How PxWeb 2 helps through the statistics jungle

Kristin Glomsås, Statistics Norway, krg@ssb.no

Åsa Arrhén, Statistics Sweden, asa.arrhen@scb.se

Abstract.

Finding the right statistics has become increasingly important in a world where facts are frequently challenged. Both Statistics Norway (SSB) and Statistics Sweden (SCB) publish vast amounts of data across thousands of tables, often with multiple similar versions due to confidentiality requirements. For users, whether experts or the general public, locating the correct table can be difficult and time-consuming.

PxWeb 2 tackles this challenge by providing a modern interface that helps users cut through the "statistics jungle" and find trustworthy data quickly and confidently. PxWeb 2 is a new user interface for publishing and exploring statistical tables, displaying data directly from standardized px-files or from a connected SQL database. The solution introduces improved search, intuitive filtering, and multiple navigation paths, significantly reducing the effort required to identify the right table. By ensuring that users more easily locate correct and relevant statistics, PxWeb 2 strengthens transparency and supports an informed public discourse.

The development was guided by extensive user insights gathered through usability testing, feedback from producers, user inquiries, and shared findings between Statistics Norway (SSB) and Statistics Sweden (SCB). These insights highlighted common challenges across countries and informed key decisions on accessibility (WCAG), performance, mobile adaptation, and design choices aimed at supporting both expert users and the general public.

PxWeb 2 shows how shared development and user-centred design can produce a tool that is both powerful and accessible, and its open-source nature allows other national statistical offices to adopt and adapt the solution.

Keywords: User interface, User Experience, Accessibility, Search and Discovery.

1. Introduction

Public trust in official statistics depends not only on data quality but also on users' ability to access, understand, and make use of the information that statistical offices publish. As statistical production becomes more comprehensive and detailed, users are increasingly confronted with large volumes of data, specialised terminology, and collections of tables that may appear similar at first glance but differ in important ways.

Statistical data are typically organised according to production logic, classification systems, and methodological constraints. Users, however, rarely approach these systems with an understanding of such structures. Instead, they tend to arrive with concrete questions, searching for a specific figure or fact rather than a predefined statistical table. This gap between system design and user expectations often makes it difficult to locate relevant data efficiently and with confidence.

This paper presents PxWeb 2, a new user interface for statistical data jointly developed by Statistics Norway (SSB) and Statistics Sweden (SCB) in a three-year project. The primary aim of PxWeb 2 is to improve users' ability to find the correct statistical table with minimal effort and a clear understanding of its content.

In this paper, *findability* refers to users' ability to identify the correct table and understand its contents well enough to make the right choice efficiently, without needing to revise or repeat their selection.

The guiding question for this work is how a user-centred interface can support users in finding the correct statistical table more efficiently and with greater confidence.

2. Background and problem description

2.1. User challenges in statistical databases

Both SSB and SCB publish extensive statistical databases containing thousands of tables across a wide range of subject areas. These tables vary in time coverage, level of detail, classifications, or confidentiality adjustments. While such distinctions are meaningful from a statistical production perspective, they are not always easy for users to recognise or interpret.

Usability studies and user support inquiries have shown that many users struggle to determine whether a table is relevant based solely on its title. Consequently, users often open and close multiple tables before finding the one that meets their needs. This type of trial-and-error behaviour is time-consuming and can cause users to lose trust in the database when they find it too difficult to find the right table.

A recurring insight was that most users do not conceptualise the database as a collection of intentional, predefined statistical tables. Instead, they expect a more flexible system in which numbers can be retrieved directly according to their own criteria. Interfaces that require early table selection therefore tend to create uncertainty before users have had an opportunity to explore the data.

2.2. Limitations of the previous PxWeb interface

These challenges were particularly evident in the previous version of PxWeb. At the start-page level, users found it difficult to navigate the content due to dense structures, technical terminology, and limited contextual information about what tables actually contained. Many users reported uncertainty about where to begin and expressed a need for clearer guidance and explanations.

At the table level, users struggled to understand how to arrive at a table with the desired variables and values. Selection processes were perceived as complex, and essential functionality was often difficult to discover. Because figures were not displayed until all selections had been completed, users found it hard to determine whether they were on the right track. Incorrect choices early in the process frequently meant having to start over.

A fundamental issue was that users were asked to choose a table before understanding its structure or content. Even after a table was selected, users were presented with selection panels rather than a visible table, reinforcing the perception of working with an abstract database rather than a concrete statistical product.

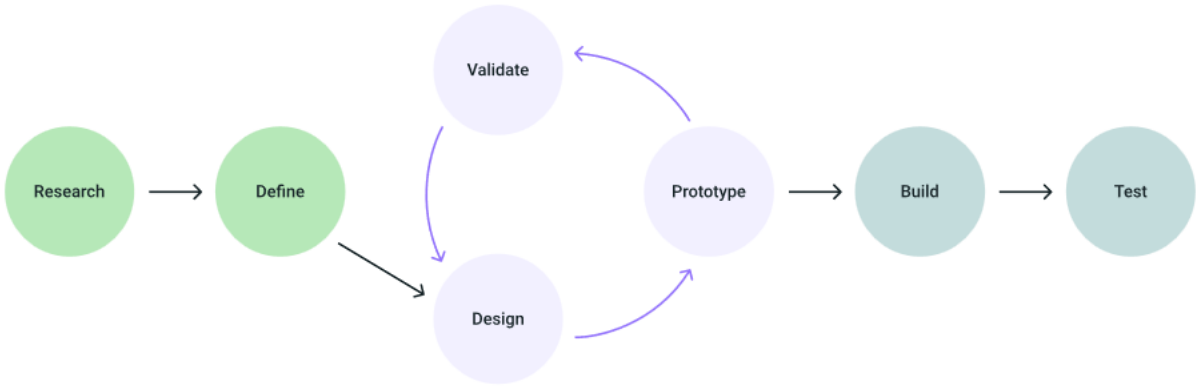
3. Methodology: user insights and design approach

The development of PxWeb 2 followed a user-centred design methodology grounded in empirical evidence. User insights were gathered from several sources, including

usability testing, user inquiries, feedback from statistical producers, and previous studies conducted within both organisations.

Rather than treating individual insights in isolation, findings were synthesised using affinity mapping to identify recurring patterns and shared challenges. These patterns were translated into a structured overview of user needs and pain points, which influenced design priorities throughout the project.

The design process



The design process was iterative, moving through cycles of research, problem definition, design, prototyping, validation, and development. Solutions were continuously tested and refined to ensure that design decisions remained aligned with observed user behaviour and needs.

4. Design principles derived from user needs

Analysis of user insights led to a set of design principles. Users needed to understand table content earlier in the process, see results sooner, and navigate the system without being discouraged from exploratory behavior. Cognitive load needed to be reduced, and the interface had to accommodate multiple user strategies rather than enforcing a single, linear path.

Accessibility was treated as a foundational requirement rather than an additional constraint. Together, these principles formed the basis for the design solutions implemented in PxWeb 2.

5. The PxWeb 2 solution: supporting table discovery

PxWeb 2 addresses the identified challenges through a combination of structural, visual, and interaction level changes aimed at improving findability and user confidence.

A central shift in PxWeb 2 is the move from early table selection to early content understanding. Users are provided with contextual information, descriptive metadata, and example views before making binding choices. This enables them to assess relevance without relying on trial and error.

The start page plays an active role in discovery. Rather than functioning solely as an entry point, it provides an overview of the available content and offers several ways to begin exploration. By combining thematic navigation, search functionality, and editorial elements, the interface reduces users' reliance on understanding internal topic structures.

Search and filtering are integrated into a continuous exploration process. Search results include informative previews, and filters can be applied and adjusted dynamically without forcing users to restart. This supports exploratory behaviour and allows users to refine their understanding as they navigate.

One of the most notable improvements concerns the presentation of data on the table page. In PxWeb 2, selections and results are displayed on the same screen, enabling users to see figures as soon as meaningful selections are made. Default tables and example views help users quickly determine whether a table meets their needs, thereby reducing unnecessary reconfiguration.

Table presentation is further optimised through predefined views, where appropriate stubs and headers are specified to ensure a meaningful initial display. This mechanism support early comprehension of both table structure and content.

PxWeb 2 also recognises mobile usage as a distinct context. On smaller screens, interaction is simplified and essential information is prioritised, reflecting the fact that mobile users are often seeking a quick overview or a single value rather than performing in depth exploration.

6. Accessibility and inclusive design

Accessibility has been a core consideration throughout the development of PxWeb 2. Guided by the principles of the Web Content Accessibility Guidelines (WCAG), the interface is designed to be perceivable, operable, understandable, and robust across devices and assistive technologies.

Clear visual hierarchy, sufficient contrast, and scalable text support perceivability. Full keyboard operability, predictable focus behaviour, and standardised interaction patterns ensure that users can navigate the interface using different input methods. Clear language, consistent layout, and informative error messages support understanding, while semantic HTML and well-defined roles and states ensure compatibility with assistive technologies.

Importantly, many accessibility measures also improve usability for users without disabilities. By reducing friction and ambiguity, accessibility acts as an enabler of findability rather than as a separate concern.

7. Remaining challenges and limitations

Despite substantial improvements, some challenges extend beyond the scope of interface design. The inherent complexity of official statistics, including methodological changes, breaks in time series, and professional terminology used in metadata continues to present difficulties for some users.

Table titles, variable names, and classifications are not always aligned with everyday language, and PxWeb 2 cannot fully compensate for unclear or inconsistent content. In addition, conceptual misunderstandings of statistical databases, particularly expectations of fully flexible querying remain an ongoing challenge.

Practical constraints also limited the extent of user testing during development. Although the project was informed by extensive user insights, not all user groups could be included. Consequently, post launch feedback plays a crucial role in identifying areas that require further attention.

8. Future work and continuous learning

The launch of PxWeb 2 marks the beginning of a new phase focused on learning from real world usage. User feedback, usage data, and continued usability testing will be central inputs to future development.

Future work will place greater emphasis on improving metadata quality, clarifying communication around changes in tables, and strengthening connections between discontinued tables and their replacements. Continued collaboration between designers, statisticians, and developers is essential to addressing challenges that extend beyond the interface itself.

PxWeb 2 is developed as an open-source solution, enabling shared learning and collaboration across national statistical offices. This collaborative model increases the potential for long-term improvements in statistical dissemination.

9. Conclusion

PxWeb 2 illustrates how a user-centred approach can support improvements in how users navigate and explore statistical databases. By emphasising early understanding of content, simple navigation, and integrated accessibility, the solution addresses several challenges identified in earlier user studies and support inquiries. Usability testing indicates that the design changes make it easier for users to orient themselves and assess the relevance of tables, enabling quicker identification of the information they need compared to the previous interface.

These findings should be seen as indicative rather than conclusive. As the interface is still new, further testing is needed to confirm its impact across different user groups and contexts. PxWeb 2 should therefore be viewed as an evolving solution and a practical example of how user-centred design can be applied in the dissemination of official statistics. Continued evaluation and development will be essential to better understand and improve how users access and use statistical information over time.

Ultimately, improving access to official statistics is not achieved through a single solution, but through continuous efforts to understand users, refine tools, and adapt to evolving needs over time.