

# Kansas Department of Transportation Research Report Style Guide

Thank you for reading this guide to the publication style of KDOT Research Reports. The purpose of this document is to help authors know how to format and edit their reports. KDOT prefers all Research Reports submitted to us utilize either this Style Guide or the FHWA-HRT-15-058 “Turner-Fairbank Highway Research Center R&D Communications Reference Guide” if the research report is also being submitted for national publication (i.e., NCHRP, TRB, AASHTO, etc.). Our house style is based on the Publication Manual of the American Psychological Association, 7<sup>th</sup> Edition. For any items not discussed in this style guide, please refer to the Publication Manual of the American Psychological Association, 7<sup>th</sup> Edition. In cases where this style guide and the American Psychological Association (APA) do not recommend the same treatment of a particular item, this style guide should be followed by authors for reports.

All reports must be submitted in Microsoft Word .docx (preferable) or .doc file format. Instructions for utilizing the K-TRAN Styles can be found the KDOT Research Reports Formatting Guide. The K-TRAN Styles are saved in the KDOT Research Reports Styles Template.

**Note: KDOT will add the technical documentation page, disclaimer, and other front matter before publication. Please provide the following information with each submission:**

Report Number  
Report Title  
Authors  
Address of Performing Organization  
KDOT Project/Contract Numbers  
Keywords

# Chapter 1: Organization

## 1.1 General Guidelines

- The maximum number of pages for reports is 75 pages (excluding appendices). Any exceptions to this limit should be approved by KDOT prior to submission.
- The target audience for the report will be provided by KDOT (e.g., paving contractors, bridge designers, KDOT), and the report should be written with them in mind. Master's theses or doctoral dissertations may not satisfy this requirement.
- The use of English units of measurement is required for all reports, except for instances where SI is the accepted standard practice. Dual units are allowed where SI (metric) appears in parentheses, e.g., 22 in. (558.8 mm).
- It is not necessary to provide chapter summaries, either in the introduction or in the body of the report.
- Literature reviews should be relevant to the central topic of research and kept as brief as possible.
- All references must be clearly cited within the text of a report and included in the reference list. See Chapter 2 of this Style Guide for information on references.
- **The scope and conclusion of a research report must be consistent with the project proposal approved as Special Attachment No. 1 in the contract.**

## 1.2 Numbering

Sections should be numbered by chapter, section, subsection, etc. This document is an example of the preferred numbering format.

Tables, Figures, and Equations should be numbered by chapter. Always include a period (NOT a hyphen) in Table, Figure, and Equation numbers.

Figure 1.1 = the first figure in Chapter 1

Table 5.7 = the seventh table in Chapter 5

Equation 3.12 = the twelfth equation in Chapter 3

Tables, Figures, and Equations should only be numbered sequentially (1, 2, 3...) if the report is written following the FHWA-HRT-15-058 “Communications Reference Guide” to be submitted for national publication.

## 1.3 Report Components

Reports should generally include the following components.

- Cover page
- Abstract
- Keywords
- Acknowledgments
- Table of Contents
- List of Tables
- List of Figures
- Introduction (Overview, background, problem statement, objectives, scope)
- Literature review
- Methodology
- Results
- Discussion
- Applications
- Suggestions for implementation
- Conclusions
- Recommendations
- References

### 1.3.1 Cover Page

The cover page should include the title of the report; each author's name, academic and professional titles, and affiliations; the completion date; and the institution for which the report was prepared.

### 1.3.2 Abstract

**An abstract is required for each research report, which must include the results of the project.**

The abstract should be brief (~250 words) but detailed. Provide an overview of the report with enough context to stand alone separate from the rest of the document. A well-written abstract will help readers decide whether to read the full report.

The abstract addresses the following (usually 1–2 sentences per topic):

- Key aspects of the literature review
- Problem under investigation or research question(s)
- Clearly stated hypothesis or hypotheses
- Methods used (including brief descriptions of the study design, sample, and sample size)
- Study results
- Implications (i.e., why this study is important, applications of the results or findings)

### 1.3.3 Keywords

Keywords address essential paper elements, such as research topic, population, method, and application of results or findings. Keywords may be included on the cover page; KDOT will add these to the technical documentation page before publication.

Authors are encouraged to choose keywords from the Transportation Research Thesaurus (TRT), which was created as a tool to provide a common and consistent language between producers and users of transportation information. <https://trt.trb.org/>.

### *1.3.4 Acknowledgments*

Often, people who contributed to the research, but who did not participate in the writing of the report (and who would therefore not be considered co-authors) are listed here. Project monitors are often named in this section. Please note that this is a professional acknowledgment section—only persons or institutions that supported your work in a professional capacity should be listed here. Please do not use this space to acknowledge family, friends, or other persons or institutions that supported your work in a private or personal capacity.

### *1.3.5 Table of Contents*

This list should include all sections and subsections, as well as any appendices or other additional elements. Leader dots should be used between each entry and its page number.

The Table of Contents can be automatically generated using the Table of Contents feature in Word. Please utilize the K-TRAN Heading Styles to facilitate this process. Instructions for creating a Table of Contents, List of Tables, and List of Figures can be found in the KDOT Research Reports Formatting Guide.

### *1.3.6 Tables*

Tables should be used to organize data that is too detailed or complicated to be described adequately in the text.

Tables that appear in the body of the report must be fully editable. Screenshots or saved images are not an acceptable replacement. Do not link tables to separate files or programs.

Table numbers and captions appear above the table, together on one line.

### *1.3.7 Figures*

Figures should be detailed and should contribute to the understanding of the information presented in the report. Figures must not be blurry or hard to decipher. Do not link figures to separate files or programs.

Figure numbers and captions appear underneath the figure. Captions should appear on the same line as the figure label. Both the figure and its caption should be centered.

Any figures comprised of complex, multi-layered graphics (including charts) should be converted into a .jpeg or .png file before submission. This will prevent any accidental changes or omission of lost elements in your figures. It also simplifies the addition of alternative text and improves the accessibility of the final PDF. For figures containing multiple images/charts, those items designated as (for example) 1.1a, 1.1b, 1.1c, etc., may remain as separate objects with their own alternative text descriptions. Alternative text must be provided for all figures in your report. See Chapter 3 for further information.

Charts and graphs should be designed in such a way that they are easily understood when rendered in black and white. We do not publish print reports; however, readers may choose to print a copy of the PDF, and they usually do so in black and white.

If you are including photographs as figures, please insert them directly into the document. Please make sure that the photos are high resolution and that they show exactly what you want them to feature with minimal background detail. Any unnecessary elements should be cropped out. Please make sure that the size of your photo is appropriate—small enough to economize space and not to give any undue emphasis, but large enough to show detail where necessary.

Please do not submit the photos or figures as separate files—insert them into the document.

### *1.3.8 Equations*

Equations should be indented by 1” unless this causes the equation to spill onto a second line. Equation labels should follow on the next line after the equation. Equations do not need to be bolded to match the equation label.

$$IQ = \left( \frac{SL}{PL-10} \right) * V * 0.55$$

**Equation 2.1**

$$Y = 0.19955 + 0.01468ALCO - 0.0722HL - 0.0674PCI + 0.0095AFAM - 0.0677HMRR$$

**Equation 2.2**

If the equation contains variables that must be defined, please list each variable on its own line (not in the form of a paragraph).

Microsoft Word 2010 and newer versions include built-in support for writing and editing equations. KDOT prefers that authors use these built-in tools to write equations in their reports.

### *1.3.9 Conclusions*

The conclusions should include the major findings presented in the body of the report and should fulfill the expectations set forth in the introduction. No new information or analysis should be presented here. You may wish to address ambiguous data or unanswered questions or concerns in this section. You may also wish to clearly communicate any limitations to your research, i.e., include a mild caution about conclusions that cannot reasonably be drawn from the data you have presented. In this section, you should tell the reader the implications of your research—tell the reader why your report is important.

### *1.3.10 Recommendations*

Recommendations should provide KDOT guidance to implement the major findings of the report. They should flow directly from the conclusions and be fully supported by information presented in the body of the report. The recommendations should be as specific as possible, actionable, and address the problem(s) detailed in the project proposal.

### *1.3.11 Appendices*

Appendices should contain any information that can be considered supplemental or tangential to the information supplied in the main body of the report. Overly technical or detailed information may better serve your reader as part of an appendix, while also improving the readability and flow of the main body of your report.

Appendices should be lettered as Appendix A, Appendix B, and so on. Tables, figures, and equations included in appendices should be numbered according to the letter designation, i.e., Table A.1, Figure B.3, Equation D.6, etc.

## Chapter 2: References

Please note that any idea that did not originate with you as an author must be attributed to its source, whether it is quoted verbatim or not. Please be especially careful with paraphrasing or summarizing. **Any report with undocumented or improperly documented sources will be returned to the authors for rework.**

For help with references, please use the Publication Manual of the American Psychological Association, 7<sup>th</sup> Edition. Please also utilize the resources your university has at your disposal.

For more information on building a reference list:

APA Style Author–Date Citation System:

<https://apastyle.apa.org/style-grammar-guidelines/citations/basic-principles/author-date>

APA Style References:

<https://apastyle.apa.org/style-grammar-guidelines/references>

APA Style Reference Guide for Journal Articles, Books, and Edited Book Chapters:

<https://apastyle.apa.org/instructional-aids/reference-guide.pdf>

APA Style In-Text Citations:

<https://apastyle.apa.org/style-grammar-guidelines/citations>

We use what is called the author-date system of documentation in which a brief in-text citation directs readers to a full reference list entry. Each entry in a reference list must correspond to an in-text citation and vice versa.

The reference list appears at the end of the paper. Entries appear in alphabetical order. Please include enough information in the citation so that KDOT and readers can locate each of your sources. Your reference list should allow readers to assess the usefulness and legitimacy of each source, as well as serve as a resource for future research.

In-text citations can be made either narratively or parenthetically. A **narrative citation** appears where the author's surname is used in the text and the year of publication follows in parentheses. A **parenthetical citation** appears after a quote or reference where both the author's surname and year of publication are enclosed in parentheses.



## 2.1 Journal Articles

### Reference List Entry:

Alluri, P., Saha, D., & Gan, A. (2016). Minimum sample sizes for estimating reliable Highway Safety Manual (HSM) calibration factors. *Journal of Transportation Safety & Security*, 8(1), 56–74.

**Narrative In-Text Citation:** Alluri et al. (2016)

**Parenthetical In-Text Citation:** (Alluri et al., 2016)

Note: For sources with three or more authors, use the first authors name and “et al.” for all in-text references as demonstrated above.

### Reference List Entry:

Chen, Q., & Abu-Farsakh, M. (2016). Mitigating the bridge end bump problem: A case study of a new approach slab system with geosynthetic reinforced soil foundation. *Geotextiles and Geomembranes*, 44(1), 39–50.

**Narrative In-Text Citation:** Chen and Abu-Farsakh (2016)

**Parenthetical In-Text Citation:** (Chen & Abu-Farsakh, 2016)

### Reference List Entry:

Elgaaly, M., Sandford, T. C., & Colby, C. (1992). Testing an integral steel frame bridge. *Transportation Research Record*, 1371, 75–82.

**Narrative In-Text Citation:** Elgaaly et al. (1992)

**Parenthetical In-Text Citation:** (Elgaaly et al., 1992)

For sources that are articles in scholarly journals that are accessed online, please provide the DOI or a *stable* URL:

Butler, J. (2017). Where access meets multimodality: The case of ASL music videos. *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*, 21(1).  
<http://technorhetoric.net/21.1/topoi/butler/index.html>

## 2.2 Research Reports

Always cite the report or publication number if one is available.

### Reference List Entry:

Kramer, S. L., & Sajer, P. (1991). *Bridge approach slab effectiveness* (Report No. WA-RD 227.1). Washington State Department of Transportation.

**Narrative In-Text Citation:** Kramer and Sajer (1991)

**Paranthetical In-Text Citation:** (Kramer & Sajer, 1991)

### Reference List Entry:

Laguros, J. G., Zaman, M. M., & Mahmood, I. U. (1990). *Evaluation of causes of excessive settlements of pavements behind bridge abutments and their remedies—Phase II, Executive summary* (Report No. FHWA-OK-89-07). Oklahoma Department of Transportation.

**Narrative In-Text Citation:** Laguros et al. (1990)

**Paranthetical In-Text Citation:** (Laguros et al., 1990)

### Reference List Entry:

Guo, J., & MacKenzie, K. (2012). *Hydraulic efficiency of grate and curb-opening inlets under clogging effect* (Report No. CDOT-2012-3).

<https://rosap.nrl.bts.gov/view/dot/24517>

**Narrative In-Text Citation:** Guo and MacKenzie (2012)

**Paranthetical In-Text Citation:** (Guo & MacKenzie, 2012)

### Reference List Entry:

National Cooperative Highway Research Program (NCHRP). (2014). *Proposed guideline for reliability-based bridge inspection practices* (NCHRP Report 782).

<https://doi.org/10.17226/22277>

**Narrative In-Text Citation:** National Cooperative Highway Research Program (2014) or NCHRP (2014)

**Paranthetical In-Text Citation:** (National Cooperative Highway Research Program, 2014) or (NCHRP, 2014)

Note: Acronym can be used if it has already been defined for the reader.

## 2.3 Standards

### Reference List Entry:

AASHTO PP 68-14. (2016). *Collecting images of pavement surfaces for distress detection*.  
American Association of State Highway and Transportation Officials.

**Narrative In-Text Citation:** AASHTO PP 68-14 (2016)

**Parenthetical In-Text Citation:** (AASHTO PP 68-14, 2016)

### Reference List Entry:

ASTM D1883-16. (2016). *Standard test method for California Bearing Ratio (CBR) of laboratory-compacted soils*. ASTM International. doi: 10.1520/D1883-16,  
www.astm.org

**Narrative In-Text Citation:** ASTM D1883 (2016)

**Parenthetical In-Text Citation:** (ASTM D1883, 2016)

### Reference List Entry:

ASTM D1556 / D1556M-15e1. (2015). *Standard test method for density and unit weight of soil in place by sand-cone method*. ASTM International. doi:  
10.1520/D1556\_D1556M-15E01, www.astm.org

**Narrative In-Text Citation:** ASTM D1556 (2015)

**Parenthetical In-Text Citation:** (ASTM D1556, 2015)

### Reference List Entry:

Kansas Department of Transportation (KDOT). (2015). Section 1106: Aggregates for granular base. *Standard specifications for state road & bridge construction*.

**Narrative In-Text Citation:** Kansas Department of Transportation (2015) or KDOT (2015)

**Parenthetical In-Text Citation:** (Kansas Department of Transportation, 2015) or (KDOT, 2015)

**Reference List Entry:**

Kansas Department of Transportation (KDOT). (2013). Aggregates for on grade concrete (Special provision 07-11004-R08). *Special provision to the standard specifications, 2007 Edition*.

**Narrative In-Text Citation:** Kansas Department of Transportation (2013) or KDOT (2013)

**Parenthetical In-Text Citation:** (Kansas Department of Transportation, 2013) or (KDOT, 2013)

**Reference List Entry:**

KT-22 Kansas Test Method. (2010). Making and curing compression and flexural test specimen in the field. *Kansas Department of Transportation construction manual, Part V*. Kansas Department of Transportation.

**Narrative In-Text Citation:** KT-22 (2010)

**Parenthetical In-Text Citation:** (KT-22, 2010)

**Reference List Entry:**

KTMR-22 Kansas Test Method. (2012). *Resistance of concrete to rapid freezing and thawing*. Kansas Department of Transportation.

**Narrative In-Text Citation:** KTMR-22 (2012)

**Parenthetical In-Text Citation:** (KTMR-22, 2012)

## 2.4 Books

### Reference List Entry:

American Association of State Highway and Transportation Officials (AASHTO). (2016).  
*Manual for assessing safety hardware* (6th ed.).

**Narrative In-Text Citation:** American Association of State Highway and Transportation Officials (2016) or AASHTO (2016)

**Parenthetical In-Text Citation:** (American Association of State Highway and Transportation Officials, 2016) or (AASHTO, 2016)

Chapter of an edited book:

### Reference List Entry:

Horvath, J. S. (2004). Integral-abutment bridges: a complex soil-structure interaction challenge. In *GeoTrans 2004* (pp. 460-469). American Society of Civil Engineers.

**Narrative In-Text Citation:** Horvath (2004)

**Parenthetical In-Text Citation:** (Horvath, 2004)

### Reference List Entry:

Dillard, J. P. (2020). Currents in the study of persuasion. In M. B. Oliver, A. A. Raney, & J. Bryant (Eds.), *Media effects: Advances in theory and research* (4th ed., pp. 115–129). Routledge.

**Narrative In-Text Citation:** Dillard (2020)

**Parenthetical In-Text Citation:** (Dillard, 2020)

Note: Editor information should be included if available.

## 2.5 Websites

### Reference List Entry:

Federal Highway Administration (FHWA). (2020). *What is TSMO?*  
<https://ops.fhwa.dot.gov/TSMO/index.htm>

**Narrative In-Text Citation:** FHWA (2020)

**Paraphrased In-Text Citation:** (FHWA, 2020)

### Reference List Entry:

Federal Emergency Management Agency (FEMA). (2020). *National Incident Management System (NIMS)*. <https://www.fema.gov/national-incident-management-system>

**Narrative In-Text Citation:** FEMA (2020)

**Paraphrased In-Text Citation:** (FEMA, 2020)

When contents of a page are designed to change over time but are not archived, include a retrieval date in the reference:

### Reference List Entry:

U.S. Census Bureau. (n.d.). *U.S. and world population clock*. U.S. Department of Commerce. Retrieved January 9, 2020, from <https://www.census.gov/popclock/>

**Narrative In-Text Citation:** U.S. Census Bureau (n.d.)

**Paraphrased In-Text Citation:** (U.S. Census Bureau, n.d.)

Webpage with an individual author:

### Reference List Entry:

Horovitz, B. (2021, October 19). *Are you ready to move your aging parent into your home?* AARP. <https://www.aarp.org/caregiving/home-care/info-2021/caregiving-questions.html>

**Narrative In-Text Citation:** Horovitz (2021)

**Paraphrased In-Text Citation:** (Horovitz, 2021)

For further help with citing webpages, see: <https://apastyle.apa.org/style-grammar-guidelines/references/examples/webpage-website-references>

## 2.6 Dissertations/Theses

### Reference List Entry:

Huffaker, C. D. (2013). *Behavior and analysis of an integral abutment bridge* (Master's thesis). Utah State University.

**Narrative In-Text Citation:** Huffaker (2013)

**Paranthenetical In-Text Citation:** (Huffaker, 2013)

### Reference List Entry:

Huntley, S. A. (2009). *Field performance and evaluation of an integral abutment bridge* (Doctoral dissertation). University of New Brunswick.

**Narrative In-Text Citation:** Huntley (2009)

**Paranthenetical In-Text Citation:** (Huntley, 2009)

## 2.7 Google Maps/Google Earth

Authors of KDOT research reports often include maps and satellite imagery obtained from Google Maps or Google Earth. These resources must be properly cited in your report and reference list. Proper citation format is as follows:

Google Maps. (n.d.). Kansas State Capitol Visitor Center [Street map]. Retrieved February 16, 2023, from <https://goo.gl/maps/GSwZimma5weHnmfp6>

**Author:** Map Cartographer, in this case Google Maps or Google Earth

**Date:** Online maps created “on the fly” have no official publishing date, so use “n.d.” and include a retrieval date.

**Title:** Include a short description of form enclosed with brackets. If no title is given, include the location, co-ordinates, elevation, or other available information in the description.

**URL:** Stable link to the cited map. A shorter link than the browser address is available when you hit “Share” in Google Maps.

In-text citations should be handled like any other reference type. For example:

**Narrative In-Text Citation:** Google Maps (n.d.)

**Paranthenetical In-Text Citation:** (Google Maps, n.d.)

For further help with citing maps, please see <https://blog.apastyle.org/apastyle/2015/08/how-to-cite-online-maps.html>

## 2.8 Other Reference Examples

- AASHTO T 307-99. (2017). *Standard method of test for determining the resilient modulus of soils and aggregate materials*. American Association of State Highway and Transportation Officials.
- ACI Committee 318. (2019). *Building code requirements for structural concrete (ACI 318-19)*. American Concrete Institute.
- ASTM D2166 / D2166M-16. (2016). *Standard test method for unconfined compressive strength of cohesive soil*. ASTM International. doi: 10.1520/D2166\_D2166M-16, www.astm.org
- Elias, V., Fishman, K.L., Christopher, B.R., & Berg, R.R. (2009). *Corrosion/degradation of soil reinforcements for mechanically stabilized earth walls and reinforced soil slopes (Report No. FHWA-NHI-09-087)*. Federal Highway Administration.
- KTMR-23 Kansas Test Method. (2022). *Wetting and drying test of sand and sand-gravel aggregate for concrete*. Kansas Department of Transportation.
- KT-50 Kansas Test Method. (2022). *Uncompacted void content of fine aggregate*. Kansas Department of Transportation construction manual, Part V. Kansas Department of Transportation.
- National Center for Statistics and Analysis. (2019). *Rural/urban comparison of traffic fatalities: 2017 data (Traffic Safety Facts, Report No. DOT HS 812 741)*. National Highway Traffic Safety Administration.
- Transportation Research Board (TRB). (2016). *Highway capacity manual: A guide for multimodal mobility analysis (6th ed.)*.
- Zegeer, C. V., & Council, F. M. (1995). Safety relationships associated with cross-sectional roadway elements. *Transportation Research Record, 1512*, 29–36.



## Chapter 3: Accessibility

According to Federal rule, as of March 23, 2018, all public facing PDFs must be accessible. As a result, report PDFs must be accessible for inclusion in the National Transportation Library's (NTL) Repository & Open Science Access Portal (ROSA P).

For research reports, accessibility refers to efforts to accommodate all potential readers. This includes those with disabilities who may rely on the use of Assistive Technology such as text-to-speech converters.

Before any reports are published, it is our responsibility to check our documents for accessibility barriers. To that end, there are two new requirements:

1. All figures must be converted to a .jpeg or .png file, with no overlaying shapes or other elements.
2. Alternative (alt) text must be added to all figures.

For more information about accessibility, see:

<https://transportation.libguides.com/accessibility>

<https://webaim.org/techniques/alttext/>

<https://www.w3.org/WAI/tutorials/images/tips/>

<https://www.fhwa.dot.gov/508/>

<https://www.section508.gov/>

### 3.1 Complex Figures and Charts

Any figures comprised of complex, multi-layered graphics (including charts) should be converted into a .jpeg or .png file before submission. This will prevent any accidental changes or omission of lost elements in your figures. It also simplifies the addition of alternative text and improves the accessibility of the final PDF.

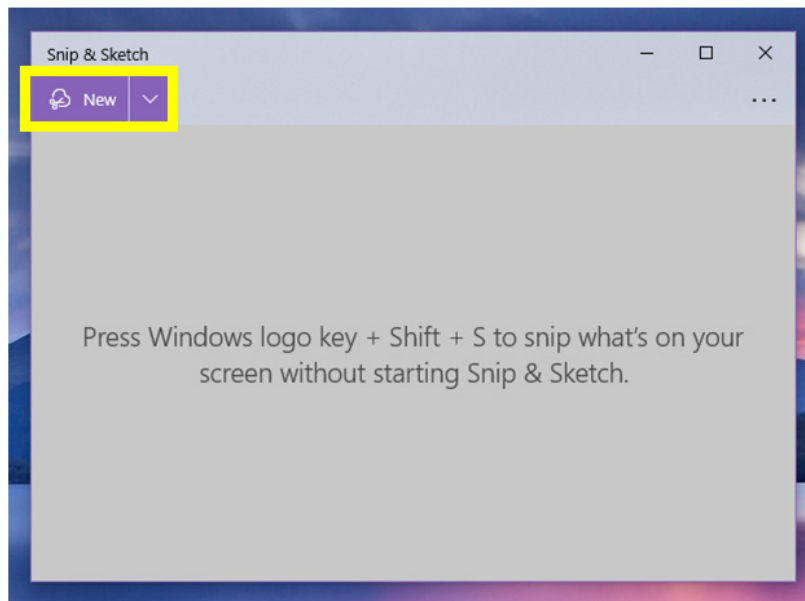
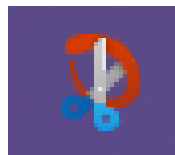
There are a number of ways to meet this requirement. If you've created your figures in another program, such as PowerPoint, you can export them to an image file before they're inserted in the Word document. Please utilize whatever method you prefer.

To create an image of a chart in Word:

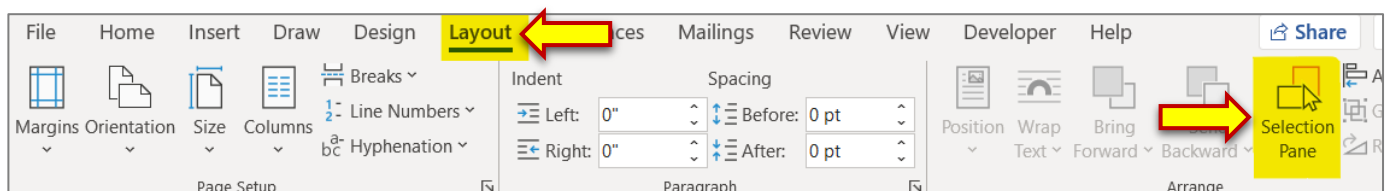
1. Click the outside edge of your chart.
2. Choose Copy.
3. De-select the original chart by placing your cursor on another line.
4. Right-click and choose Paste as picture.
5. Delete the original chart.

For a quick and easy solution, you can also use the Snip & Sketch tool to save a screenshot to replace the multi-layered image.

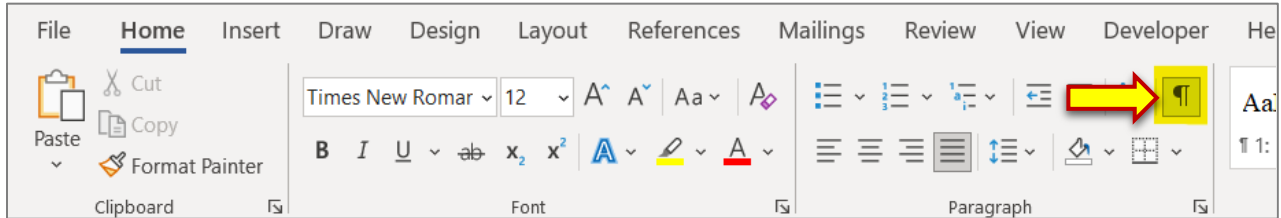
Snip & Sketch Taskbar icon:



Note that you can use the Selection Pane to check the number of objects on each page. This will help identify figures comprised of multiple objects that need to be combined into one image.



Before taking a screen capture of your figures, be sure to hide all paragraph formatting first. You can toggle between showing and hiding paragraph formatting by pressing Ctrl+Shift+8, or by clicking the button on the Home tab shown below.

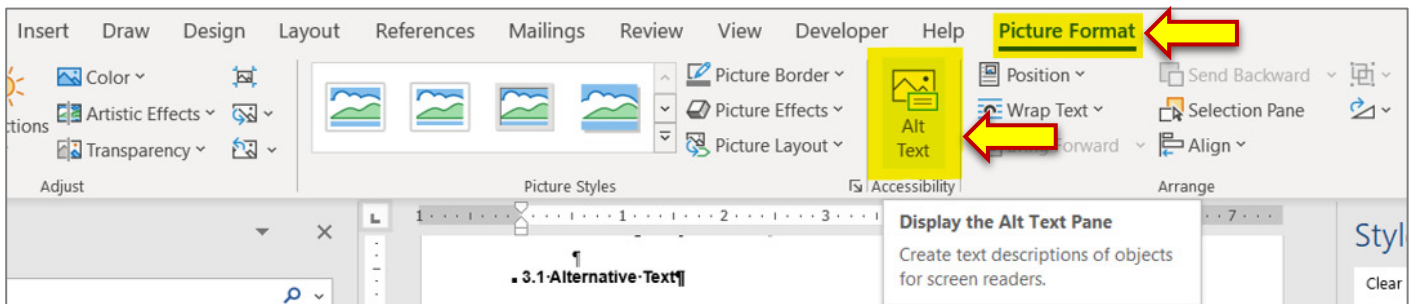


Make sure Word zoom is set to 100% for the best image quality.

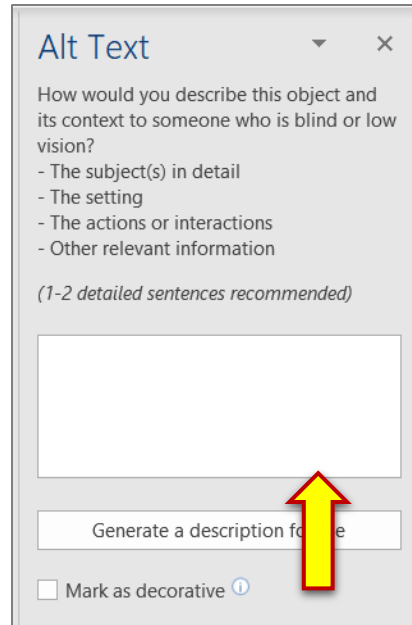
### 3.2 Alternative (Alt) Text

Alternative text must be written out for every figure or image within the report. This alt text will serve as a text-to-speech aid for the visually impaired. Alt text should convey the meaning of an image or other non-text element. Data represented on charts, diagrams, and illustrations should be briefly described.

To add alt text, click on any figure in your Word document. This will pull up the “Picture Format” tab on the main Ribbon. On the Picture Format tab, you’ll find the Alt Text button:



Click to open the Alt Text pane. Alternative text descriptions should be added to the text box for each figure in your report.



With the Alt Text pane open, you can click on any image to find what, if any, alt text has been written for that figure. The Alt Text pane will remain open until the user clicks on the X in the corner.

### 3.3 Accessible Use of Colors

Figures should use color combinations that provide a sufficient degree of contrast and no reliance on color alone to convey meaning.

For further reading:

<https://apastyle.apa.org/style-grammar-guidelines/tables-figures/colors>

## Chapter 4: Usage Items

### 4.1 Numbers

Always spell out numbers beginning a sentence, or recast the sentence so that the number does not appear at the beginning.

Spell out numbers zero through nine; use numerals for numbers 10 and greater. However, always use numerals to express a quantity if the number immediately precedes a unit of measurement.

Use a space, not a hyphen, between the numeral and the abbreviation or symbol. The exception to this rule is in the case of measures of angles, in which case no space is used:

4.5 ft, 12 °F, but 45° angle

For expressions including two or more quantities, do not repeat the abbreviation or symbol:

16-30 kHz                      0.3, 1.5, and 3.0 mg/dl

APA notes that units of measurement used without a numeral should always be spelled out.

See also: <https://apastyle.apa.org/instructional-aids/numbers-statistics-guide.pdf>

### 4.2 Abbreviations, Acronyms, and Initialisms

Terms, names of organizations, etc., should be spelled out the first time they are used in the abstract and in the body of the report. The acronym, initialism, or abbreviation follows in parenthesis in the text and in the abstract. The acronym, initialism, or abbreviation can be used in the subsequent text in the abstract and in the text of the report.

Units of measure should be spelled out upon the first usage in the abstract and in the body of the report, with the abbreviation following in parentheses. The unit of measure may be abbreviated in subsequent uses. Inches should always be spelled out.

Omit the period after every technical abbreviation.

See also: <https://apastyle.apa.org/instructional-aids/abbreviations-guide.pdf>

### **4.3 Capitalization Style for Titles, Chapter and Section Headings, Figure and Table Captions**

- Capitalize all major words in titles of books and articles within the body of the paper.
- Conjunctions, articles, and short prepositions are not considered major words; however, capitalize all words of four letters or more.
- Capitalize all verbs (including linking verbs), nouns, adjectives, adverbs, and pronouns.
- When a capitalized word is a hyphenated compound, capitalize both words.
- Capitalize the first word after a colon or a dash in a title.

## References and Resources

Alred, G. J., Brusaw, C. T., & Oliu, W. E. (2015). Handbook of technical writing (11th ed.).

American Psychological Association. (2019). Publication manual of the American Psychological Association (7th ed.).

Shuler, L., & Vanlandingham, D. (2017). Turner-Fairbank Highway Research Center R&D communications reference guide (Report No. FHWA-HRT-15-058).

<https://www.fhwa.dot.gov/publications/research/general/15058/15058.pdf>

APA Style and Grammar Guidelines:

<https://apastyle.apa.org/style-grammar-guidelines>

APA Style Reference Examples:

<https://apastyle.apa.org/style-grammar-guidelines/references/examples>

APA Style Handouts and Guides:

<https://apastyle.apa.org/instructional-aids/handouts-guides>

APA Style Common Reference Examples Guide:

<https://apastyle.apa.org/instructional-aids/reference-examples.pdf>

APA Style Mechanics of Style:

<https://apastyle.apa.org/style-grammar-guidelines/mechanics-style>

APA Style Grammar:

<https://apastyle.apa.org/style-grammar-guidelines/grammar>