

Creating accessible digital content



28/01/2025

What is digital accessibility?



Universidad
de Alcalá



Digital⁴
Sustainability
Skills for Europe's Twin Transition



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What is digital accessibility?

- Set of principles and techniques that must be respected when designing, building, maintaining and updating digital resources and services (documents, videos, video games, websites, apps, ...), to ensure equality and non-discrimination in access for users, in particular people with disabilities and the elderly (*RD1112/2018*).
- Some 1.3 billion inhabitants, 16% of the world's population, with some form of disability (1 in 6 people) (*WorldHealth Organization, 2023*).



The screen reader...

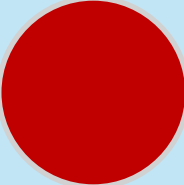
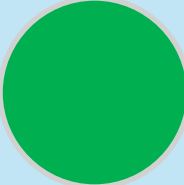
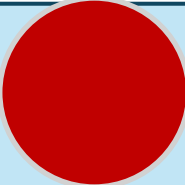
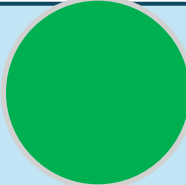
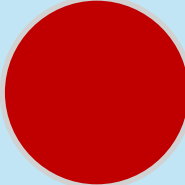
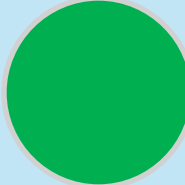



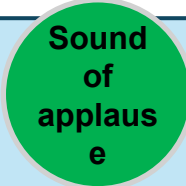


¿Podrías visualizar correctamente
el documento en tu cabeza?



How can accessibility problems be avoided?

UNIVERSAL DESIGN



Visual impairment	Hearing impaired	Motor disability
<ul style="list-style-type: none">Pressing the green circle starts the gamePressing the red circle cancels the game  	<ul style="list-style-type: none">If you press the circle with applause sound starts the gamePressing the circle with explosion sound cancels the game  	<ul style="list-style-type: none">Pressing the green circle starts the gamePressing the red circle cancels the game  
<ul style="list-style-type: none">Pressing the green circle starts the gamePressing the red circle cancels the game  	<ul style="list-style-type: none">If you press the circle with applause sound starts the gamePressing the circle with explosion sound cancels the game  	<ul style="list-style-type: none">Pressing the green circle starts the gamePressing the red circle cancels the game  

Assistive technologies used by users with disabilities

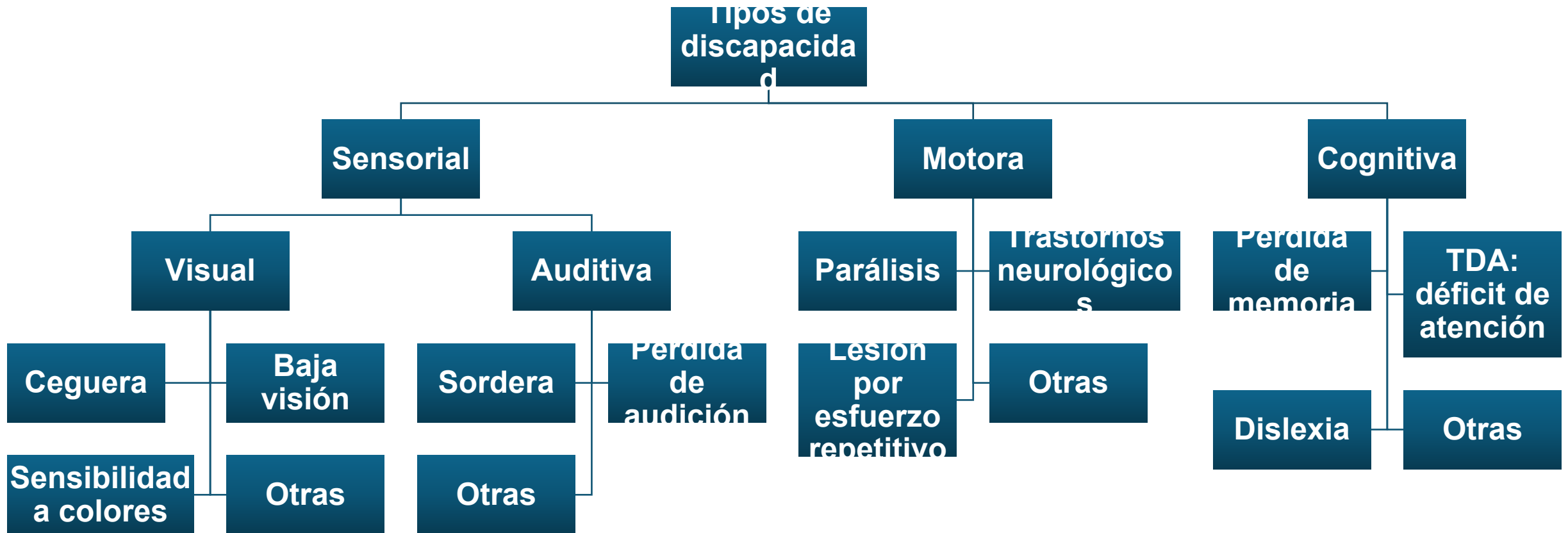
- Software or hardware products that allow disabled people access to function or feature that they could not otherwise use.
- Visual impairment
 - Screen reader, magnifier, zoom, Braille keyboard/display, assistant (voice access)
- Hearing impaired
 - Subtitles, Visible and Vibratory Alerts, Amplifier
- Motor disability
 - Pushbutton, keyboards and special mice, access by facial gestures

Criteria for digital accessibility

W3C Principles ☾ [WCAG 2.2](#) (Web Content Accessibility Guidelines, published 2023 and **currently referenced**)

- 1: Perceivable - The user can perceive the information.
- 2: Operable – User can easily operate to user interface and information navigation.
- 3: Understandable – The information and operation of the user interface are understandable.
- 4: Robust - Content robust enough to be reliable in various environments (e.g. browsers), including technical aids.

Profiles of users with disabilities



Regulatory context analysis

- Some countries already had prior regulation (Spain, Italy, etc.) in the WCAG: Law 4/2007, Law 56/2007, Law 7/2010, Law 26/2011, etc.
 - Main focus on ICT professionals for the web and apps
- Examples in Spain on education: previous existence of indications on accessibility in teaching, accessible exams or adapting content for the disabled

Digital accessibility regulations in the EU

- Royal Decree 1112/2018: Transposition of Directive (EU) 2016/2102
 - Accessibility of websites and apps and all content: web pages, documents, videos, forms, ..
- Obliges accessibility of digital information, web and apps:
 - In AAPP
 - Those who receive public funding for their design or maintenance.
 - Public service providers, by concession or contract: in particular, educational, health, cultural, sports and social services.
 - Private educational, training and university centres supported, in whole or in part, with public funds.

EU Directive 2016/2102

Office files published by the public sector must be accessible. Also all new public websites.

Non-public intranets and extranets must be accessible September 23, 2019

Recorded media files must be accessible. Legacy websites prior to 23 September 2018 must be accessible.

Public sector apps must be accessible

Websites and business apps according to directive 2019/882 June 28, 2025

December 22, 2016, September 23, 2018

December 23, 2018

September 23, 2020

June 23, 2021

June 28, 2025

Directive 2016/2102 enters into force

States should have implemented directive-based legislation and infrastructure for oversight

Finalised model accessibility statement, technical requirements, monitoring methods and national reports to the Commission

Since 2021, States are required to report annually to the Commission on the state of accessibility

Clarifications in Spain

- Royal Decree 1112/2018: effective from 20 September 2018
- Office files published before the RD are excluded, except those of active administrative tasks
- “Third-party content that is not funded, developed or controlled by the obligated party” is excluded.
 - **Therefore, those financed should also comply with: subsidised projects**



More regulations

- DIRECTIVE (EU) 2019/882 on accessibility requirements for products and services. New spotlights:
 - Companies must comply with their products:
 - Computers and self-service (TPV, ATMs, IT consumption and communications, etc.)
 - Communications and audiovisual, transport, banking, books and e-commerce
 - Public Administrations must enforce in procurements and grants
- Transposed in Spain: Law 11/2023
- Accessibility reports and accessibility information
 - Sometimes very focused on technicians and web design
- Our analysis experience:
 - AAPP websites well accessible: municipalities, deputations, etc.
 - Documents: very few accessible
- **Report to the European Commission every 3 years**
 - <https://digital-strategy.ec.europa.eu/en/library/web-accessibility-directive-monitoring-reports>

In short...

- Digital accessibility:

- Extent to which products, systems, services, environments and facilities can be used by **users with the broadest spectrum of needs**, characteristics and capabilities to achieve the goals for which they have been developed (UNE-EN 301-549)

- Regulation:

- Directive EU 2016/2102 → transposed RD 1112/2018
- Directive EU 2019/882 → Transposition Law 11/2023

Annual report for
the European
Commission

- Standards and criteria

- EN 301-549 (Spanish UNE-EN 301-549)
- W3C WCAG 2.2 (de facto standard)
 - Principles grouped into levels A, AA, AAA

Legislation requires
compliance with
AA level

Online documents

- Unreachable number of documents for technicians
- Examples of the number of documents on websites (analysis 2022):

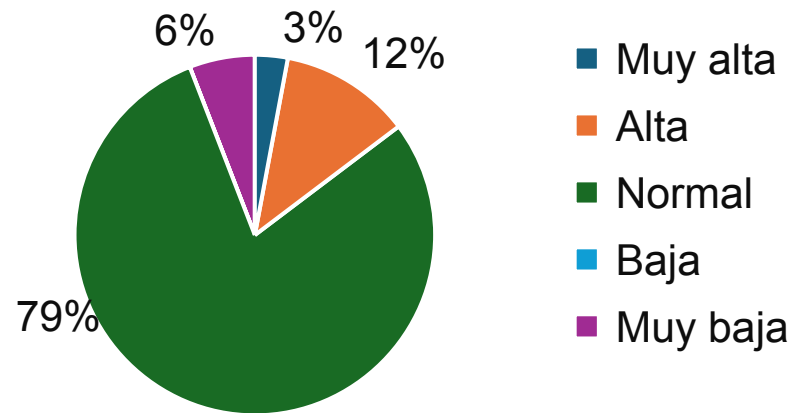
Ayuntamiento ciudad grande	Ayuntamiento ciudad mediana	Universidad pública grande	Universidad pública mediana	Ministerio	Organismo público
• 58.700 docs	• 2.490 docs	• 88.100 docs	• 12.300 docs	• 19.800 docs	• 13.400 docs

- Need to involve content creators and managers
 - Skills and awareness

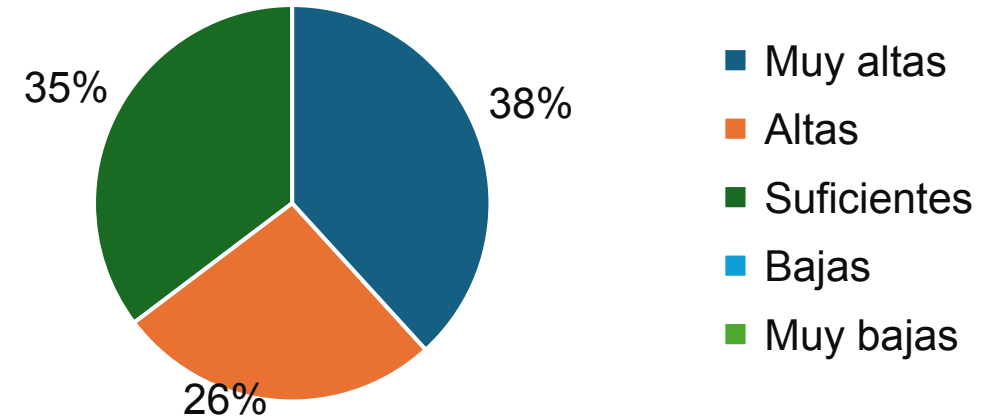
- Erasmus+ KA-2 project: We All Make Digital Information Accessible:
 - <https://wamdia.eu/es/>
- Big survey: 525 people + 28 interviews, 16 countries
 - Education 38% and AAPP 44%, women 60% and men 40%
 - Correct accessibility concept: 55%
 - Ease of access and supported formats: 35%, Free access to data and information: 9%
 - Regulation:
 - 42% did not or did not know; 58% yes there is although 51% did not know details

Results: Is it hard to learn?

Difficulty learning how to create accessible digital files



To what extent were your previous skills sufficient?

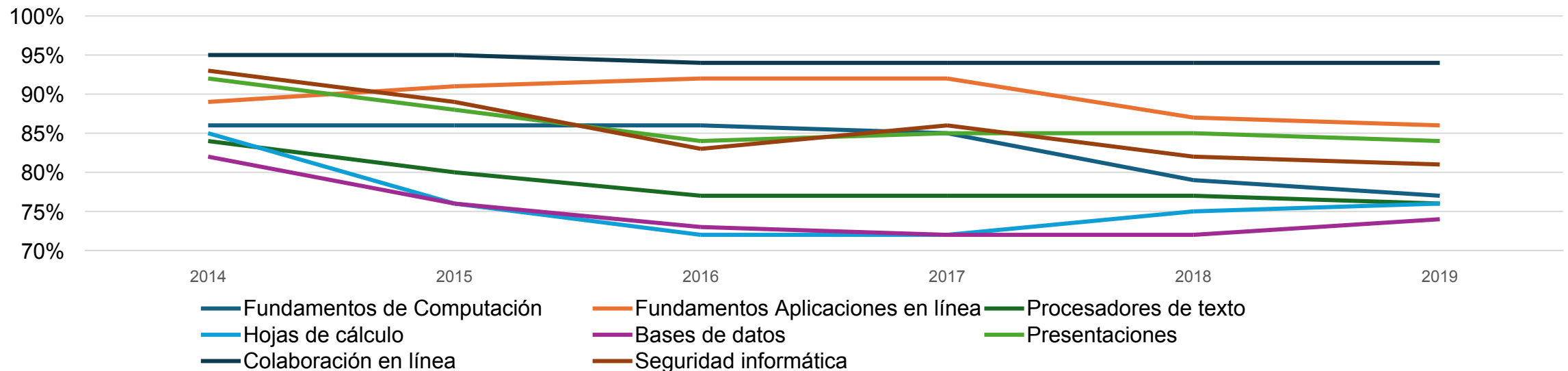


What surprised you?

- Existence of legislation on digital accessibility: 78%
 - It's an obligation, not an option
- Check that any user can contribute to digital accessibility and with commonly used tools: 68%

Digital skills

- Difficult to progress if digital skills not previously insured
- What you think you are capable of is far superior to reality
- Skills do not improve overall due to lack of training and reliable contrast



Thanks to WAMDIA, other opportunities

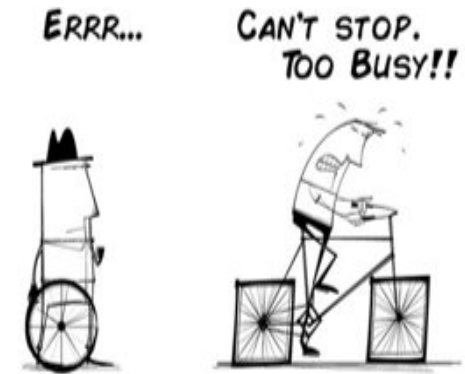
- <https://esvial.cc.uah.es/ecdl/accesibilidad-digital/es/>



Some practical aspects

Accessibility in documents

- Document title (metadata)
- Title Structure with Word Styles
- Font and paragraph format, etc.
- Images with title, alternative text and in line with the text
- Tables for structured data:
 - Header row (repeated if necessary)
 - Regular structure
- Links that identify the destination
- You don't have to reinvent the wheel! **Use the functi**
 - E.g. Create indexes with the option “Table of Contents”
 - E.g. Page or section breaks, not blanks



Document title

- In metadata and significant

Título	Plantilla accesible
Etiquetas	Agregar etiqueta
Comentarios	Agregar comentarios

Información

Título del documento

Descargas

Cargar Compartir Copiar ruta de acceso Abrir ubicación de archivo

Proteger documento
Controle el tipo de cambios que los demás pueden hacer en este documento.

Inspeccionar documento
Antes de publicar este archivo, tenga en cuenta que contiene:
▪ Propiedades del documento y nombre del autor

Historial de versiones
Ver y restaurar versiones anteriores.

Propiedades

Tamaño	11,5KB
Páginas	1
Palabras	0
Tiempo de edición	0 minutos
Título	Agregar título
Etiquetas	Agregar etiq
Comentarios	Agregar com

Fechas relacionadas

Última modificación	Hoy, 9:35
Fecha de creación	Hoy, 9:35
Última impresión	

Título
Agregar título

Header levels

- Define the structure of the document
 - Visually and internally → WE CREATE A LABEL STRUCTURE
- Help navigation through the document
- Helps consistency in format
- Facilitates other aspects, e.g. creating indic
- New and/or customizable can be created



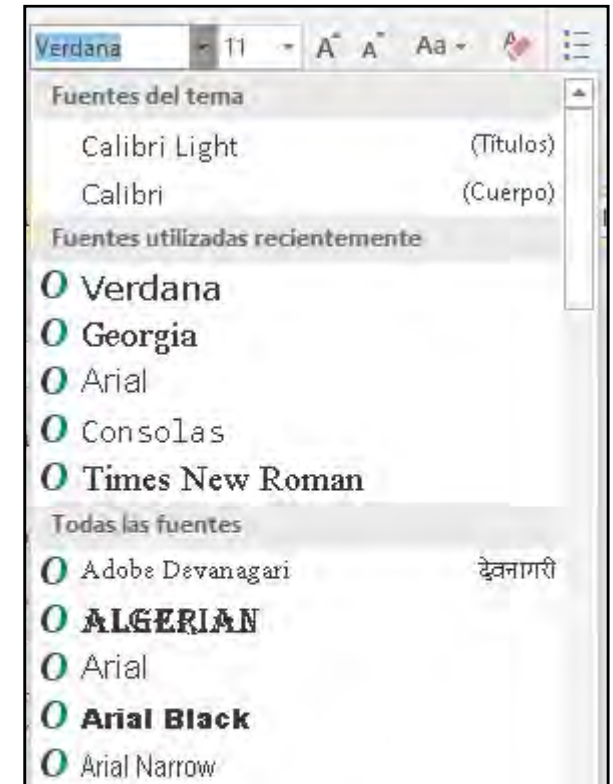
Font type and size

- For digital documents: best source WITHOUT serif

Fuente con serifa

Fuente sin serifa

- Examples of non-serif fonts
 - Calibri, Arial, Verdana, ...
- Examples of fonts with serif
 - Times New Roman, Cambria, Georgia, ...
- Large size, at least 12 points
 - It will depend on the chosen source



Alignment and interlining

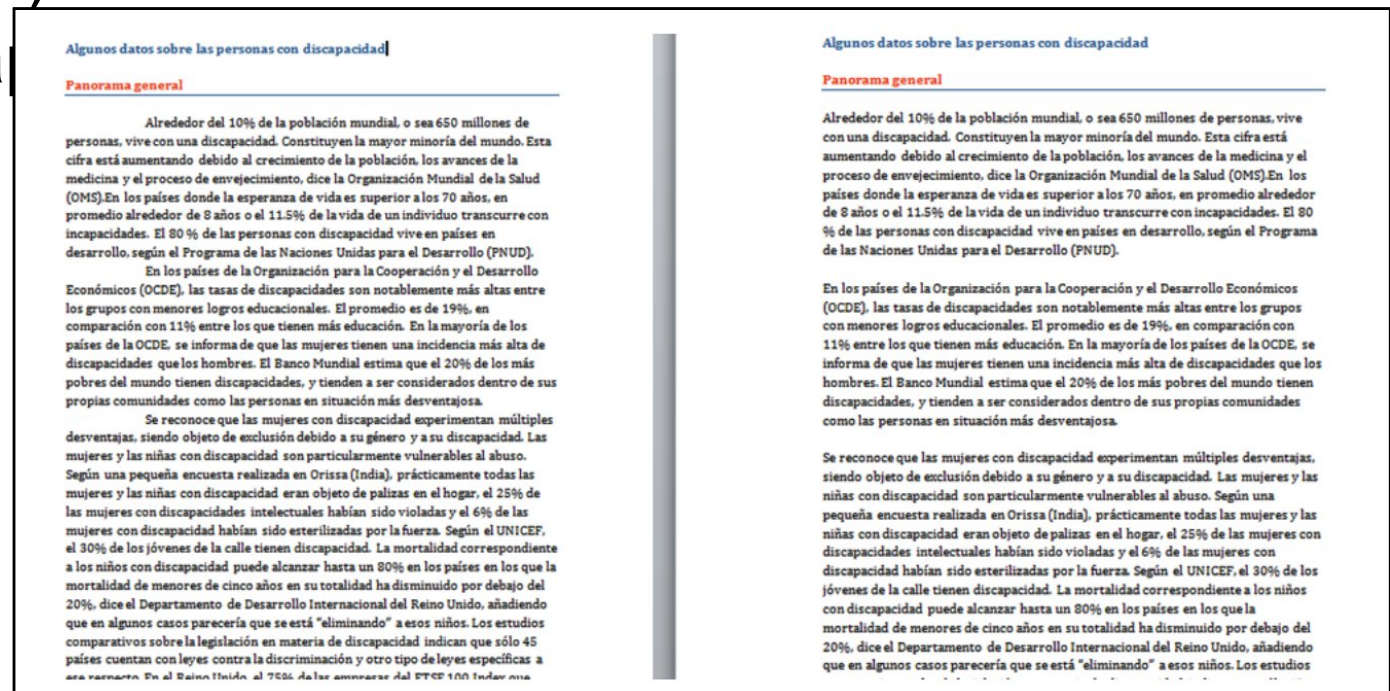
- Preferable left-aligned text
- Avoid irregular spaces between words
- Wide interlining (at least 1.15)
- Separation between paragraphs
 - Greater than between lines
 - e.g.: After 8 – 12 points

- **IMPORTANT**

Do not format with spaces
blank or line breaks!

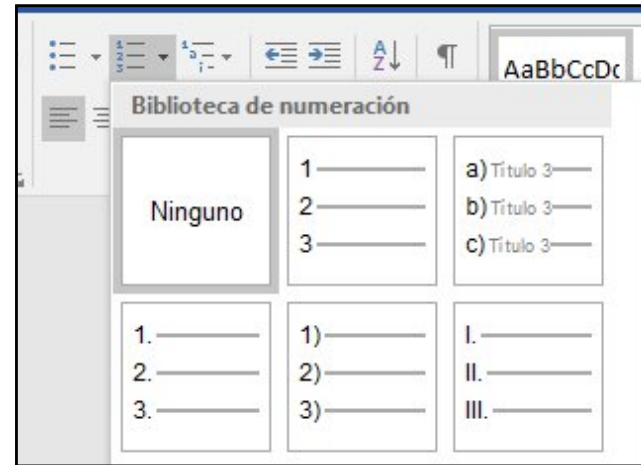
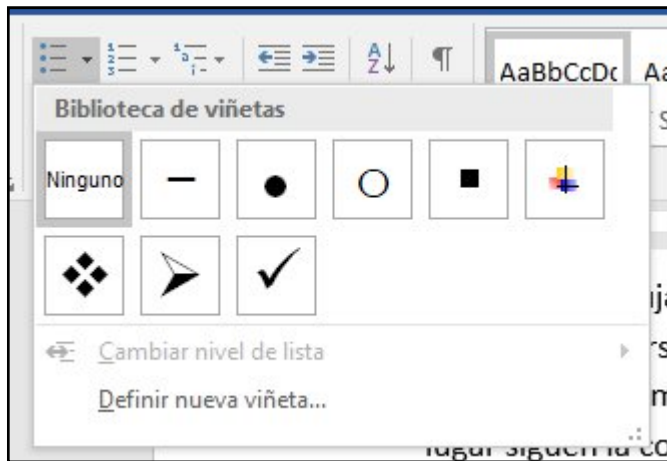


left Lorem ipsum, dolor sit amet, consectetur adipiscing elit.	center Lorem ipsum, dolor sit amet, consectetur adipiscing elit.
justify Lorem ipsum, dolor sit amet, consectetur adipiscing elit.	right Lorem ipsum, dolor sit amet, consectetur adipiscing elit.

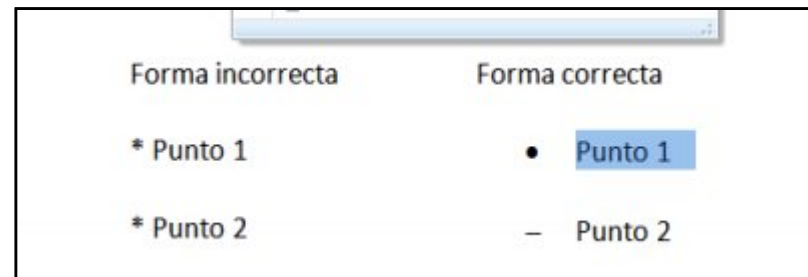


Lists

- Using the options “vignettes” or “enumerations” → Create structure



- Avoid simulated lists with hyphens, asterisks, etc.



Links

If I need to see the full URL, add context before

- Clearly identify the destination of the link
- Avoid using full URLs
- Avoid general or vague phrases

Forma incorrecta:

Una vez finalizado el plazo de preinscripción, la Universidad hará público un listado citando a los alumnos con día y hora para que acudan a matricularse.

[+ info](#)

[Más...](#)

[Información](#)

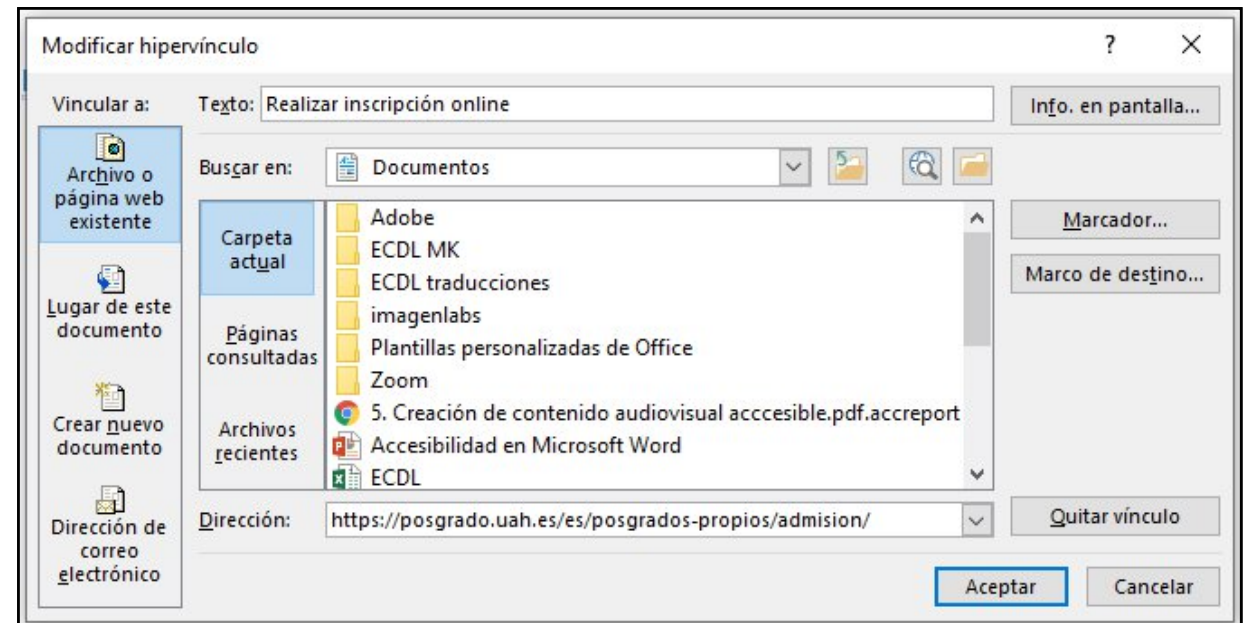
[Inscripción](#)

Forma correcta:

Una vez finalizado el plazo de preinscripción, la Universidad hará público un listado citando a los alumnos con día y hora para que acudan a matricularse.

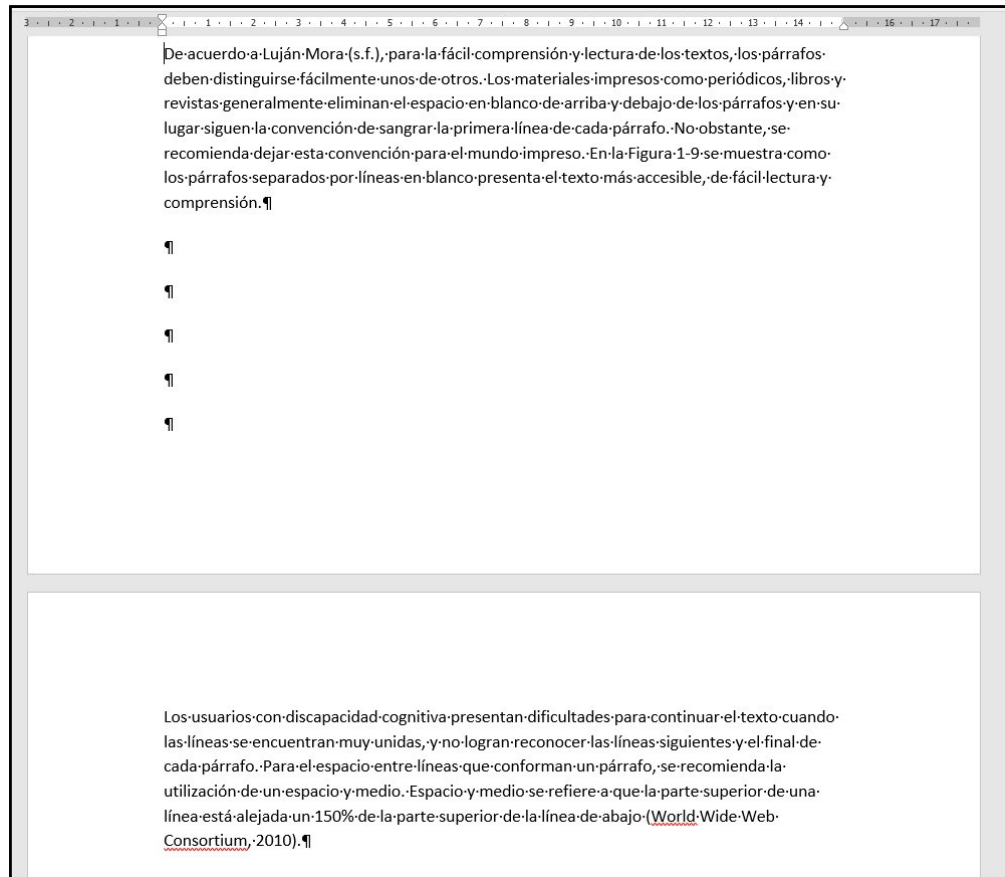
[Más información sobre el proceso de inscripción.](#)

[Realizar la inscripción online](#)



Page breaks

Non-accessible option, line breaks



De acuerdo a Luján Mora (s.f.), para la fácil comprensión y lectura de los textos, los párrafos deben distinguirse fácilmente unos de otros. Los materiales impresos como periódicos, libros y revistas generalmente eliminan el espacio en blanco de arriba y debajo de los párrafos y en su lugar siguen la convención de sangrar la primera línea de cada párrafo. No obstante, se recomienda dejar esta convención para el mundo impreso. En la Figura 1-9 se muestra como los párrafos separados por líneas en blanco presenta el texto más accesible, de fácil lectura y comprensión. ¶

¶

¶

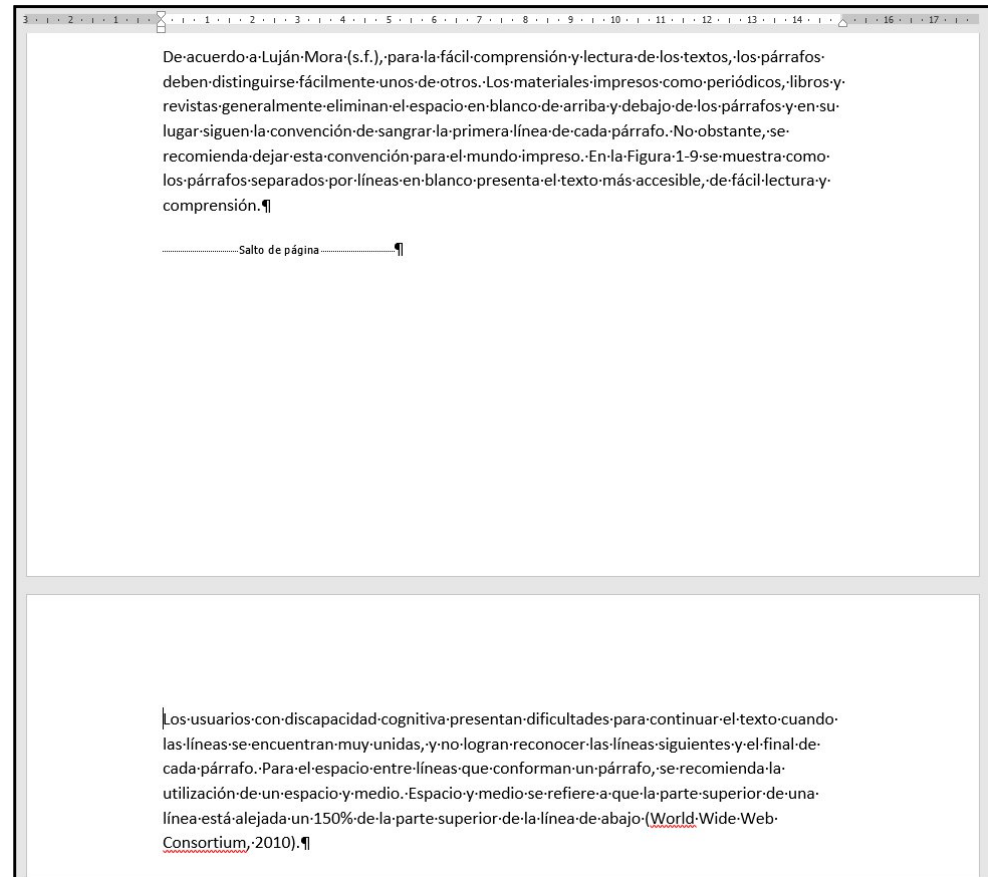
¶

¶

¶

Los usuarios con discapacidad cognitiva presentan dificultades para continuar el texto cuando las líneas se encuentran muy unidas, y no logran reconocer las líneas siguientes y el final de cada párrafo. Para el espacio entre líneas que conforman un párrafo, se recomienda la utilización de un espacio y medio. Espacio y medio se refiere a que la parte superior de una línea está alejada un 150% de la parte superior de la línea de abajo (World Wide Web Consortium, 2010). ¶

Accessible option, page breaks



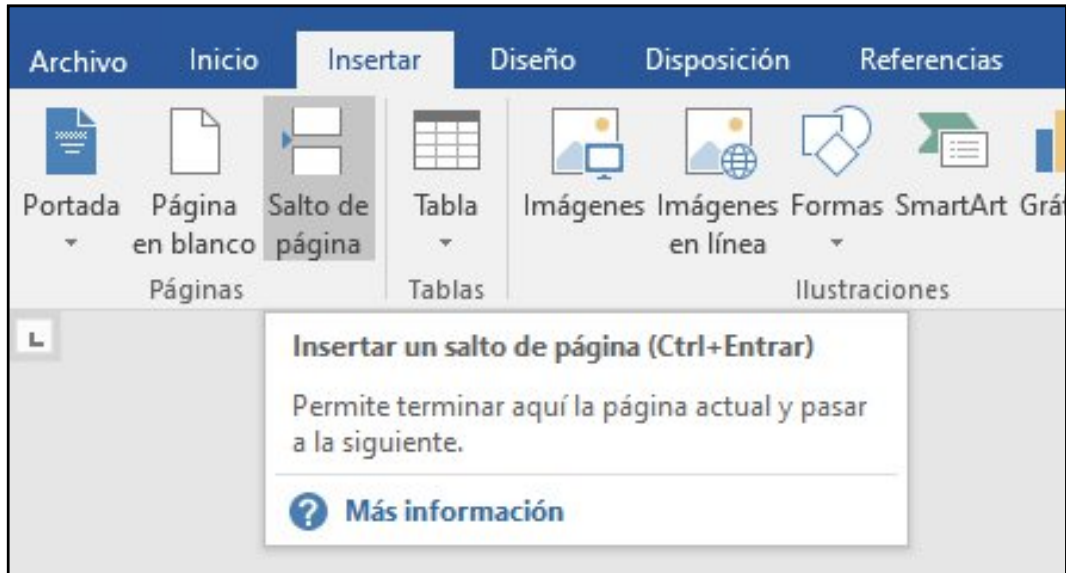
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..... Salto de página ¶

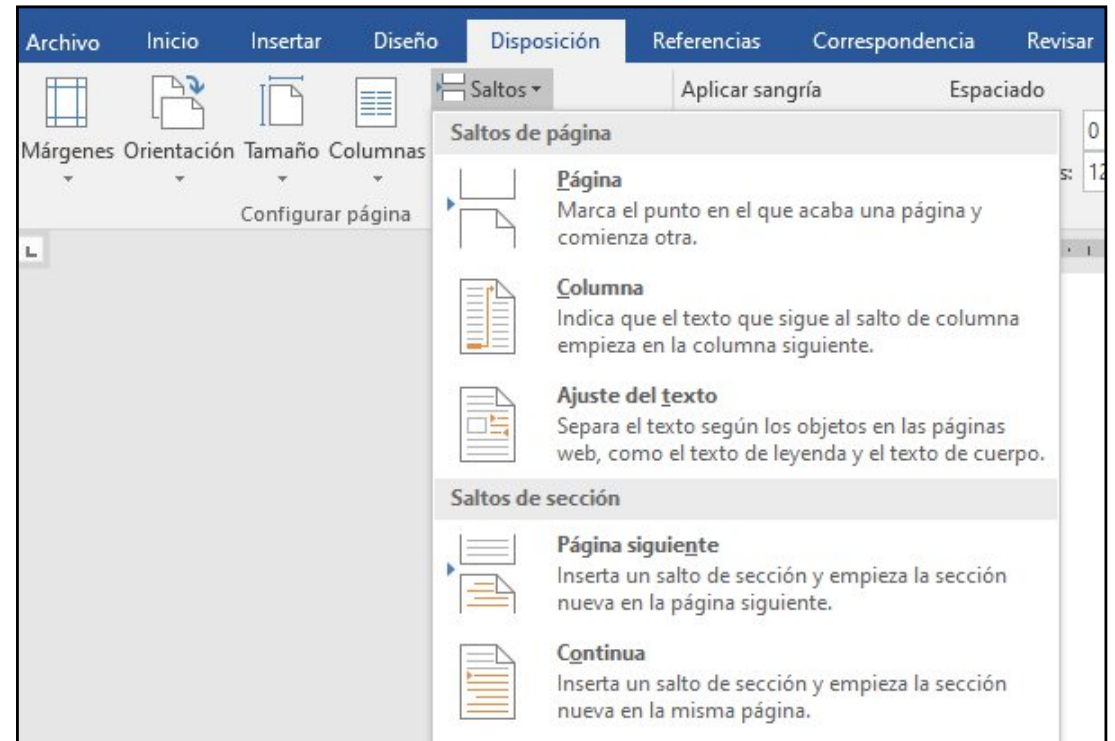
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Add page or section breaks

Option 1: From the "Insert" tab,
Page break

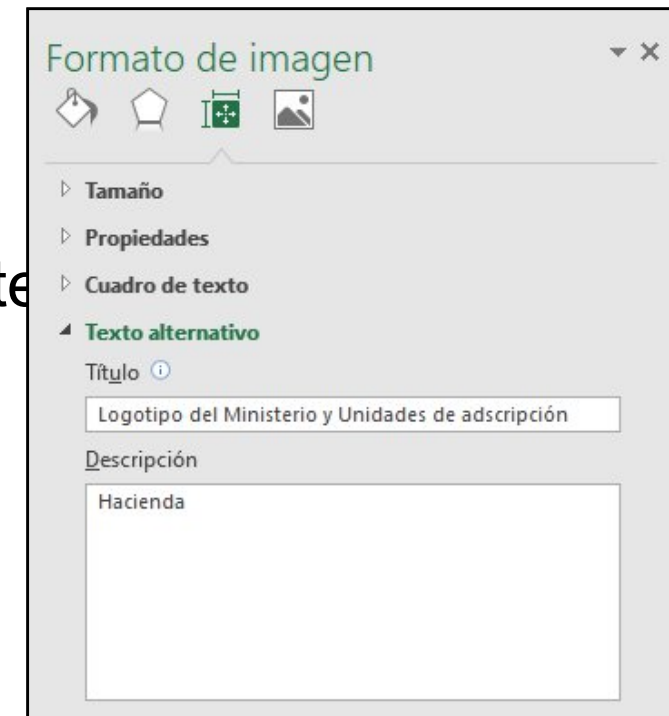


Option 2: From the 'Disposición' tab,
Jumps



Non-textual content. Images

- Images, graphics, etc. **always with alternative text in DESCRIPTION**
- **Objective:** describe the information to be conveyed with that content.
 - Is it just decorative? → Indicate it
- Relevance and adjustment of the alternative text
 - Content and purpose: concise and unambiguous (1-2 sentences)
 - Do not repeat context (photo of, graph of,...)



Alternative texts

- There is no single valid text for a graphic or image
- It depends on the context and the audience to whom it is addressed



Contexto: imagen en la portada de un libro



TA: imagen decorativa de la Universidad de Alcalá

Contexto: Clase de arquitectura

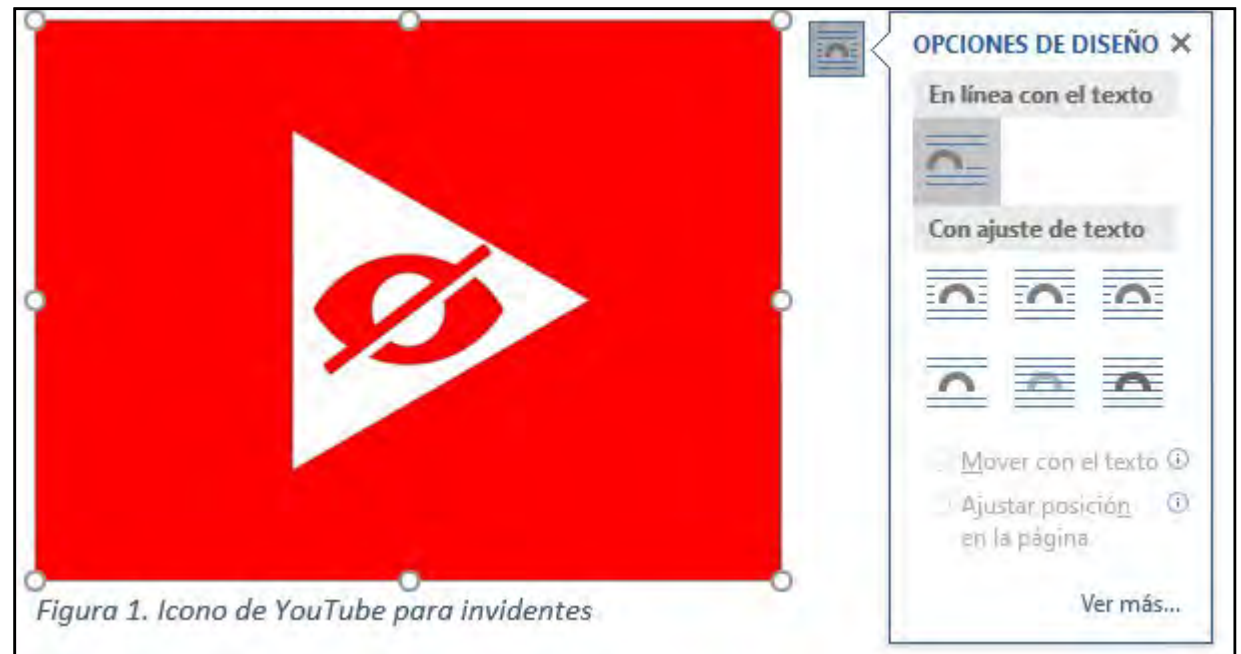


TA: con detalles de su estilo artístico, materiales, etc.

What do we want the user to understand about that element?

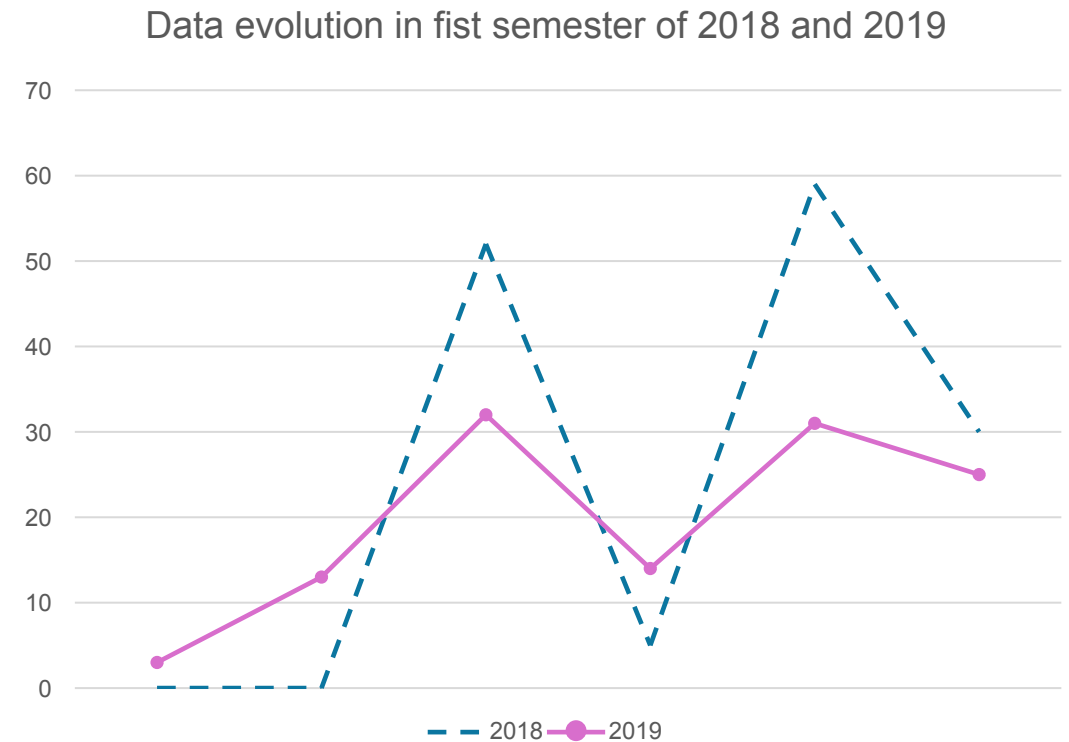
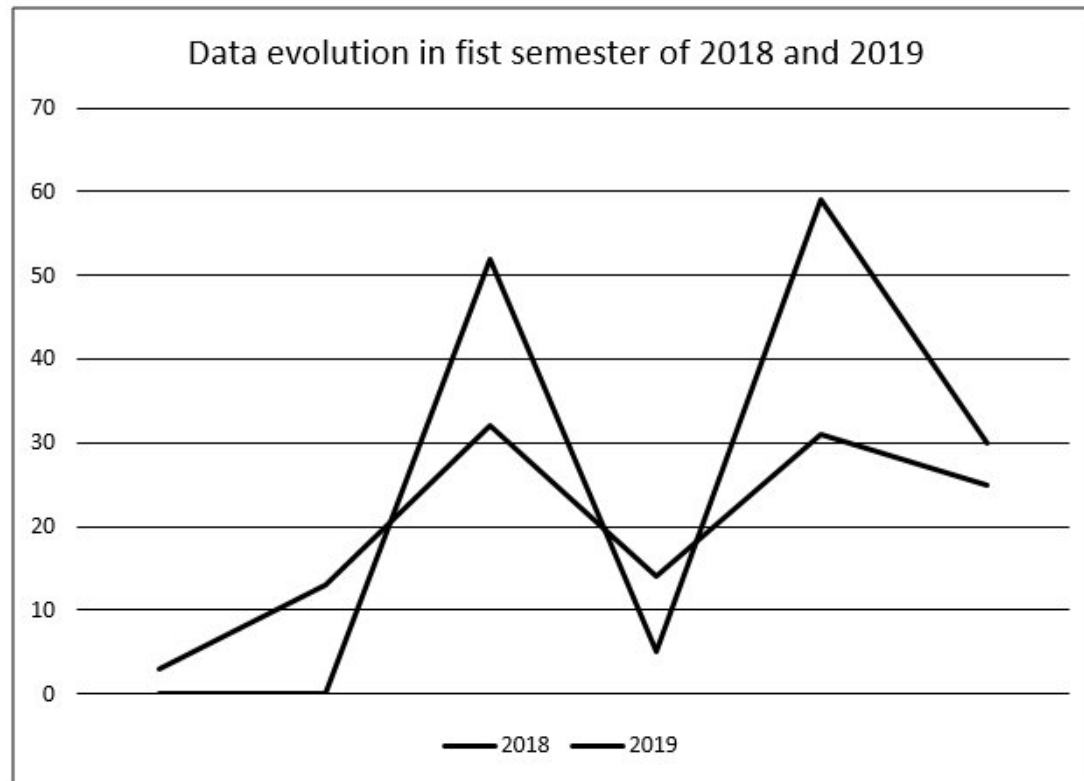
Images. More requirements

- Alternate text
- In line with the text
 - Essential to ensure that the reading order is consistent
- Identification title
- Contrast and use of color
 - Colour Contrast Analyzer
 - Care in graphics

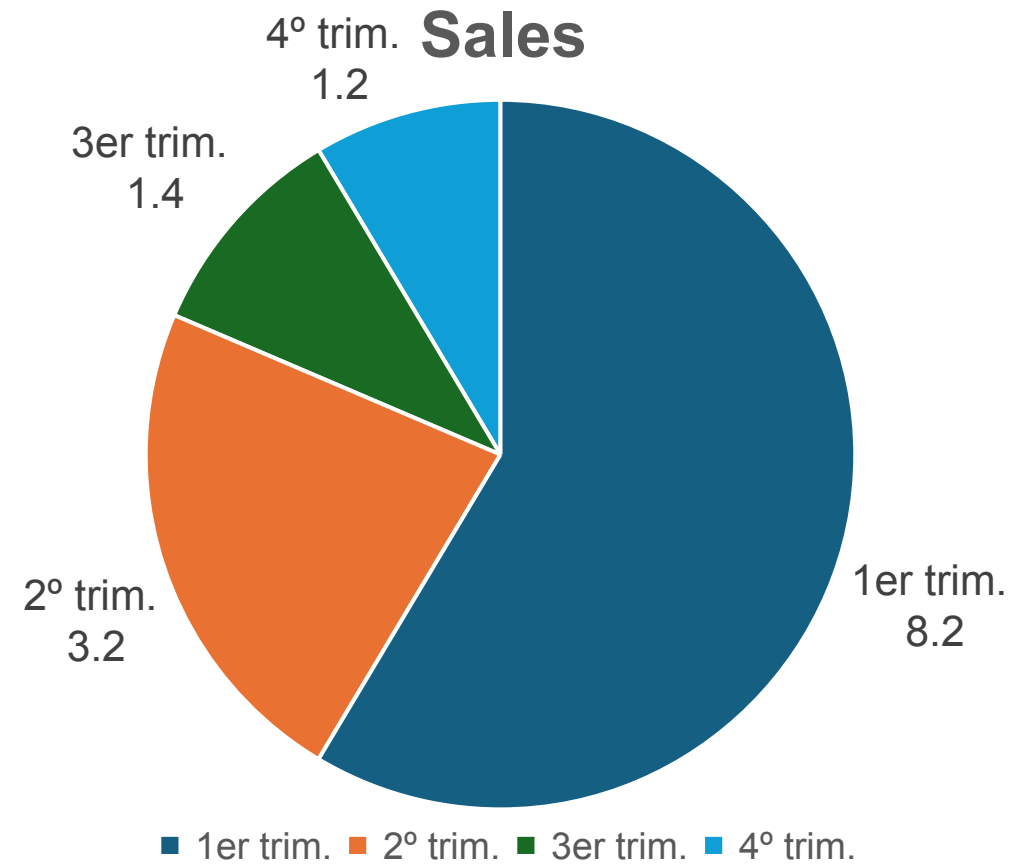
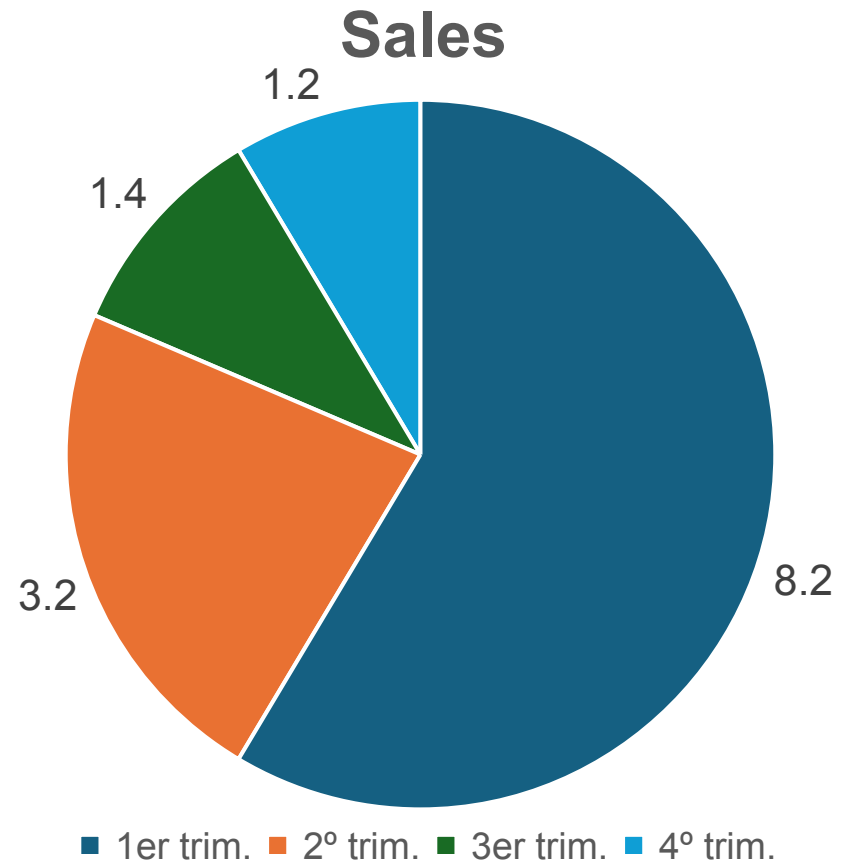


Semantic use of color. Charts

Watch out for graphics! – Use of colour in the legend



More examples. Sector chart

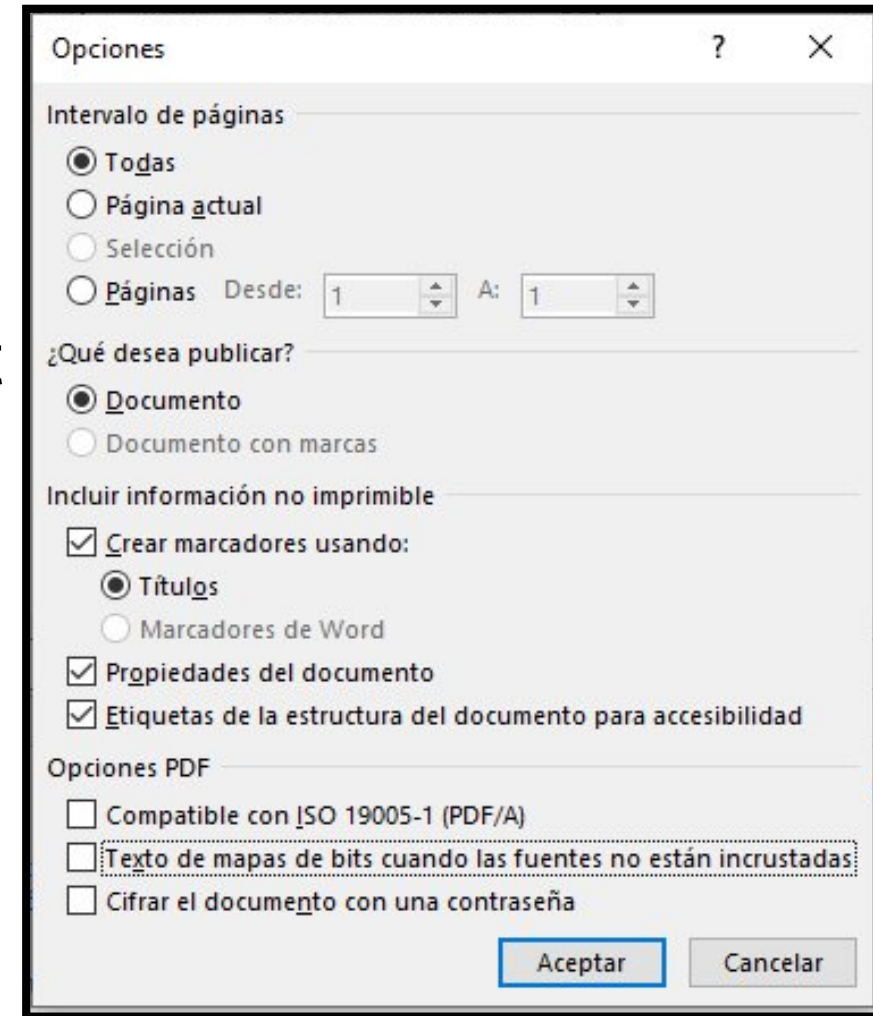
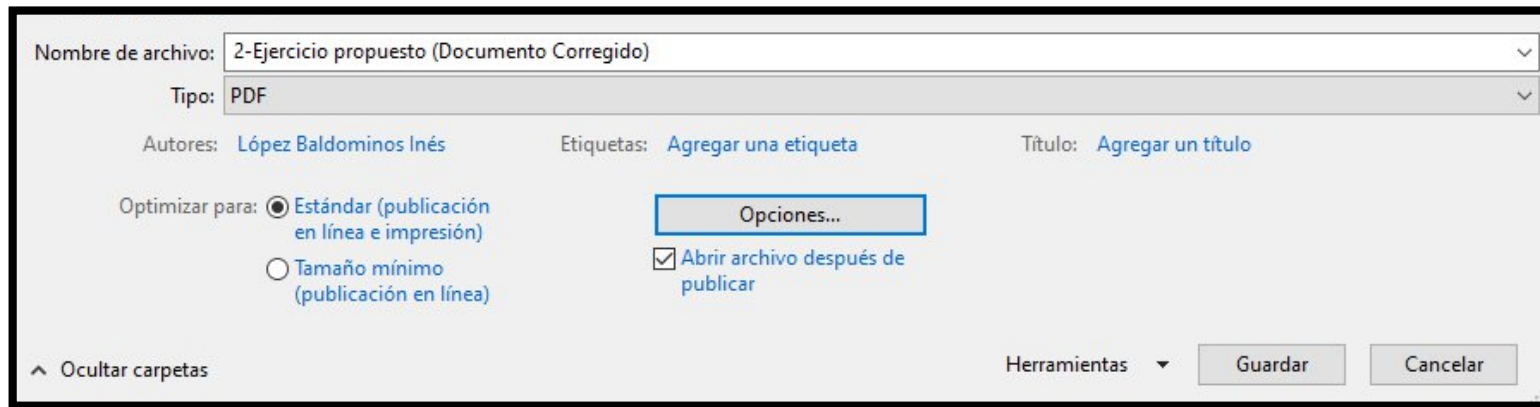


Tables. Do you need alternative text?

- They cause a lot of problems for people who use screen readers
- Technically they are not a non-textual element
 - Screen readers DO read the contents of each cell
- According to the regulations, they do not need alternative text
- Problem, how do you check accessibility?
 - Some automatic testers do ask for it
 - MS Office (depending on version)
 - Adobe PDF (table summary)
 - Word TA is not exported as PDF Summary

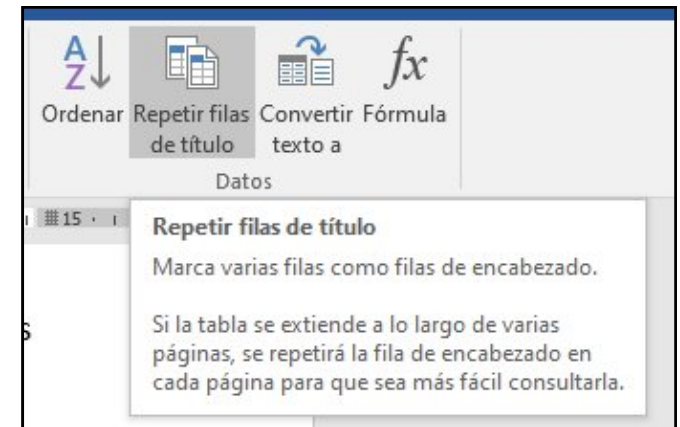
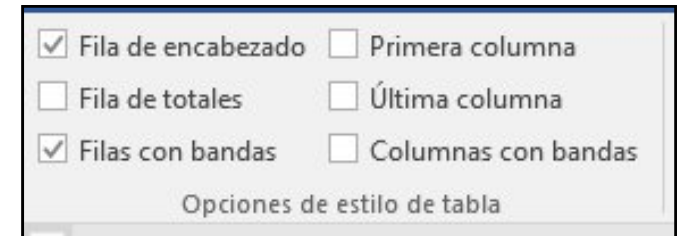
I have the Word and now what?

- Sharing while maintaining accessibility
 - Accessible PDF
- Problems are inherited
- Greater accessibility of the original document
 - Less changes will need the PDF



Tables. More requirements

- Exclusively for displaying **structured data**
 - Avoid use for formatting
- Simple design. No cells combined or divided.
- Mark header row
- Repeat header row
- Contrast and use of color



Canal de YouTube	Tema	Subscriptores
Molly Burke	Maquillaje y moda	1,796,949
Tommy Edison Experience	vlog – humor	643,163
Joy Ross	Maternidad	97,001
Blind Film Critic (Tommy Edison)	Crítica de cine	39,712

Poorly exported example

0-total-guia-presupuestos-2024-01012024.pdf - Adobe Acrobat Pro (32-bit)

Archivo Edición Ver Firma electrónica Ventana Ayuda

Inicio Herramientas LFP 2025 Guía Presupuesto 2... 0-total-guia-presu... x

📁 ☆ ☁️ 🖨️ 💬 ⬆️ ⬇️ 1 / 67 | 💬 ✎️ ✏️ 📄

Accesibilidad

Comprobador de accesibilid... X

- ☰
- > Documento (6 problemas)
- > Contenido de página (3 problemas)
- > Formularios
- > Texto alternativo (5 problemas)
- > Tablas (5 problemas)
- > Listas (2 problemas)
- > Encabezados (1 problema)

Document title

First paragraph with content

Excel-specific requirements

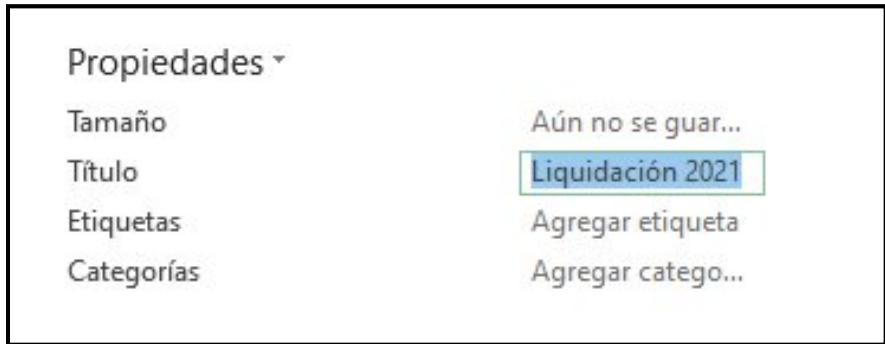
- Representative names on the sheets
- Relevant information in the first cell
 - A1 never empty
- Tables with regular structure (no combined cells)
- Single (marked) and representative header row
- Identified as table
- Beware of color contrast



File structure

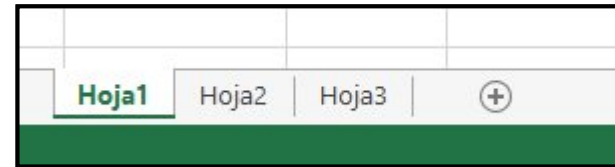
If applicable delete empty tabs

Representative title (metadata)

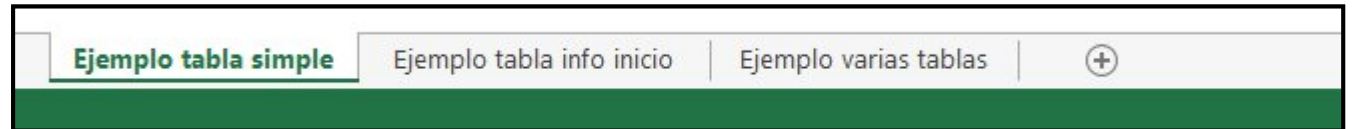


Tabs (name and not empty)

Sheet1, sheet2, etc – non-significant names



Clear names




Cell A1

- It's the first thing you read (screen reader)

May contain

- table title
- summary about the contents of the tab
- instructions to use it tab

In A1 we say in which cells you have to enter data (can be a comment)

	A	B	C	D	E	F	R
	 Universidad de Alcalá VICERRECTORADO DE INVESTIGACIÓN Y TRANSFERENCIA Servicio de Gestión de la Investigación		Sección de Becas y Otras Ayudas Colegio de Leon - C/ Libreros, nº 21 28801 Alcalá de Henares (Madrid) Teléfono: 91 885 68 09 - Fax: 91 885 43 70				
1	Baremos de financiación (año 2024)						
2							
3	VALORACIÓN DE LA ACTIVIDAD INVESTIGADORA						
4							
5	Nombre:	<input type="text"/>					
6	Departamento:	<input type="text"/>					
7	Firmado:	<input type="text"/>					
8							


Changes in design?

Focusing on selection is an option that can help visually

WITH information in A1

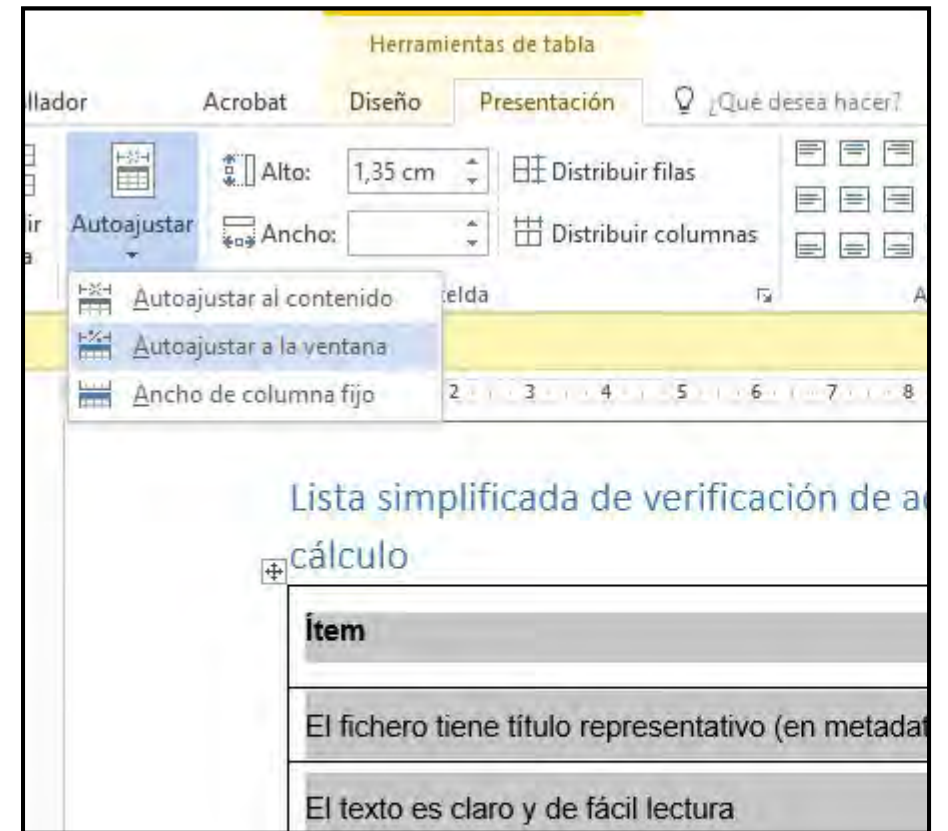
A	B	C	D
 Universidad de Alcalá VICERRECTORADO DE INVESTIGACIÓN Y TRANSFERENCIA Servicio de Gestión de la Investigación			Sección de Investigación y Transferencia Colegio de Le... 28801 Alcalá Teléfono: 91 1...
1	Baremos de financiación (año 2024)		
2			
3	VALORACIÓN DE LA ACTIVIDAD INVESTIGADORA		
4			
5	Nombre:	<input type="text"/>	
6	Departamento:	<input type="text"/>	
7	Firmado:	<input type="text"/>	
8			

NO information in A1

A	B	C	D
 Universidad de Alcalá VICERRECTORADO DE INVESTIGACIÓN Y TRANSFERENCIA Servicio de Gestión de la Investigación			Sección de Investigación y Transferencia Colegio de Le... 28801 Alcalá Teléfono: 9...
1			
2	Baremos de financiación (2024)		
3			
4	VALORACIÓN DE LA ACTIVIDAD INVESTIGADORA		
5			
6	Nombre:	<input type="text"/>	
7	Departamento:	<input type="text"/>	
8	Firmado:	<input type="text"/>	
9			

Export table

- Exporting Excel 2016 to PDF Gives Problems
 - Label structure not maintained correctly
 - Microsoft 365 exports “good”
- Alternative?
- Publish data directly to Excel
- If part of a document, Word and PDF
 - Paste table in Word
 - Auto-adjust to window
 - Use as template
 - Next time I just copy and paste data



What requirements do they ask of you?

- Does it have to be accessible before publishing it?
- How is it checked?
 - Automatic tools
 - Manual check
- What about false positives or negatives?
 - E.g. Alternative text in tables
 - E.g. Images with unsuitable alternative text

What do you think and what do you need?

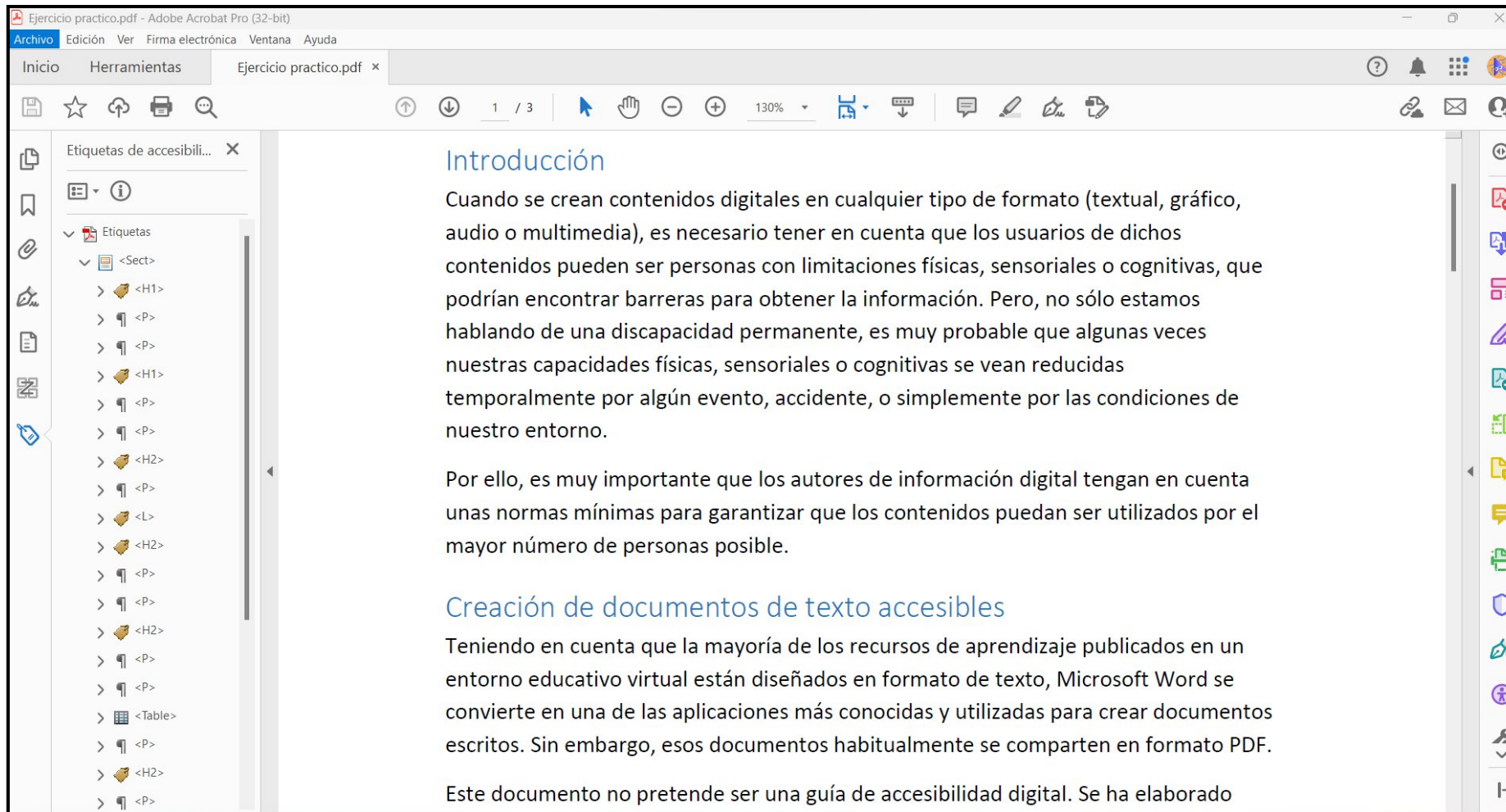
Accessibility in PDF

1. Perform accessibility check PDF tagged?
2. Fix automatic/short failures to resolve
3. Content panel:
 - Label elements correctly
 - Check reading order
 - Clean the document from empty or incorrect items
 - Mark as **artifacts** the decorative elements
4. Label panel:
 - Check that labels are consistent
 - Check that the structure of the labels is correct
5. Add bookmarks
6. Recheck accessibility: automatic and manual



Many problems are solved by organizing the document and labels!

Labels for accessibility in PDF



The screenshot shows the Adobe Acrobat Pro interface. The main window displays a PDF document titled "Ejercicio practico.pdf". The document content is as follows:

Introducción

Cuando se crean contenidos digitales en cualquier tipo de formato (textual, gráfico, audio o multimedia), es necesario tener en cuenta que los usuarios de dichos contenidos pueden ser personas con limitaciones físicas, sensoriales o cognitivas, que podrían encontrar barreras para obtener la información. Pero, no sólo estamos hablando de una discapacidad permanente, es muy probable que algunas veces nuestras capacidades físicas, sensoriales o cognitivas se vean reducidas temporalmente por algún evento, accidente, o simplemente por las condiciones de nuestro entorno.

Por ello, es muy importante que los autores de información digital tengan en cuenta unas normas mínimas para garantizar que los contenidos puedan ser utilizados por el mayor número de personas posible.

Creación de documentos de texto accesibles

Teniendo en cuenta que la mayoría de los recursos de aprendizaje publicados en un entorno educativo virtual están diseñados en formato de texto, Microsoft Word se convierte en una de las aplicaciones más conocidas y utilizadas para crear documentos escritos. Sin embargo, esos documentos habitualmente se comparten en formato PDF.

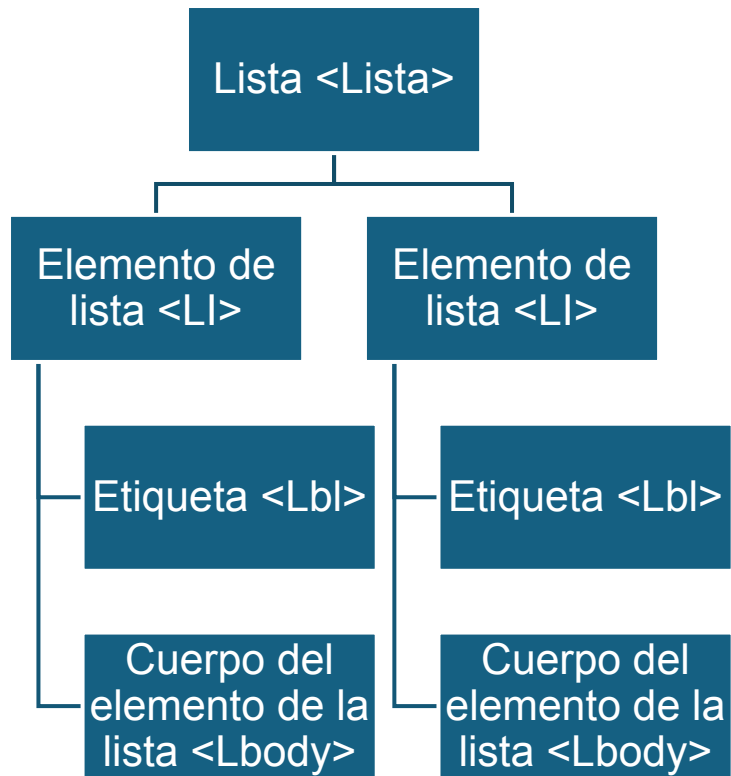
Este documento no pretende ser una guía de accesibilidad digital. Se ha elaborado

The left sidebar shows the "Etiquetas de accesibili..." (Accessibility Labels) panel, which is expanded to show a list of labels for the document's content:

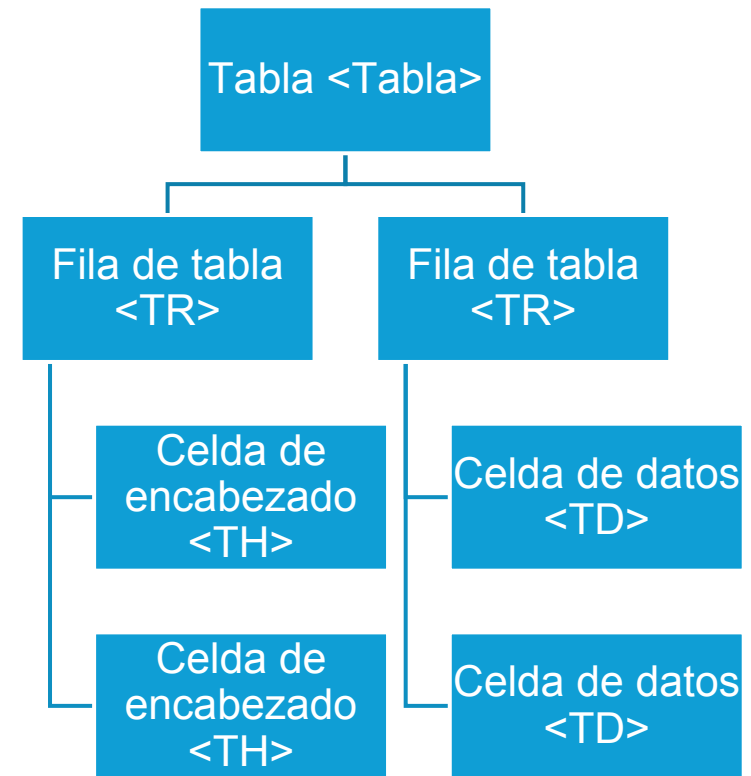
- <Sect>
- <H1>
- <P>
- <P>
- <H1>
- <P>
- <P>
- <H2>
- <P>
- <L>
- <H2>
- <P>
- <P>
- <H2>
- <P>
- <P>
- <Table>
- <P>
- <H2>
- <P>

Label structure

Lists



Tables



Combining PDFs and accessibility

- Combining PDFs is accessible
- The originals have to be accessible
- Label structures are combined
- At the end you have to generate the bookmarks
 - Automatic if there is title structure



More aspects in more resources

- PowerPoint presentations:
 - Accessible and then move to PDF
 - Accessible to share directly
- Video:
 - Accessible subtitling: e.g. [YouTube](#)
 - Audio Description
- E-mail address



Common and habitual problems

- Problems in title structure and bookmarks in **99% docs**
 - Levels of simulated titles (no real structure)
 - Important for user navigation and interaction
- Other errors:
 - Incomplete metadata (e.g. untitled): 99%
 - Unstructured or incorrectly structured lists: 76%
 - Untagged PDF (for incorrect export): 58%
- Organisation:
 - Training in accessibility in documents and digital information
 - Implementation of reasonable procedures

Eye-catching situations

- Use of images to include tables, graphs, links etc.
 - Even TEXT!
 - Pages of one document inserted in another as an image
 - Links as Image Utility?
- Editable content is not retained!
- Simulated lists (without using Word option)
- Spaces between word letters for more separation
 - E J E M P L O
- Line breaks to move to the next page



Accessibility is no longer a choice It was already an ethical now it's a legal obligation



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Skills for Europe's Twin Transition

