SURVEY FUTURES

SURVEY DATA COLLECTION METHODS COLLABORATION

Retrospective measurement of life events in online self-completion surveys

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Survey Futures

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- **Survey Futures** is a research programme focused on ensuring large scale surveys in the UK can innovate and adapt in a changing environment.
- Survey Futures is funded by the UK's Economic and Social Research Council (ESRC).
- The programme is a collaboration between nine universities, and three survey agencies (NatCen, Ipsos, and Verian), in partnership with the National Centre for Research Methods (NCRM), and the Office for National Statistics (ONS).
- The programme includes over 50 researchers working across nine research strands, covering the most significant topics of survey research.
- Visit our website: https://surveyfutures.net/

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Research Strand 5

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- **Research Strand 5** of Survey Futures studies **complex measurements in online self-completion surveys**.
- Accurately capturing complex phenomena is critical for the success of social surveys.
- As the field increasingly shifts towards online data collection, a key challenge emerges: how to administer complex measures without compromising data quality or comparability with other survey modes.
- Four types of measurements:
  - Industry and occupation coding.
  - Cognitive assessments.
  - Consent to data linkage.
  - **Event histories and retrospective data**.

Retrospective data collection

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- The study of life events, their sequence, interconnections, and their impact on individual and social outcomes has been a long-standing area of interest across various disciplines.
- Information about these events often needs to be gathered retrospectively.
- However, relying on participants' memory makes retrospective data collection susceptible to errors such as event omissions and reporting inconsistencies.

Retrospective data collection

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- **Our evidence review** synthesises methods for retrospective data collection in **self-administered online surveys**. We include academic papers, conference presentations, survey technical reports, and other published literature.
- We focus on survey design practices that can help optimising retrospective data collection methods for self-completion.
- The focus is on the **methods** used.

Retrospective data collection

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- A **survey practice guide** has recently been published on the Survey Futures website.
- This document introduces, for each method of retrospective data collection:
  - Pros and cons
  - Wider considerations
  - Recommendations for their implementation
- We use summary tables to present this information.

Retrospective data collection

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- Overlapping methods with non-standardised definitions.
- For simplicity, we group methods across two key dimensions:
- **Time span**:
  - Long term: “life histories” covering the full life span of the respondent.
  - Short term: “event histories” covering shorter periods; typically, inter-wave periods in longitudinal surveys.
- **Visual layout**:
  - Retrospective calendars include a visual grid format to enable simultaneous visualisation of several domains, either to directly input events, **or** as a visualisation aid that supplements a questionnaire.
  - Questionnaire-based approaches do not include any visual aids.

Retrospective data collection

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WITH VISUAL LAYOUT

WITHOUT VISUAL LAYOUT

Retrospective calendars

- Chronological grid format with time units on one axis and life domains on the other.
- Visual layout enhances memory recall.
- However, most applications have been interviewer-administered.

Questionnaire-based approaches

- Participants are asked questions about their past in several domains.
- Questions are asked sequentially with respondents required to recall events from the most recent to the most distant or vice-versa.

SHORT-TERM

Event history calendars (EHC)

Conventional questionnaire

Dependent interviewing

Event-triggered data collection

LONG-TERM

Life history calendars (LHC)

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Life history calendars (LHCs)

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- LHCs capture complete **life histories**, understood as a series of significant and interrelated events occurring to individuals across several domains over their complete lifespan.
- Domains include education and employment history, family events, relationships and partnerships, fertility history, places of residence.
- They are typically used in initial interviews for longitudinal or cohort surveys.

Life history calendars (LHCs)

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- LHCs facilitate access to autobiographical memory for life history data collection in three ways:
  1. Landmark events in the calendar act as temporal anchoring points.
  2. The calendar enables the sequencing of events and presents them graphically, helping respondents contextualise them and reducing the risk of omissions.
  3. The visual nature of the calendar allows respondents (and interviewers) to link episodes across life domains, encouraging top-down and parallel retrieval.
- Interviewer-led LHCs have proven effective for collecting life histories, compared to conventional questionnaires.
- However, evidence on the effectiveness of online self-administered LHCs is limited.

Life history calendars (LHCs)

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- Online self-administered LHCs are completed as respondents answer questions about specific domains and events.
- The LHC interface can be used:
  - As a **visual representation** of answers provided by the respondent. In this case, respondents cannot directly edit the calendar, and any edits or changes must be done directly in each question screen.
  - As a **responsive tool for data entry**. In this case, respondents can directly add and edit information by clicking the appropriate area of the calendar.
- In both cases, the calendar is used as an aid to simultaneously visualise events across several domains and over time.

Life history calendars (LHCs)

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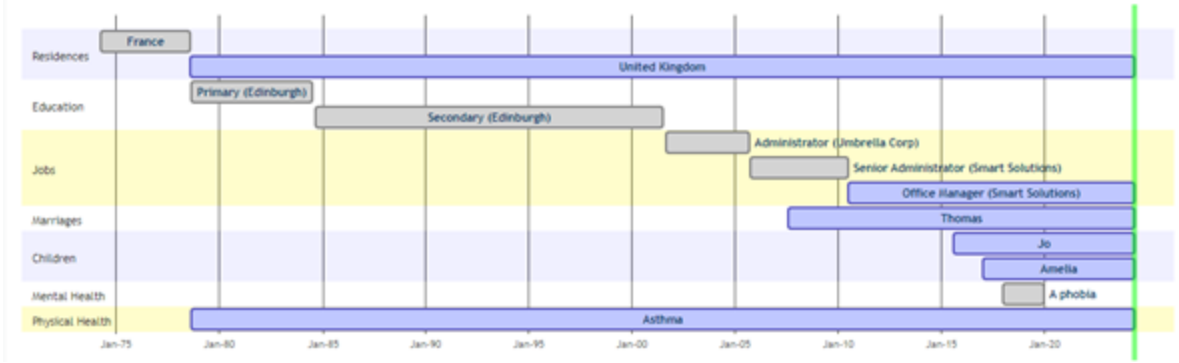
- Two UK surveys have recently used LHCs for online retrospective data collection:
  - The 2024 English Longitudinal Study of Ageing (ELSA) completed a full data collection wave administering LHCs online.
  - Understanding Society recently completed an LHC pilot and are now evaluating the results:



Life history calendars (LHCs)

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- Other applications include:
  - The Sexual Health and Behaviour of Young People survey (SHBYP) in Switzerland (Barrense-Dias et al., 2018).
  - The pilot study for the Research Group on Adolescent Health (GRSA), also in Switzerland (Morselli et al., 2016).
  - A LHC implemented in a probability-based internet panel survey (Glasner et al., 2015).
  - A LHC implemented in an experimental study on educational and occupational trajectories of secondary-school graduates, undergraduates, and university graduates in Germany (Cartensen et al., 2022).

Life history calendars (LHCs)

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Pros

- Event sequencing and graphic display helps reducing the risk of omission.
- Visual properties allow respondents to link episodes across life domains, encouraging top-down and parallel retrieval.
- Landmark events in the calendar can serve as temporal anchoring points or bonding cues.
- Pre-loaded information can aid event recall.

Cons

- Implementation of self-administered LHCs can require significant efforts in terms of programming and budget.
- Due to grid dimensions, LHCs can be difficult to adapt for display in smaller screen devices (e.g. mobile phones).

Life history calendars (LHCs)

SURVEY FUTURES
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Wider considerations

- The issue of which **layouts** to use is still not resolved:
  - Horizontal layouts are generally incompatible with mobile devices.
  - Vertical layouts work better, but only if the number of domains is limited.
- **Instructions** are essential in the absence of interviewers:
  - **Video demonstrations** can be helpful, especially for more complex calendars.
  - **Contextual help** (tooltips, pop-ups, help menus) could be more helpful than instructions provided in the questionnaire.

Recommendations

- Reliable for collecting events over long periods.
- High implementation costs may be compensated by higher data quality.
- For more accurate results, self-administered LHCs should
  - provide clear completion instructions
  - provide completion examples (for example, pre-filled events or domains)
  - ensure simultaneous visualisation of several domains in a single graphical time frame
  - incorporate consistency checks
  - allow participants to edit responses
  - ensure compatibility across devices and screen sizes

Life history calendars (LHCs)

SURVEY FUTURES
SURVEY DATA COLLECTION METHODS COLLABORATION

- Survey practice guide:

Method	Summary	Data quality		Wider considerations	Recommendations
		Pros	Cons		
(1) Retrospective calendars					
Life history calendars (LHC)	• Grid-based diary with time units (e.g., years, decades) on one axis and life domains (e.g., career, relationships, health) on the other. • The timeline spans the participant's entire life. • Participants are invited to place relevant events in the grid.	• The LHC allows for sequencing of events and displays them graphically, helping respondents to contextualise them and reducing the risk of omission. • The visual properties of the LHC allow respondents and interviewers to link episodes across life domains, encouraging top-down and parallel retrieval. • Landmark events in the LHC can serve as temporal anchoring points or bonding cues. • The LHC can use pre-loaded information from previous responses to the same questionnaire to aid event recall.	• Implementation of a self-administered LHC can require significant efforts in terms of programming and budget. • Due to grid dimensions, the LHC can be difficult to adapt for display in smaller screen devices (e.g. mobile phones).	• The issue of which grid layout to use is not solved in the literature. "Horizontal" layouts are largely optimised for desktop use and are incompatible with smaller screen sizes. "Vertical" layouts work better for mobile devices, only if the number of domains is limited. • In the absence of an interviewer, instructions for completion are essential. Video demonstrations and contextual help (tooltips, pop-ups, help menus) can aid comprehension of complex tasks • Pre-loaded data (from prior survey responses) can reduce input burden. Step-by-step event entry (click- or question-based) and editing capabilities can improve event recall and data accuracy. • Instrument complexity and topic sensitivity can potentially lead to response breakoffs.	LHCs can be a reliable source of retrospective data on life events over long periods in self-administered online surveys. High implementation costs might be compensated by higher data quality. To ensure their effectiveness, they should: • Provide clear completion instructions. • Provide completion examples (for example, pre-filled events or domains). • Ensure simultaneous visualisation of several domains in a single graphical time frame. • Incorporate consistency checks and allow participants to edit responses. • Ensure compatibility across devices and screen sizes.

Retrospective data collection

SURVEY FUTURES
SURVEY DATA COLLECTION METHODS COLLABORATION

WITH VISUAL LAYOUT

WITHOUT VISUAL LAYOUT

Retrospective calendars

- Chronological grid format with time units on one axis and life domains on the other.
- Visual layout enhances memory recall.
- However, most applications have been interviewer-administered.

Questionnaire-based approaches

- Participants are asked questions about their past in several domains.
- Questions are asked sequentially with respondents required to recall events from the most recent to the most distant or vice-versa.

SHORT-TERM

LONG-TERM

Event history calendars (EHC)

Life history calendars (LHC)

Conventional questionnaire

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Event history calendars (EHCs)

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- EHCs focus on collecting **event histories**, covering shorter time periods.
- They are typically used in longitudinal or cohort surveys to collect information about events occurring in the period between two consecutive interviews or waves and, more generally, when studying specific timeframes (days, months or years), rather than entire lifespans.

Event history calendars (EHCs)

- EHCs have been used in several longitudinal surveys including:
  - National Child Development Study (NCDS) and Next Steps in the UK
  - The German Family Panel (pairfam)
  - Growing Up in Australia
- Other applications include:
  - Sage et al. (2013) collecting data on personal events for university students after their graduation.
  - West et al. (2022) collecting information on contraceptive use in a sample of Women's Health Study participants.

Event history calendars (EHCs)

SURVEY FUTURES
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Wider considerations

- Horizontal layouts can be appropriate for EHCs, as the period covered is shorter compared to LHCs. This could ensure better adaptation for smaller screen sizes.
- Instrument complexity and topic sensitivity can potentially lead to response breakoffs.
- **As with LHCs, instructions** are essential in the absence of interviewers.

Recommendations

- Compared to LHCs, EHCs usually cover shorter time spans for which recall error is likely a minor concern.
- As EHCs are also notoriously difficult to design and implement, they are not the most cost-effective method to collect retrospective data in shorter periods.
- **Like LHCs**, self-administered EHCs should:
  - Provide completion instructions.
  - Provide completion examples.
  - Ensure simultaneous visualisation of domains.
  - Allow for step-by-step event entry (click- or question-based) and editing capabilities.
  - Incorporate consistency checks.
  - Ensure device compatibility.

Event history calendars (EHCs)

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- Survey practice guide:

Method	Summary	Data quality		Wider considerations	Recommendations
		Pros	Cons		
(1) Retrospective calendars					
Event history calendars (EHC)	· Grid-based diary with time units (e.g., months, years) on one axis and life domains (e.g., career, relationships, health) on the other. · The timeline covers a shorter time span (for example, the time between two consecutive waves in a longitudinal survey, or the last X months or years). Participants are invited to place relevant events in the grid.	· The EHC allows for sequencing of events and displays them graphically, helping respondents to contextualise them and reducing the risk of omission. · The visual properties of the EHC allow respondents and interviewers to link episodes across life domains, encouraging top-down and parallel retrieval. · Landmark events in the EHC can serve as temporal anchoring points or bonding cues. · The EHC can use pre-loaded information (for example, from previous waves, or from previous responses earlier in the same questionnaire), to aid event recall.	· As with LHCs, EHCs can be significantly costly to program and implement. · EHCs can also be difficult to adapt for display in smaller screen devices. However, this is less concerning than for LHCs, as the time span is shorter.	· "Horizontal" layouts can be appropriate for EHCs, as the period covered is shorter compared to LHCs. · As with LHCs, video instructions and contextual help are essential to ensure respondents understand the process of completing the EHCs. · Pre-loaded data (both from prior survey responses, and from information obtained in previous waves) can reduce input burden. Step-by-step event entry (click- or question-based) and editing capabilities can improve event recall and data accuracy. · Instrument complexity and topic sensitivity can potentially lead to response breakoffs.	Compared to LHCs, EHCs usually cover shorter time spans for which recall error is likely a lesser concern. As EHCs are also difficult to design and implement, they are not the most cost-effective method to collect retrospective data in shorter periods.

Retrospective data collection

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Life history calendars (LHC)

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Conventional questionnaires

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- A series of questions designed to construct a respondent's life history (or event history).
- Often ask respondents to input dates to situate events within a specific timeframe.
- May include visual aids (e.g. summary tables for feedback).
- Commonly used in cross-sectional surveys or when recruiting new participants in longitudinal surveys.

Conventional questionnaires

SURVEY FUTURES
SURVEY DATA COLLECTION METHODS COLLABORATION

Wider considerations

- Relatively easy to implement without significant programming efforts.
- Further research is required on the best methods for manual **date input**.
- **Summary tables** are relatively easy to program and implement (compared to EHCs/LHCs) and can be adapted for display in smaller screens if required.

Recommendations

- Only effective in certain contexts, e.g. for collecting information about non-sensitive life events in short time spans.
- **Date input** can be facilitated by list layouts (when dates are in the proximity of the present date), or calendar layouts (for dates removed from the present date). When not using graphical interfaces, a pre-coded list of months might be more effective than providing text entry boxes for months and years. Device compatibility must be ensured in all cases.
- No evidence that **summary tables** are as effective to aid event recall as EHCs/LHCs.

Conventional questionnaires

SURVEY FUTURES
SURVEY DATA COLLECTION METHODS COLLABORATION

- Survey practice guide:

Method	Summary	Data quality		Wider considerations	Recommendations
		Pros	Cons		
(2) Questionnaire-based approaches					
Conventional questionnaire	· A series of questions about life events, sequentially, with respondents required to recall events from the most recent to the most distant or vice-versa. · Frequently requires respondents to manually input dates associated with specific events. · To aid event recall, they can incorporate summary tables with information from previous responses in the survey questionnaire or previous interviews.	· Easier to program than calendars. · Validation checks can be incorporated to ensure consistency. · Summary tables can contribute to aid visual recall by the visual display of several domains over time.	· Questionnaire-based approaches tend to produce less accurate and consistent data than event calendars, due to the lack of visual aids and cues for event recall. · Some date input formats can require significant effort from respondents attempting to find the correct date. · Displaying information about sensitive domains on summary tables can trigger concerns over privacy issues. · Response burden is not necessarily lower than for EHCs/LHCs.	· Questions requiring the manual input of dates can be difficult for some respondents. Different methods of data input can be used depending on the proximity of the required dates and the availability of a graphical layout. · Summary tables are relatively easy to program and implement (compared to EHCs/LHCs) and can be adapted for display in smaller screens if required. · Displaying information in summary tables requires processing information from prior responses.	· Questionnaire-based approaches could be effective only in certain contexts, especially for collecting information about non-sensitive life events in short time spans. · Date input can be facilitated by list layouts (when dates are in the proximity of the present date), or calendar layouts (for dates removed from the present date). When not using graphical interfaces, a pre-coded list of months might be more effective than providing text entry boxes for months and years. Device compatibility must be ensured in all cases. · There is no evidence that summary tables are as effective to aid event recall as retrospective calendars.

Retrospective data collection

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SHORT-TERM

LONG-TERM

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Dependent interviewing (DI)

SURVEY FUTURES
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- Questionnaire-based approach that uses answers from previous interviews to guide question routing or wording in subsequent interviews.
- Two types:
  - **Proactive DI**: Participants are asked whether their circumstances have changed since the last interview or remained the same.
  - **Reactive DI**: Participants are first asked about their current status without referencing prior answers. Discrepancies are only addressed if they suggest a change in status.
- Widely employed in longitudinal surveys including:
  - The US Panel Study of Income Dynamics (PSID).
  - The European Union Statistics on Income and Living Conditions (EU-SILC) survey.

Dependent interviewing (DI)

SURVEY FUTURES
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Wider considerations

- **Proactive DI:** There is ongoing research on which questions should be used: "*is that still the case?*" vs. "*has this changed?*".
- **Reactive DI:** There is ongoing research on which events should trigger the follow-up questions.

Recommendations

- **Proactive DI**: Effective for longitudinal surveys that collect event histories in the inter-wave period.
- **Reactive DI**: Effective for longitudinal surveys collecting information about economic variables, including personal income and financial situation.

Dependent interviewing (DI)

SURVEY FUTURES
SURVEY DATA COLLECTION METHODS COLLABORATION

- Survey practice guide:

Method	Summary	Data quality		Wider considerations	Recommendations
		Pros	Cons		
(2) Questionnaire-based approaches					
Dependent interviewing - - *Proactive*	• A series of questions about changes in a specific life domain during the period between two consecutive interviews (or wave) of a longitudinal survey. • Respondents are reminded of their previous answer before being asked to update their status. • Information from previous waves is fed forward to tailor the wording and routing of questions to the situation of the respondent, or to include automatic edit checks during the interview.	• Relatively easier to implement without significant programming efforts (compared to LHCs/EHCs). • Respondents are asked to engage in recognition and reconciliation of information, which can be less cognitively challenging than information recall. • It has been shown to reduce spurious changes in response over time, seam effects, and respondent burden.	• Questionnaire-based approaches tend to produce less accurate and consistent data than event calendars, due to the lack of visual aids and cues for event recall. • Only suitable for longitudinal surveys in which prior information about the participant is available. • Presenting the information to the respondent may serve to supress the reporting of change due to satisficing behaviour.	• There are still methodological discussions about which questions should be used. Some studies suggest that reminding respondents of their previous answer and then asking "is that still the case?" produces the most accurate data. Other studies have found that respondents are more likely to report a change in their status when they were asked "has this changed?" than with the earlier mentioned question. • To preserve confidentiality and data security it must be ensured that information from previous waves is displayed to the right respondent.	• This method is widely used for longitudinal surveys collecting data about the period between two consecutive interviews (waves). • Its maximum effectiveness is achieved for collecting event histories.
Dependent interviewing - - *Reactive*	• A series of questions about changes in a specific life domain during the period between two consecutive interviews (or wave) of a longitudinal survey. • Respondents are asked about their status without reference to the prior answer. If the answer indicates a change in status, a follow-up question is triggered to check whether this change in status is correct.	• Relatively easier to implement without significant programming efforts (compared to LHCs/EHCs). • They can reduce response burden, as not all respondents will need to be asked every follow-up question.	• Questionnaire-based approaches tend to produce less accurate and consistent data than event calendars, due to the lack of visual aids and cues for event recall. • Only suitable for longitudinal surveys in which prior information about the participant is available. • As follow-up questions are asked only if certain predefined conditions are met, there is a risk of under-reporting of events.	• The conditions that trigger the follow-up questions must be carefully studied to avoid under-reporting of events. • To preserve confidentiality and data security it must be ensured that information from previous waves is displayed to the right respondent.	• This method can be used for longitudinal surveys collecting data about the period between two consecutive interviews (waves). • Its maximum effectiveness is achieved for collecting information about economic variables, including personal income and financial situation.

Retrospective data collection

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WITH VISUAL LAYOUT

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SHORT-TERM

Event history calendars (EHC)

LONG-TERM

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Event-triggered data collection

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- A relatively new method also used for longitudinal surveys.
- Respondents are contacted monthly in the inter-wave period.
- They answer simple "*Yes/No*" questions about whether they have experienced any of a list of life events in the period between the last and the current interview.
- If the answer is positive, they are then asked to identify which events occurred and then routed into modules of follow-up questions for each reported event.
- This method has been trialled in Understanding Society, and research is ongoing.

Event-triggered data collection

SURVEY FUTURES
SURVEY DATA COLLECTION METHODS COLLABORATION

- Survey practice guide:

Method	Summary	Data quality		Wider considerations	Recommendations
		Pros	Cons		
(2) Questionnaire-based approaches					
Event-triggered data collection	· Participants are asked a series of "Yes/No" questions about whether they have experienced any of a list of life events in the period between the last and the current interview (wave) in a longitudinal survey. · If the answer is positive, they are then asked which events they have experienced and then routed into modules of follow-up questions for each reported event.	· Relatively easy to implement without significant programming efforts. · They can reduce response burden, as participants will only be asked questions about the life events they marked. · Early trials have reported positive results with low levels of attrition and drop-outs and high data quality.	· Questionnaire-based approaches tend to produce less accurate and consistent data than event calendars, due to the lack of visual aids and cues for event recall. · Only suitable for longitudinal surveys in which prior information about the participant is available.	· This is a relatively new and innovative method, and, to date, it mostly concerns data collection of inter-wave events. Further work is required to determine how it can be integrated with event history questions in annual interviews.	· This method can be used for collecting data about inter-wave events in longitudinal surveys.

Summary of findings

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- Collecting reliable retrospective data is possible for self-administered online surveys.
- The increased time and resources spent on programming and design can be compensated by the reduction of fieldwork and interviewing costs and the increased data accuracy.
- LHCs can potentially provide a reliable method for collecting life history data.
- Questionnaire-based approaches can be a more cost-effective alternative than EHCs for gathering retrospective data for shorter periods, as recall error may be a lesser concern.

Topics for further research

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- **Methodological research**. There is currently a lack of methodological research on:
  - The comparison between interviewer-led and self-administered instruments for retrospective data collection.
  - The comparison of different methods for retrospective data collection.
- **Respondent heterogeneity**. Different data collection instruments may be more appropriate for different demographic groups, based on age, education, income, or cultural background.
- **Device compatibility**. As event retrieval in EHCs and LHCs depends on visualisation, ensuring calendar tools are compatible with small screens is essential and non-trivial.

Topics for further research

SURVEY FUTURES
SURVEY DATA COLLECTION METHODS COLLABORATION

- **Data structures.** Event history data is more complex than conventional survey data and requires more sophisticated data structures.
- **Open-source coding.** Collaboration across institutions, using open-source code for calendar tools, could reduce design and implementation costs in the long-term.
- **Data integration.** Obtaining consent to use external data sources (e.g., for employment or education histories) could be helpful for data validation.
- **Incentives.** Completing event histories can be burdensome for participants. Offering print-outs of calendars or other non-monetary incentives may help to improve completion rates.

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Thank you!

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SURVEY DATA COLLECTION METHODS COLLABORATION

- **Next workshop:**

Cognitive measures in online self-administered surveys

26th November 2025 @ 4pm UK time

SURVEY FUTURES

SURVEY DATA COLLECTION METHODS COLLABORATION

Retrospective measurement of life events in online self-completion surveys

Dr Cristian Domarchi (University of Southampton) – *Presenting Author*
Professor Olga Maslovskaya (University of Southampton)
Professor Lisa Calderwood (Centre for Longitudinal Studies, University College London)
Mr Matt Brown (Centre for Longitudinal Studies, University College London)

Online Workshop – 4th November 2026

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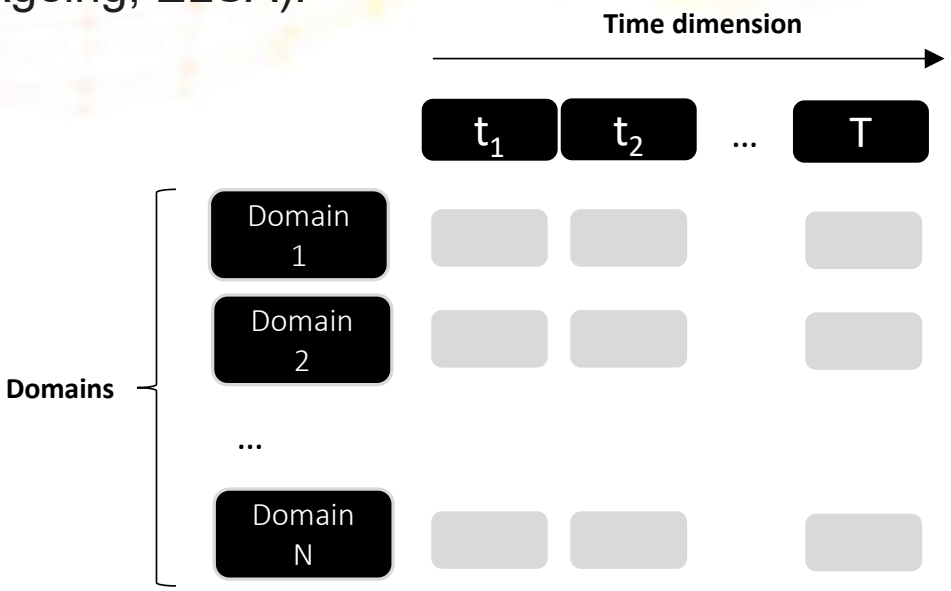
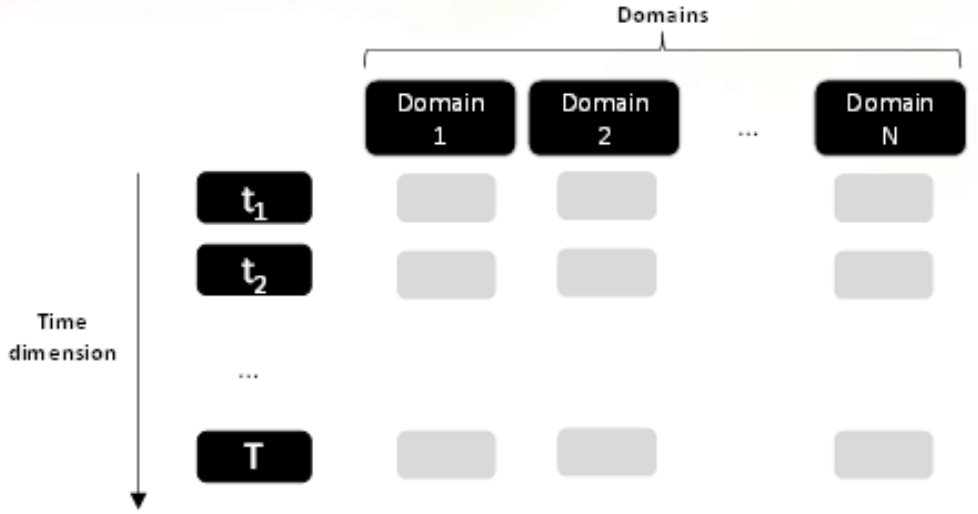
LHCs: Layouts

Left-to-right is the most frequently used layout (e.g. tests conducted as part of Understanding Society and the English Longitudinal Survey of Ageing, ELSA).



Top-to-bottom was less frequently used (e.g. the Sexual Health and Behaviour of Young People (SHBYP) in Switzerland).



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