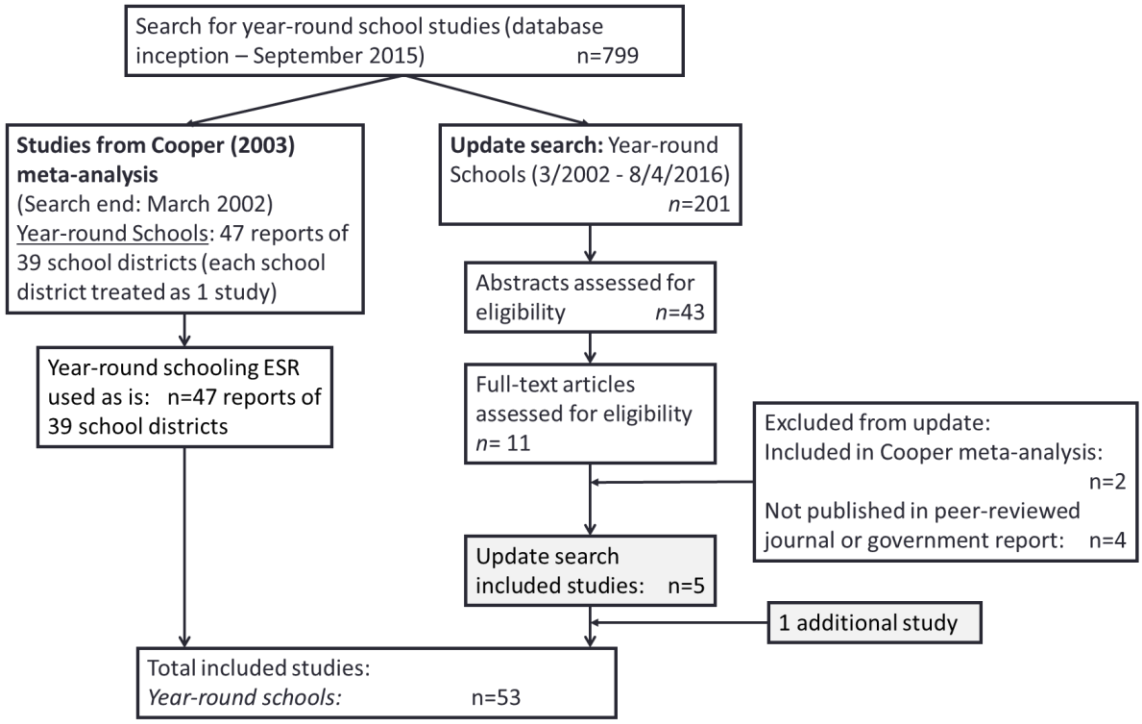
The Cooper review did not report on population characteristics. Four studies from the update (15, 18, 19, 21) reported on gender and found similar proportions of female (median 47.9%) and male students. Three studies (15, 19, 21) reported populations were mostly white (median 43%) or Hispanic (median 39.5%). The distribution of the black population (15, 19, 21) (median 8.2%) was slightly lower than the US population, while the Asian population (15, 19) (median 6.3%) was similar to the U.S. population. The median proportion of students eligible for free or reduced-price lunch was 33.6% (18, 21). Study and intervention characteristics are in Appendix Table 2.

Appendix III: Limitations

The definition of an intervention is key, both for evaluation of its effectiveness and for potential implementation. In the case of year-round school calendars, common definitions note that while school breaks are rearranged in the school year, there is no net change in the amount of schooling provided. However, at least in the case of single-track schools in Virginia, all schools provided intersessions attended by large proportions of students, so that there was in fact a substantial addition of school time for these students, particularly for students attending for remedial work for whom intersession attendance was often required. Yet most of the studies reviewed by Cooper and colleagues, did not mention the presence of intersession, so we were not able to investigate this issue.

Additionally, interpretation of review findings is limited by the lack of information on other changes made in schools. For example, included studies did not indicate how teaching practices changed (did they continue with current teaching practices or modify their practices). It is critical that we understand which alternative they choose so that we can make stronger conclusions on the effectiveness of these interventions.

Appendix Figure 2: Search Process and Yield



Appendix Table 1: Study and Intervention Characteristics in Included Studies

Characteristic		Cooper 2003 # of studies reporting (%)	Update # of studies reporting (%)
Country	U.S.	47 (100%)	5 (100%)(16, 18-20, 24)
Setting	Traditional public school	NR*	4 (80%)(15, 16, 19, 20)
	NR	47 (100%)	1 (20%)(18)
Population Density	Urban	18 (38.3%)	NR
	Suburban	6 (12.8%)	NR
	Rural	5 (10.6%)	NR
	Mixed (urban to rural)	NR	3 (60%)(15, 16, 20)
School Level	Kindergarten/Elementary	18 (38.3%)	2 (40%)(18, 20)
	Elementary and Middle	6 (12.8%)	1 (20%)(19)

	Middle	5 (10.6%)	0
	High	NR	0
	Elementary, Middle, and High	18 (38.3%)	1 (20%) (15)
Type of Year-Round Calendar	Single-track	15 (31.9%)	3 (60.0%)(15, 16, 18)
	Multi-track	8 (17.0%)	3 (60.0%) (15, 19, 20)
	Both	NR	1 (33.3%) (15)
Participation in Intersession	Mentioned	15 (31.9%)	1 (20%) (16)
	Not mentioned	24 (51.1%)	4(83.3%) (15, 18-20)

*NR = not reported

Appendix Table 2: Effects of Year-Round Schools: Cooper 2003, Achievement Scores

Variable		**# of Studies**	**Weighted d-Index (95% CI)***
Overall Summary Estimate		**39****	**0.06 (0.04 to 0.08)**
Track system	Single-track	15	0.19 (0.07 to 0.31)
	Multi-track	8	0.04 (-0.12 to 0.2)
SES	Low	18	0.19 (0.08 to 0.30)
	Moderate, middle, and mixed	25	0.05 (-0.04 to 0.14)
Grade level	Elementary	23	0.10 (0.01 to 0.19)
	Secondary	9	0 (-0.14 to .14)
% white	<2/3 of sample	16	0.10 (-0.02 to 0.22)
	>2/3 of sample	14	0 (-0.13 to .13)
# years in operation	1	8	0.03 (-0.13 to .19)
	>1	17	0.10 (0 to 0.20)

Intersession	Mentioned	15	.10 (-0.01 to .21)
	Not mentioned	24	.08 (-0.01 to .17)
City size	Large urban	12	0.07 (-0.06 to 0.20)
	Small urban	6	-0.03 (-0.21 to 0.15)
	Suburban	6	0.13 (-0.06 to 0.32)
	Rural	5	0.04 (-0.19 to 0.27)
Publication type	Dissertations and theses	26	0.09 (0 to 0.18)
	All other	18	0.12 (0.02 to 0.22)
Outcome measurement	Standardized achievement tests	34	0.08 (0 to 0.16)
	Other (effect estimate based on grades)	8	0.09 (-0.06 to .24)

*Adjusted for study methodological differences; random error model; ** reports of schools from the same school district were combined for one effect estimate