

*Supporting Women and Children Experiencing
Family and Domestic Violence:*

THE ZONTA HOUSE

TECHNICAL REPORT

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Centre for Social Impact The University of Western Australia

May 2021



Acknowledgement of country

In the spirit of reconciliation, CSI UWA and Zonta House acknowledges that their operations are situated on Noongar land, and that Noongar people remain the spiritual and cultural custodians of their land, and continue to practise their values, languages, beliefs and knowledge. We acknowledge the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their elders and extend that respect to all Aboriginal and Torres Strait Islander peoples.

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Note

Language We acknowledge some of the language used is not DV informed and has been taken from existing data platforms not purpose built by the organisations. Zonta House and UWA is committed to continuous learning and improvement to ensure language is appropriate and best recognising the experiences and drivers of FDV.

Redactions Information has been redacted in the publicly available report related to partner organisations.

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In 2020, Zonta House Refuge Association Inc. (Zonta House) engaged The University of Western Australia, through the Centre of Social Impact (CSI UWA) to develop its internal data analytics and evaluation capacity so they can more effectively tell the story of the impact of its programs.

EXECUTIVE SUMMARY

As more data is being collected by Zonta House, the importance of linking the data, ensuring measurement tools are valid and reliable, and that all program outcomes are measurable has become paramount. This process has enabled UWA to assess the impact and effectiveness of Zonta House programs.

Linking of data sources

The linking of Penelope and SHIP data enabled a complete evaluation of Zonta House programs. It is recommended that processes be developed to ensure the accuracy of data entry into both Penelope and SHIP systems. As the linking is done through birth dates and Statistical Linkage Keys, it is imperative that birth dates and client names are entered correctly into both systems.

Mapping program logic to available data

By mapping the program logic to available data we were able to ascertain that all outcomes were measurable using both internal (Penelope) and external (SHIP and Department of Communities) hosted data sources.

Measuring program logic outcomes

The results of the data analysis show Zonta House are performing well and achieving their outcomes in the crisis and transitional accommodation programs, Recovery Support, Outreach Support, Positive Pathways, Future Employment Connections, and Positive Pathways programs.

Understanding a woman's journey through Zonta House

By mapping the flow of a woman's journey through Zonta House we were able to determine common pathways of program engagement, and pathways of engagement which were more likely to lead to a woman's exit from Zonta House. It is recommended that Zonta House encourage engagement with programs such as Safer Pathways, Recovery Support, Positive Pathways and Outreach Support programs as soon as possible within a woman's journey through Zonta House.

Reliability and validity of the Life Matrix

In this study we explored the potential value for the Life Matrix to be used as a routine measure at Zonta House. Of particular interest was whether the Life Matrix was reliable and valid. Five domains of the Life Matrix (emotional wellbeing; social wellbeing; community and cultural involvement; mental health; and physical health) showed a reliable underlying theme of wellbeing and contribute to the Revised Total Life Matrix Score. Validity was tested against the Depression, Anxiety and Stress Scale (DASS 21), with significant correlations in the expected direction showing convergence between the two instruments. Clients in the moderate/severe/extremely severe band had significantly lower Revised Total Life Matrix Scores than those in the normal and mild bands, also demonstrating convergence. The Life Matrix domains are significantly correlated with SHIP variables. The Life Matrix is a reliable and valid tool and is recommended for use.

Optimisation of visualisation

Many limitations were found when trying to extract and display data from the Penelope system. To enable effective visualisation of data, it is recommended that work is done directly with the developers of Penelope to access and customise visualisations.

1. INTRODUCTION

Zonta House Refuge Association Inc. (Zonta House) engaged The University of Western Australia, through the Centre of Social Impact (CSI UWA) to develop its internal data analytics and evaluation capacity so they can more effectively tell the story of the impact of its programs.

Data analytics involves the process of collecting, analysing and reporting on data while evaluation involves the assessment of the effectiveness of a program's activities, characteristics, and outcomes. Zonta House has moved significantly down the path of collecting data and reporting on its data across its programs and now seeks to develop data analytics and evaluation capabilities so as to more effectively analyse and evaluate the data to understand how effective its programs are and where changes may need to be made.

Zonta House uses a variety of data collection and reporting mechanisms which differ depending on the program in question. Across its various programs, Zonta House collects client individual data in its case management tool Penelope and uses Tableau and Power BI as a means of visualising its data and to produce reports on specific topics. However, given constraints in capacity and understanding the full application of the data tools Zonta House is limited in the range of data reports it can produce.

In its Specialist Homelessness Services programs, Zonta House inputs data into the national Specialist Homelessness Information Platform and downloads automated reports on its clients using this platform. In the Mental Health Commission programs Zonta House also inputs into data platforms. The data analytics problem that Zonta House faces is that it currently does not have the capacity to effectively join the data from external platforms to its own internal data collections to provide a richer picture of the experiences of its clients and the effectiveness of its programs.

In addition to an array of data being collected and outcomes variables in it, Zonta House currently uses two assessment tools on client entry and exit, the self-constructed Life Matrix, and the Depression, Anxiety and Stress Scale (DASS 21), to assess the impact and effectiveness of their programs. The latter scale is an internationally recognised scale with strong validity and reliability. The former tool has yet to be tested from the viewpoint of validity and reliability.

1.1. Scope of works

To get a richer understanding of its clients and determine the effectiveness of Zonta House programs CSI UWA was engaged to assist the Zonta House team to undertake the following components in the capacity development proposal:

1. Linking of data sources
2. Mapping program logic to available data sources
3. Measuring program logic outcomes
4. Understanding a woman's journey through Zonta House
5. Assessing measurement tools for reliability and validity
6. Optimising Visualisation to Zonta House needs

1.1.1. Data linkage

Data is currently collected by Zonta House through internal databases, and also stored in other databases that are controlled by state/federal funders. Linking data can help in the design and development of programs, as well as evaluating existing programs. External databases were downloaded and linked using client date of birth to the internal database, enabling data from different sources to be connected and queried. Analysis of the linked data is presented throughout the report and provides an understanding of the Zonta House client base, and the outcomes of the services they are using. This analysis required extensive data cleaning of both internal and external databases to enable the linking of as many clients as possible.

1.1.2. Mapping program logic to available data sources

By mapping program logic to data sources available to Zonta House, it becomes evident what internal and external data is available for each outcome, and whether additional data external to Zonta House (for example, Department of Communities) is needed.

1.1.3. Measuring program logic outcomes

The outcomes data analyses are presented for the main programs offered by Zonta House: Crisis Accommodation (Site 1 and Site 2), Transitional Accommodation, Recovery support, Outreach Support Case Management, Safer Pathways for Women, Future Employment, and Positive Pathways Connections programs. Two data sources have been used to measure most program logic outcomes: Penelope and SHIP, with Department of Communities data also used to measure Safer Pathways outcomes.

1.1.4. Understanding a woman's journey through Zonta House

A record of each woman's interaction with Zonta house is recorded within the Penelope system, allowing a woman's journey through Zonta House to be mapped. This mapping gives a greater understanding into the flow of movement through programs and what sequence of programs are likely to lead to a woman exiting Zonta House.

1.1.5. Reliability and validity of currently used instruments

It is important to determine the psychometric properties of both the Life Matrix, and the Depression, Anxiety and Stress Scale (DASS 21) within the women's refuge population, to promote evidence-based service models and practices to improve client outcomes.

1.1.5.1. Life Matrix

The Life Matrix calculates a risk rating of high, medium or low based on the client's responses to the following domains: housing; finance; employment; physical health; mental health; emotional wellbeing; social wellbeing; legal; education; parenting/children; immigration and visa; family and domestic violence; alcohol and other drugs; and community/cultural involvement.

1.1.5.2. DASS 21

The depression, anxiety and stress scale (DASS 21) is a self-report tool designed to measure the negative emotional states of depression, anxiety and stress over the past 7 days.

Critiquing the quality of measurement instruments is integral to ensuring that the scale is reliable in all populations for which it is used, and therefore the results reported are valid and meaningful and can be used in accurate decision making. A measurement instrument's quality is assessed using two standard indicators: reliability and validity. Reliability (the consistency of results across repeated measures), and validity (determining if the scores of a measurement represent the variable it was intended to measure) are not fixed properties of the instrument and need to be reassessed each time the instrument is revised and used with different populations or in different settings.

Reliability was determined through internal consistency (Chronbach's alpha), and exploratory factor analysis was conducted to determine whether the latent or underlying subscales line up with DASS normative data. Convergent validity of the Life Matrix was assessed by correlating the mental health domain score with the DASS 21. The reliability and validity analyses is presented in Section 6.

1.1.6. Optimisation of data visualisation

Database architecture was developed by a Master of Business Analytics student group to optimise data visualisation of Zonta House client information and allow flexibility in data visualisation options, enabling Zonta House to understand their capabilities in creating reports and output. The students' Open Database Connectivity report is presented in Section 7.

2. PROGRAM LOGIC OUTCOMES AND DATA AVAILABLE

2.1. Data sources

2.1.1. Penelope

The Penelope dataset contains records for all Zonta House clients. There are 344,721 records relating to n = 1,734 clients. The records retrieved from Penelope are presented in the table below, by program. Record data is obtained from forms pertaining to each program. Depending on the program, forms may collect data at multiple times during the program such as on entry and exit.

TABLE 2.1 PENELOPE RECORDS BY ZONTA HOUSE PROGRAM

	Total records	Clients who attended once	Clients who attended twice	Clients who attended three or more times
Crisis Accommodation Site 1	248	208	15	25
Crisis Accommodation Site 2	174	150	12	12
DV Mobile outreach – brief intervention	10	10	0	0
DV Mobile outreach – case management	3	3	0	0
Future Employment Connections	68	44	9	15
Long Term Accommodation	14	14	0	0
Outreach Brief Intervention	48	38	5	5
Outreach Support Case Management	10	8	1	1
Off Site Crisis Accommodation	28	28	0	0
Positive Pathways	838	286	64	488
Recovery Support Brief intervention	4	4	0	0
Recovery Support Outreach	7	7	0	0
Recovery Support Program	134	124	5	5
Adult Justice Housing	36	36	0	0
Adult Justice Waitlist	11	11	0	0
Safer Pathways Case Management	45	39	3	3
Safer Pathways Exited Client Support	3	3	0	0
Safer Pathways Risk Assessment	82	74	4	4
Transitional Accommodation	12	10	1	1
Transitional Accommodation Funded	30	26	2	2
Total	1,805	1,123	121	561

2.1.2. Specialist Homelessness Information Platform

The Specialist Homelessness Information Platform (SHIP) contains entry data, support data, and exit data from both sites. The data files contain records relating to n=898 clients. SHIP data pertaining to individual clients has been linked to the Penelope dataset by birthdate.

2.2. Program logic outcomes

The outcomes identified by Zonta House for each of the programs have been mapped to potential data sources.

FIGURE 2.1 CRISIS ACCOMMODATION PROGRAM LOGIC

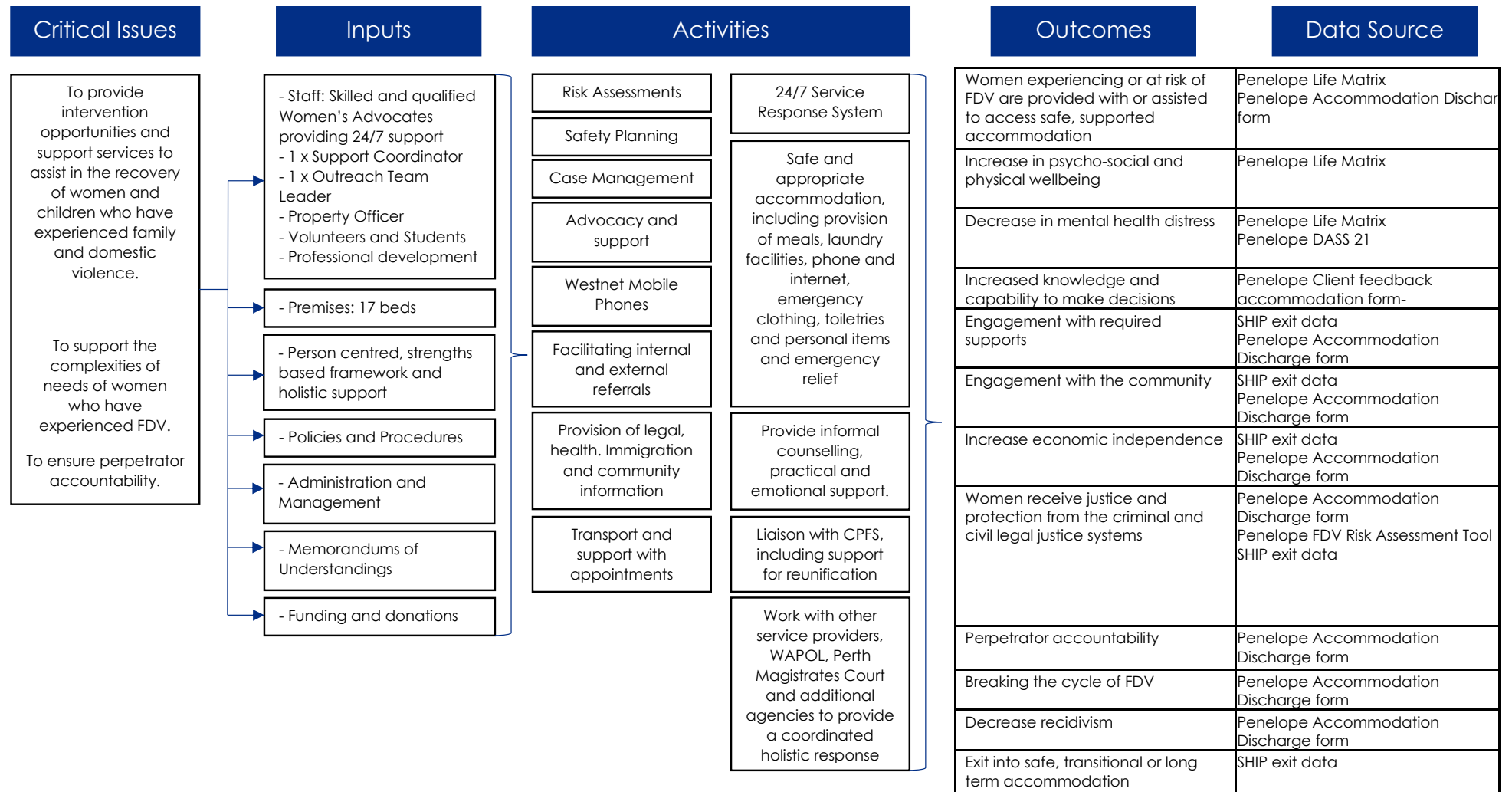


FIGURE 2.2 TRANSITIONAL ACCOMMODATION PROGRAM LOGIC

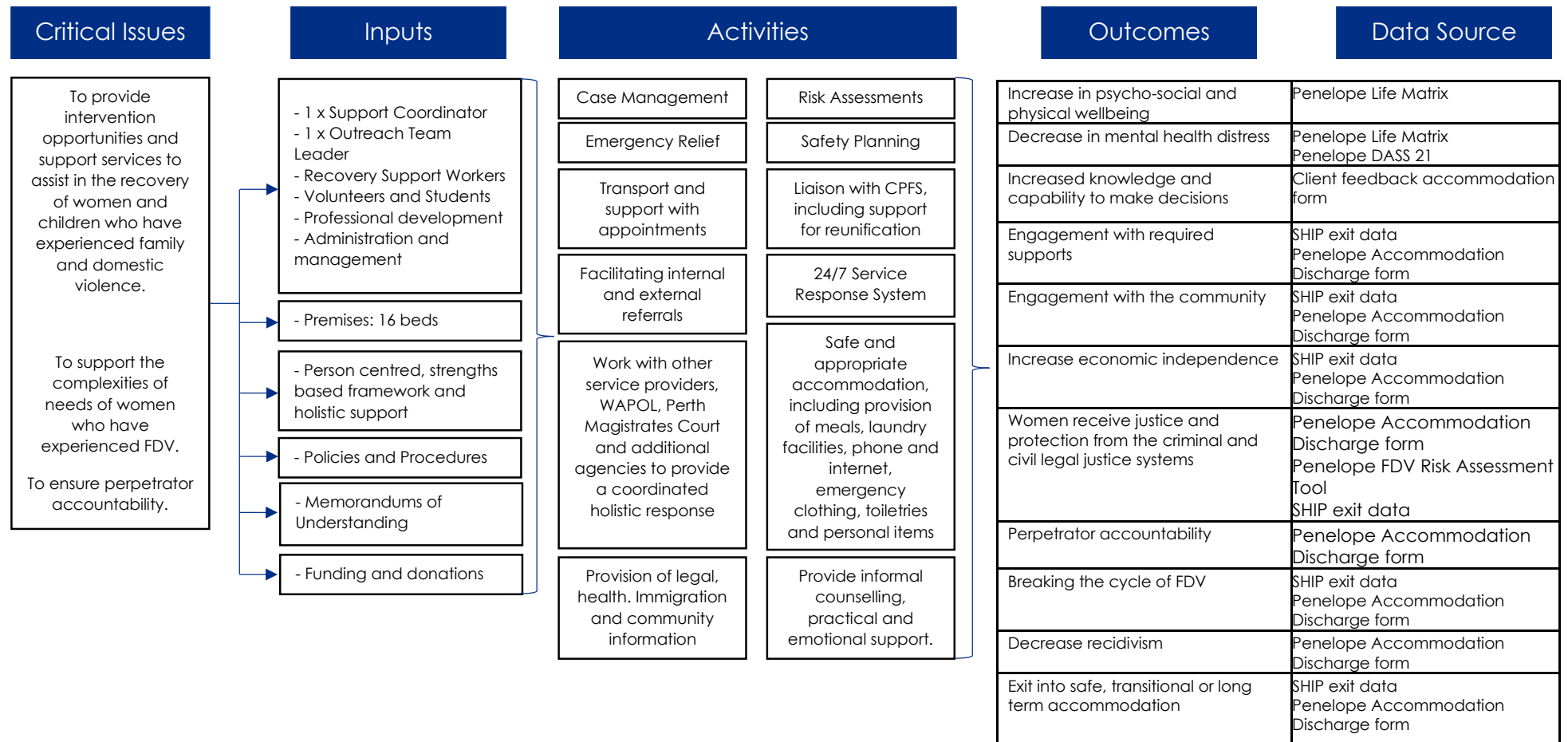


FIGURE 2.3 RECOVERY SUPPORT PROGRAM LOGIC

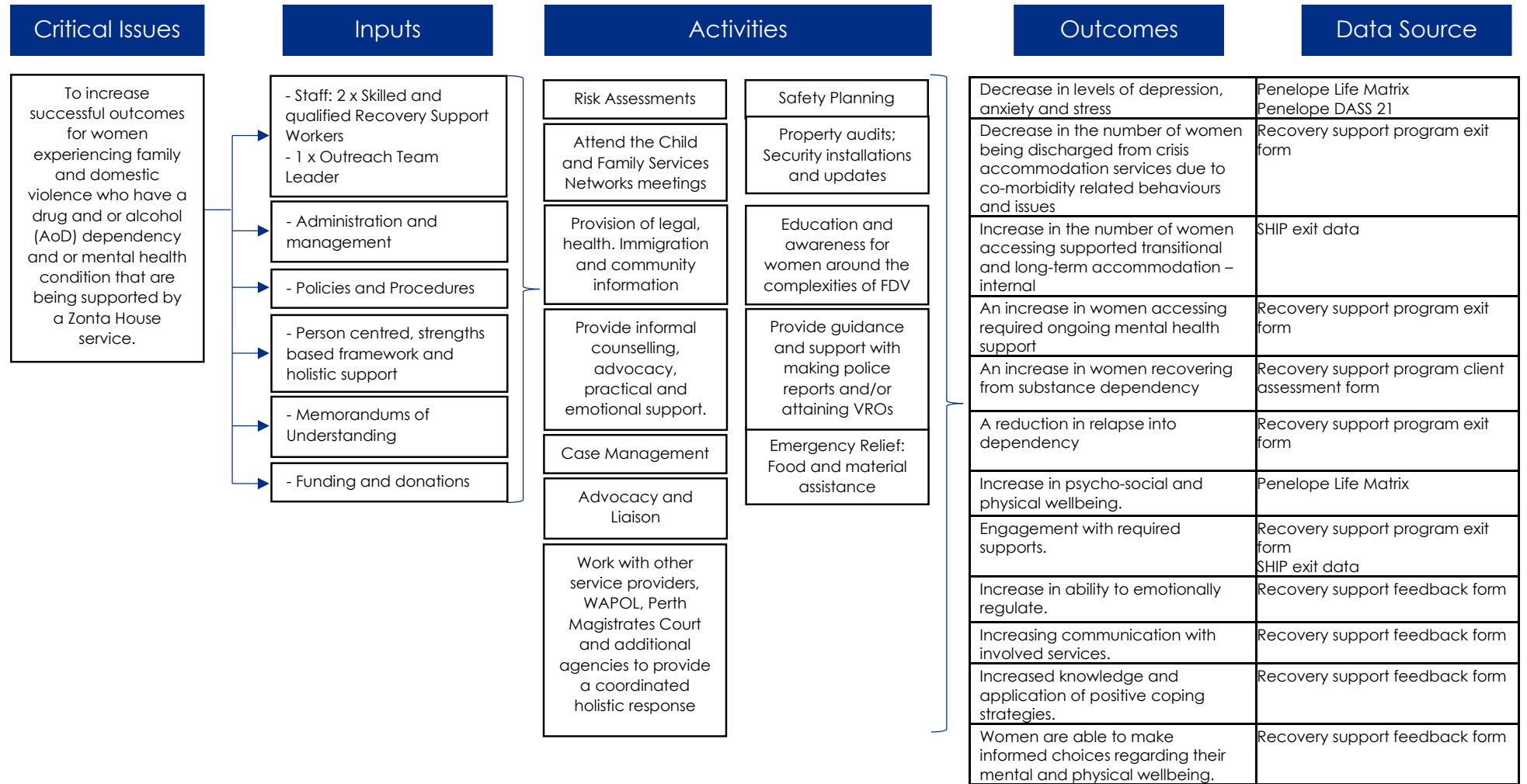


FIGURE 2.4 OUTREACH SUPPORT PROGRAM LOGIC

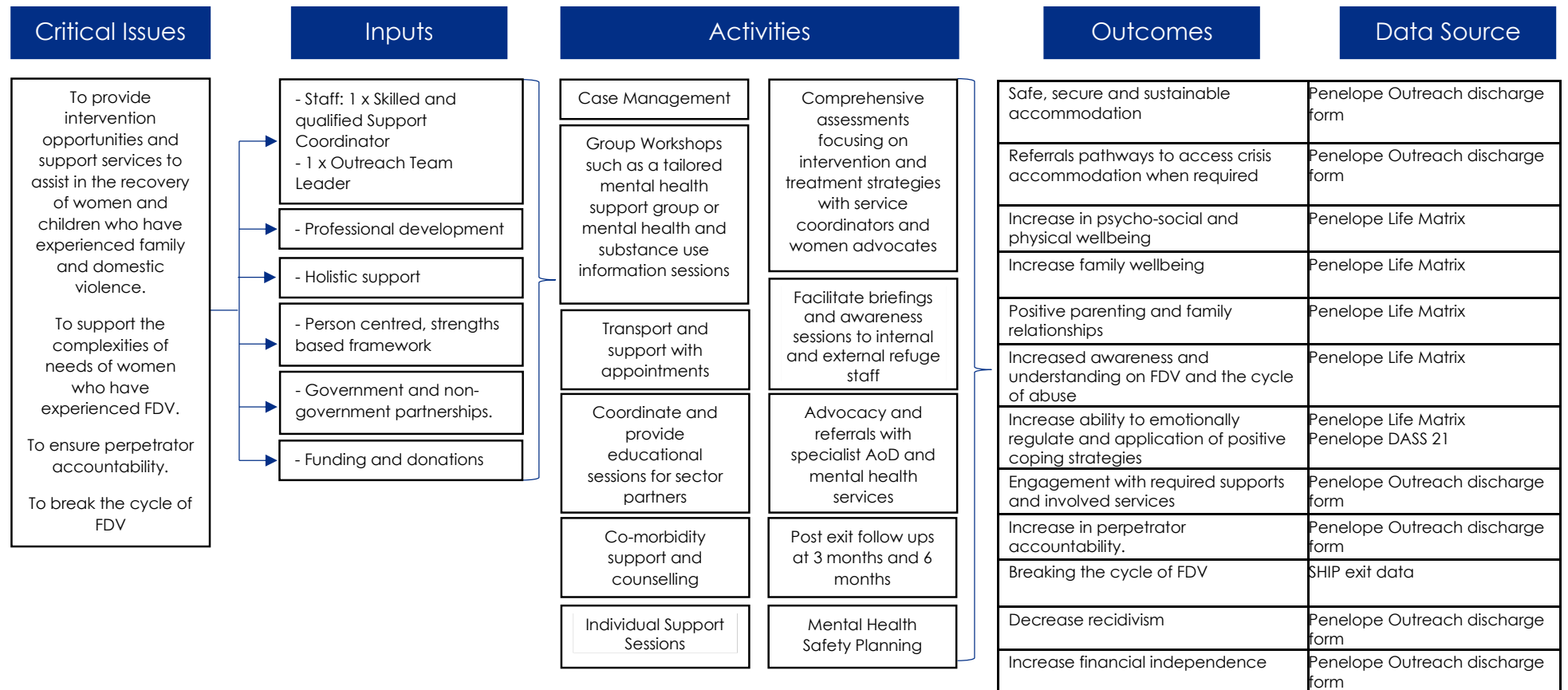


FIGURE 2.5 SAFER PATHWAYS FOR WOMEN PROGRAM LOGIC

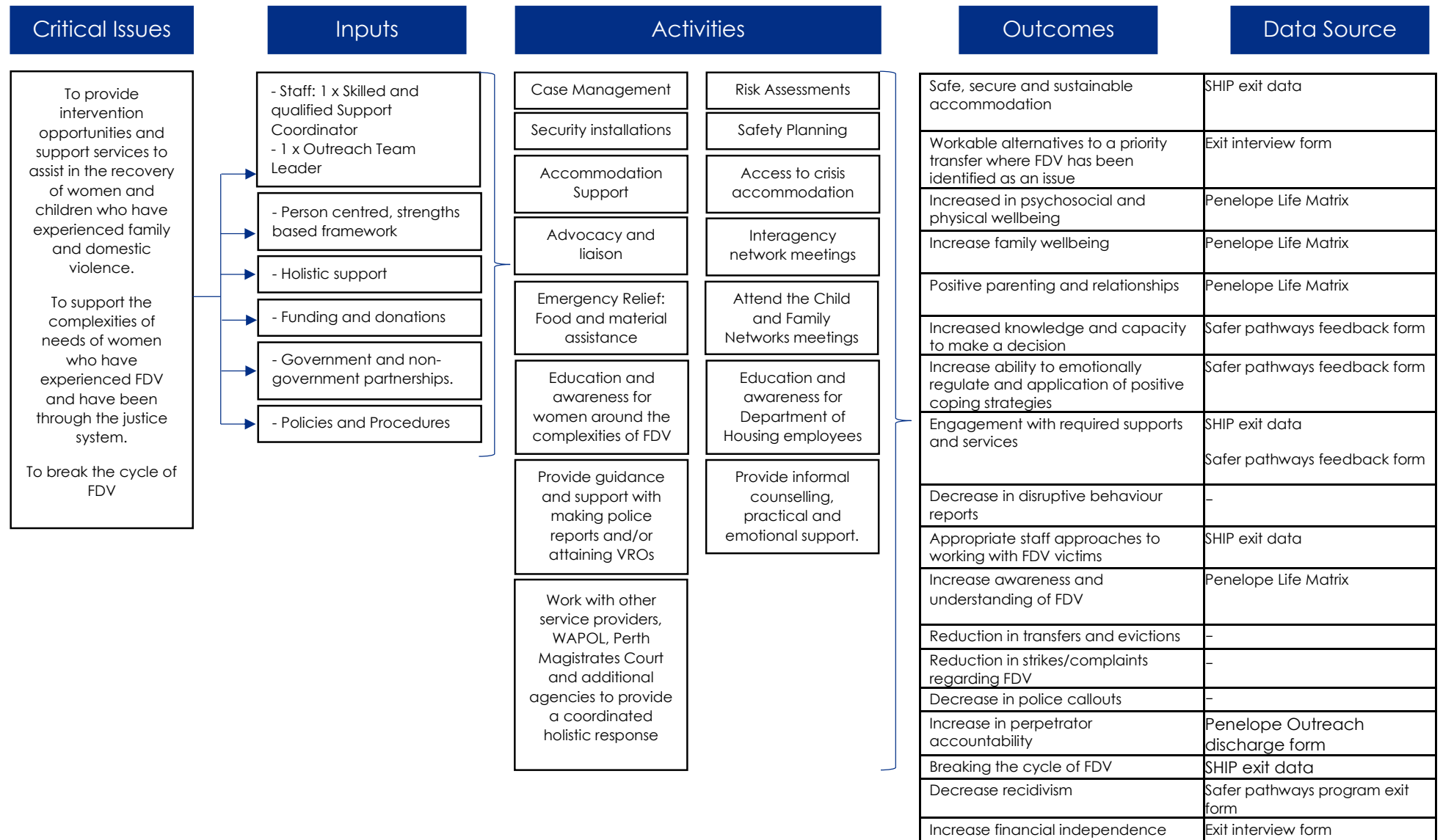


FIGURE 2.6 FUTURE EMPLOYMENT CONNECTIONS PROGRAM LOGIC

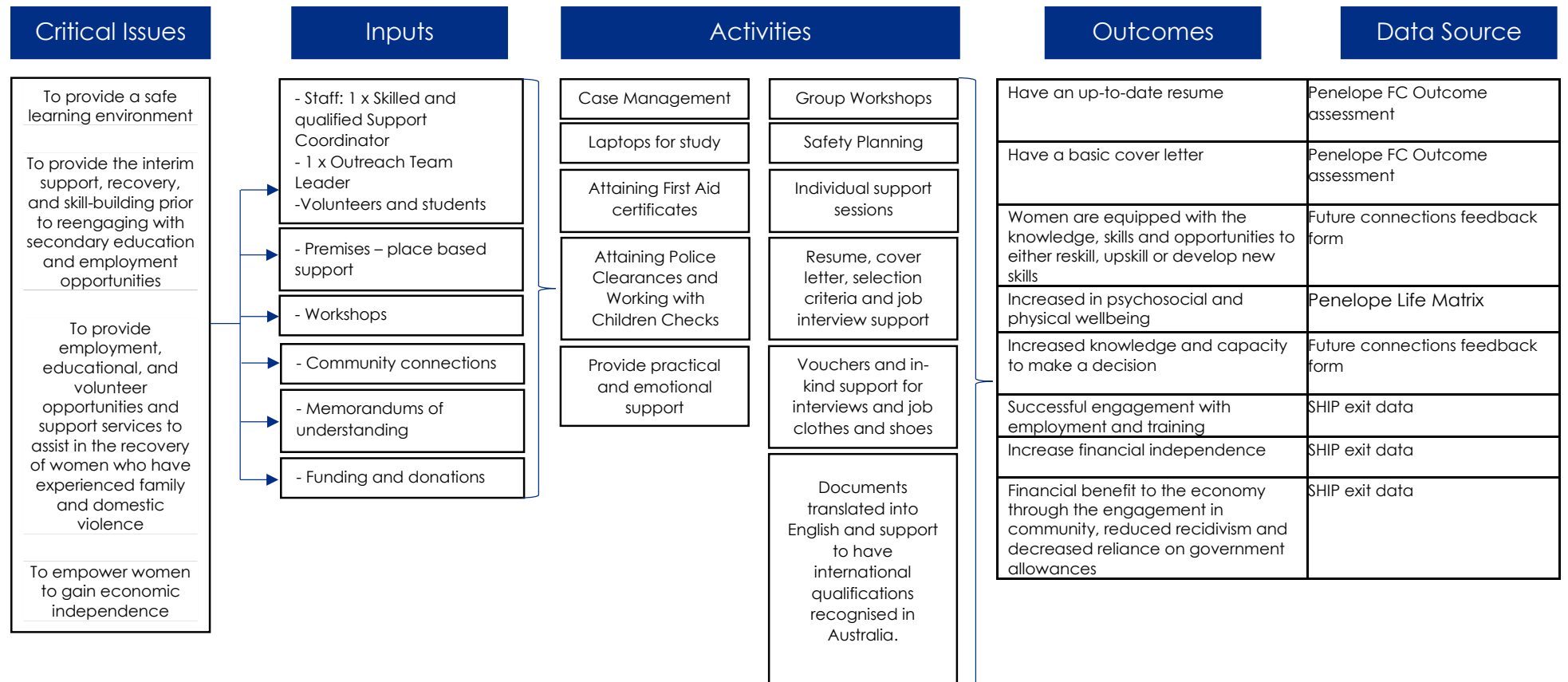
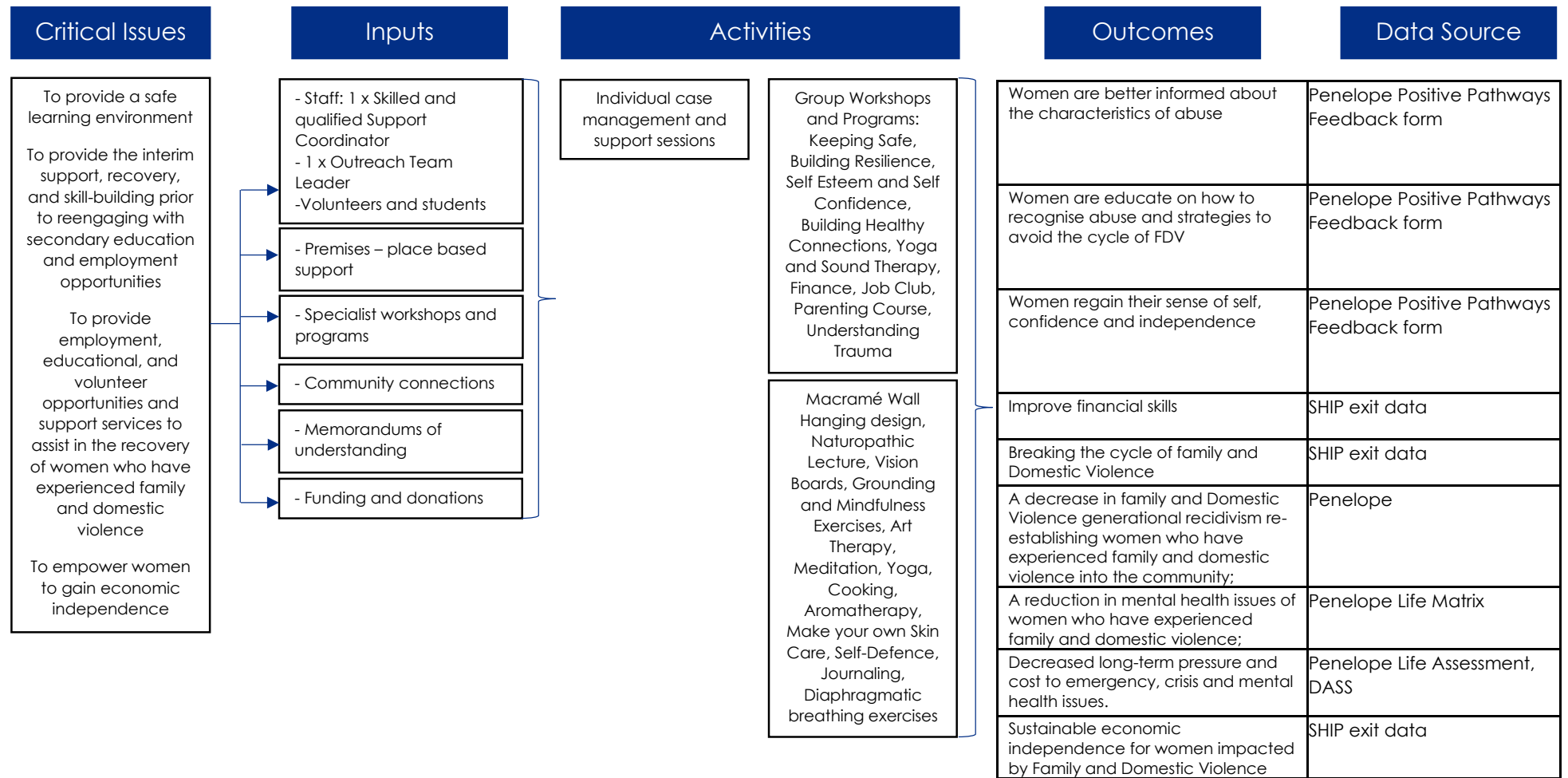


FIGURE 2.7 POSITIVE PATHWAYS PROGRAM LOGIC



3. PROGRAM LOGIC OUTCOMES – RESULTS

The results of the outcomes data analysis are presented for Crisis Accommodation (Site 1 and Site 2), Transitional Accommodation, Recovery support, Outreach Support Case Management, Safer Pathways for Women, Future Employment, and Positive Pathways Connections programs. The data analysis involved Penelope Data, SHIP data, and data from the Department of Communities.

3.1. Crisis Accommodation results

There were 422 records extracted from Penelope for the Crisis Accommodation (site 1 and site 2) program. The outcomes data are presented in the table below.

TABLE 3.1: CRISIS ACCOMMODATION PROGRAM RESULTS AND DATA SOURCES

Outcomes	Data Source	Results
Women experiencing or at risk of FDV are provided with or assisted to access safe, supported accommodation	Penelope Life Matrix	<ul style="list-style-type: none"> Significant increase in Scale 1 FDV scores
	Penelope Accommodation Discharge form	<ul style="list-style-type: none"> 93% at high risk/risk of harm. Exit into following accommodation <ul style="list-style-type: none"> Another Refuge/Transitional Accommodation Service 14% Community Housing 1% Hospital 1% Hotel/Motel 5% Housing Authority 7% Moving interstate 2% Moving overseas 1% Other 5% Previous partner's house 2% Private Rental 6% Returning to own property 9% Staying with family members 9% Staying with friends 10% Unknown 13% ZHRA Interim Refuge 1% Zonta Transitional Housing 5%
Increase in psychosocial and physical wellbeing	Penelope Life Matrix	<ul style="list-style-type: none"> Significant increase in Scale 3 emotional wellbeing scores, Scale 4 social wellbeing, Scale 5 community and cultural involvement scores
Decrease in mental health distress	Penelope DASS 21	<ul style="list-style-type: none"> Significant decrease in depression Significant decrease in anxiety Significant decrease in stress
	Penelope Life Matrix	<ul style="list-style-type: none"> Significant increase in Scale 10 mental health scores
Increased knowledge and capability to make decisions	Penelope Client feedback accommodation form	<ul style="list-style-type: none"> 87% learnt new skills and received knowledge to help with their situation 88% felt better able to cope or deal with their issues 95% received adequate information including referrals to other services to meet their needs
Engagement with required supports	SHIP exit data	<p>Of those identified with needs:</p> <ul style="list-style-type: none"> 100% short term or emergency accommodation support provided 98% family and domestic violence support General assistance and support at least 89%. Specialised services at least 83%

	Penelope Accommodation Discharge form	<p>Services accessed</p> <ul style="list-style-type: none"> • 8% Future Connections • 8% Positive Pathways • 68% Recovery Support Program <p>24% remaining engaged with Zonta House Programs post exit</p>
Engagement with the community (referrals)	SHIP exit data	<p>Of those identified with needs, referrals provided for</p> <ul style="list-style-type: none"> • 18% short term or emergency accommodation, 37% medium term transitional, 57% long term housing • 33% assistance for FDV, 25% victim support services • General assistance and support referrals provided: Assertive outreach for rough sleepers 8%, assistance to obtain government allowance 44%, employment assistance 42%, training assistance 40%, educational assistance 38%, financial information 38%, material aid/brokerage 33%, assistance for incest/sexual assault 24%, family and relationship assistance 33%, assistance for trauma 20%, assistance with challenging social behaviours 38%, living skills 39%, legal information 42%, court support 43%, advice/information 31%, retrieval/storage/removal or personal belongings 39%, advocacy/liason on behalf of client 48%, childcare 53%, structure play/skills development 100%, child contact and residence arrangements 32%, meals 2%, laundry/shower facilities 1%, recreation 6%, transport 42% • Specialised services referrals provided: child protection 36%, parenting skills education 17%, child specific counselling skills 50%, psychological services 46%, psychiatric services 47%, mental health 60%, pregnancy assistance 79%, family planning support 78%, physical disability services 29%, intellectual disability services 25%, health/medical services 69%, legal services 67%, financial advice and counselling 63%, drug and alcohol counselling 62%, specialist counselling services 55%, interpreter services 78%, assistance with immigration services 89%, culturally specific services 61%, assistance to connect culturally 55%, and other specialist services 63%.
	Penelope Accommodation Discharge form	<ul style="list-style-type: none"> • 34% engaged with community support post exit
Increased economic independence	SHIP exit data	<ul style="list-style-type: none"> • 29% of women had part-time work, 68% had full-time work • 64% main income source was Newstart allowance
	Penelope Accommodation Discharge form	<ul style="list-style-type: none"> • 6% currently studying • 9% currently employed • 64% Newstart main income source • 52% Rent status up-to-date
Women receive justice and protection from the	Penelope Accommodation Discharge form	41% identified as high risk of serious harm. 53% at risk of serious harm

Outcomes	Data Source	Results
criminal and civil legal justice systems	Penelope FDV Risk Assessment Tool	<ul style="list-style-type: none"> • 13% Police contacted • 13% VRO application • 3% Child Protection notified
	SHIP exit data	<ul style="list-style-type: none"> • 100% support provided for victim support services
Perpetrator accountability	Penelope Accommodation Discharge form	<ul style="list-style-type: none"> • 8% returning to violent relationship, 54% ongoing concerns for safety
Breaking the cycle of FDV	Penelope Accommodation Discharge form	<ul style="list-style-type: none"> • 85% have only used crisis accommodation once
Decrease recidivism	Penelope Accommodation Discharge form	Exit into safe/supported accommodation:
		<ul style="list-style-type: none"> ○ Another Refuge/Transitional Accommodation Service 14% ○ Community Housing 1% ○ Hospital 1% ○ Hotel/Motel 5% ○ Housing Authority 7% ○ Moving interstate 2% ○ Moving overseas 1% ○ Other 5% ○ Previous partner's house 2% ○ Private Rental 6% ○ Returning to own property 9% ○ Staying with family members 9% ○ Staying with friends 10% ○ Unknown 13% ○ ZHRA Interim Refuge 1%
Exit into safe, transitional or long-term data accommodation	SHIP exit data	<ul style="list-style-type: none"> • Zonta Transitional Housing 5% • 53% transition to a house/ townhouse/ or a flat, 18% into emergency accommodation

3.2. Transitional Accommodation results

There were 12 transitional accommodation and 30 transitional accommodation funded records extracted from Penelope for the Transitional Accommodation program. The outcomes data are presented in the table below.

TABLE 3.2: TRANSITIONAL ACCOMMODATION PROGRAM RESULTS AND DATA SOURCES

Outcomes	Data source	Results
Increase in psychosocial and physical wellbeing	Penelope Life Matrix	<ul style="list-style-type: none"> • Positive change in Scale 3 emotional wellbeing scores • Positive change in Scale 4 social wellbeing scores • Positive change in Scale 5 community and cultural involvement scores • Positive change in Scale 9 physical health scores (transitional accommodation only)
Decrease in mental health distress	Penelope DASS 21	<ul style="list-style-type: none"> • Decrease in depression • Increase in anxiety • Decrease in stress (transitional accommodation funded)
	Penelope Life Matrix	<ul style="list-style-type: none"> • Positive change in Scale 10 mental health scores (transitional accommodation only)

Increased knowledge and capability to make decisions	Penelope Client feedback accommodation form	<ul style="list-style-type: none"> 81% learnt new skills and received knowledge to help with their situation 89% felt better able to cope or deal with their issues 89% received adequate information including referrals to other services to meet their needs
Engagement with required supports	SHIP exit data	<p>Of those identified with needs</p> <ul style="list-style-type: none"> 100% housing/accommodation support provided 100% family and domestic violence support General assistance and support most areas 100%. Assistance for trauma 93%, Retrieval, storage, removal of personal belongings 91% Specialist services most areas 100%. Specialist counselling services 57%.
	Penelope Accommodation Discharge form	45% remaining engaged with Zonta House Programs post exit
Engagement with the community (referrals)	SHIP exit data	<p>Of those identified with needs</p> <ul style="list-style-type: none"> 25% short term and 14% medium term transitional housing 17% assistance for FDV, 25% victim support services General assistance and support referrals provided: assistance to obtain government allowance 70%, employment assistance 50%, training assistance 44%, educational assistance 70%, financial information 62%, material aid/brokerage 50%, assistance for incest/sexual assault 50%, family and relationship assistance 57%, assistance for trauma 57%, assistance with challenging social behaviours 57%, living skills 47%, legal information 73%, court support 89%, advice/information 50%, retrieval/storage/removal or personal belongings 64%, advocacy/liaison on behalf of client 67%, childcare 100%, child contact and residence arrangements 67%, recreation 14%, transport 71% Specialised services referrals provided: most services 100%. Psychological services 57%, mental health 89%, intellectual disability services 50%, legal services 78%, financial advice and counselling 44%, drug and alcohol counselling 50%, specialist counselling services 57%, interpreter services 67%, culturally specific services 43%, and other specialist services 67%.
	Penelope Accommodation Discharge form	77% engaged with community support post exit
Increased economic independence	SHIP exit data	On exit 29% of women had full-time work, 71% had full-time work
	Penelope Accommodation Discharge form	<ul style="list-style-type: none"> 59% currently Studying 50% currently Employed 36% wages Main income source, 32% Newstart, 73% Rent status up-to-date

Women receive justice and protection from the criminal and civil legal justice systems	Penelope Accommodation Discharge form	6% identified as high risk of serious harm. 12% at risk of serious harm
	Penelope FDV Risk Assessment Tool	<ul style="list-style-type: none"> • 0% Police contacted • 0% VRO application • 0% Child Protection notified
	SHIP exit data	<ul style="list-style-type: none"> • 100% support provided for victim support services
Perpetrator accountability	Penelope Accommodation Discharge form	5% returning to violent relationship, 9% ongoing concerns for safety
Breaking the cycle of FDV	SHIP exit data	<ul style="list-style-type: none"> • 100% support provided for victim support services
	Penelope Accommodation Discharge form	<ul style="list-style-type: none"> • 5% returning to violent relationship • 9% ongoing concerns regarding their safety
Decrease recidivism	Penelope data	<ul style="list-style-type: none"> • 86% have only attended program once
Exit into safe, sustainable long-term accommodation	SHIP exit data	<ul style="list-style-type: none"> • 74% transition to a house/ townhouse/ or a flat
	Penelope Accommodation Discharge form	Exit into safe/supported accommodation <ul style="list-style-type: none"> • 5% Another Refuge/Transitional Accommodation Service • 5% housing authority • 5% moving overseas • 52% Private Rental • 5% Staying with family members • 5% Unknown • 5% recovery house • 19% Zonta Transitional Housing

3.3. Recovery Support program results

There were 134 records extracted from Penelope for the Recovery Support program. The outcomes data are presented in the table below.

TABLE 3.3: RECOVERY SUPPORT PROGRAM RESULTS AND DATA SOURCES

Outcomes	Data source	Results
Decrease in levels of depression, anxiety and stress	Penelope DASS 21	<ul style="list-style-type: none"> • Significant decrease in depression • Significant decrease in anxiety • Significant decrease in stress
	Penelope Life Matrix	<ul style="list-style-type: none"> • Positive change in Scale 10 mental health scores
Decrease in the number of women being discharged from crisis accommodation services due to com-morbidity related behaviours and issues	Recovery support program exit form	<ul style="list-style-type: none"> • 88% voluntary exit
Increase in the number of women accessing supported transitional and long-term accommodation	SHIP exit data	<ul style="list-style-type: none"> • 55% transition to a house/ townhouse/ or a flat • 23% to emergency accommodation

Increase in women accessing required ongoing mental health support	Recovery support program exit form	<ul style="list-style-type: none"> 82% referred to ongoing mental health support 100% supportive response from WAPOL
Increase in women recovering from substance dependency	Recovery support program client assessment form	86% engage with the RSW for at least 3 months following exit who continue recovery from substance dependency for at least 3 month
A reduction in relapse into dependency	Recovery support program exit form	86% engage with the RSW for at least 3 months following exit who continue recovery from substance dependency for at least 3 month
Increase in psychosocial and physical wellbeing	Penelope Life Matrix	<ul style="list-style-type: none"> Positive change in Scale 3 emotional wellbeing scores Positive change in Scale 4 social wellbeing scores Significant positive change in Scale 5 community and cultural involvement scores Negative change in Scale 9 physical health scores
Engagement with required supports	SHIP exit data	<p>Of those identified with needs</p> <ul style="list-style-type: none"> Housing and accommodation referrals provided: 100% short term or emergency accommodation, 46% medium term transitional housing. 100% family and domestic violence support General assistance and support most areas 100%, at least 87% in other areas. Specialist services most areas 100%, at least 88% in other areas.
	Recovery support program exit form	<ul style="list-style-type: none"> 16% remaining engaged with Zonta House Programs post exit 63% engaged with community support
Increase in ability to emotionally regulate	Recovery support feedback form	97% feel better able to cope with or deal with my issues
Increase communication with involved services	Recovery support feedback form	94% received adequate information including referrals to other services to meet my needs
Increase knowledge and application of positive coping strategies	Recovery support feedback form	100% have learnt new skills and received knowledge to help with my situation
Women are able to make informed choices regarding their mental and physical wellbeing	Recovery support feedback form	94% received adequate information including referrals to other services to meet my needs

3.4. Outreach Support program results

There were 10 records for the Outreach Support Case Management program and 48 records for the Outreach Support Brief Intervention program extracted from Penelope. The outcomes data are presented in the table below.

TABLE 3.4 OUTREACH SUPPORT PROGRAM RESULTS AND DATA SOURCES

Outcomes	Data source	Results
Safe, secure and sustainable accommodation	Penelope Outreach discharge form	88% have safe accommodation on exit
Referral pathways to access crisis accommodation when required	Penelope Outreach discharge form	25% transferring to outreach case management program
Increased in psychosocial and physical wellbeing	Penelope Life Matrix	<ul style="list-style-type: none"> • Positive change in Scale 3 emotional wellbeing scores • Positive change in Scale 4 social wellbeing scores • Positive change in Scale 5 community and cultural involvement scores • Positive change in Scale 9 physical health scores
Increase family wellbeing	Penelope Life Matrix	Positive change in Scale 13 parenting and children scores
Positive parenting and relationships	Penelope Life Matrix	Positive change in Scale 13 parenting and children scores
Increased awareness and understanding of FDV and the cycle of abuse	Penelope Life Matrix	Positive change in Scale 1 FDV scores
Increase ability to emotionally regulate and application of positive coping strategies	Penelope Life Matrix Penelope DASS 21	Positive change in Scale 3 emotional wellbeing scores <ul style="list-style-type: none"> • decrease in depression • decrease in anxiety • decrease in stress
Engagement with required supports and services	Penelope Outreach discharge form	<ul style="list-style-type: none"> • 50% referred to another FDV provider • 25% CPFS involved • 38% Linked in with positive pathways • 13% Signed up to victim notification register
Increase in perpetrator accountability	Penelope Outreach discharge form	<ul style="list-style-type: none"> • 63% Linked in with WAPOL DVRT • 38% Supported with FVRO
Breaking the cycle of FDV	SHIP exit data	100% support provided for victim support services
Decrease recidivism	Penelope Outreach discharge form	79% have used the service once
Increase financial independence	Penelope Outreach discharge form	50% linked in with financial support

3.5. Safer Pathways for Women results

There were 45 records extracted from Penelope for the Safer Pathways for Women program. The outcomes data are presented in the table below.

TABLE 3.5: SAFER PATHWAYS FOR WOMEN PROGRAM RESULTS AND DATA SOURCES

Outcomes	Data source	Results
Safe, secure and sustainable accommodation	SHIP exit data	<ul style="list-style-type: none"> 75% transition to a house/ townhouse/ or a flat
Workable alternatives to a priority transfer where FDV has been identified as an issue	Exit interview form	Moving to: <ul style="list-style-type: none"> 8% staying with friend or family 41% remaining in housing authority property 75% waitlisted for transfer with Housing authority
Increased in psychosocial and physical wellbeing	Penelope Life Matrix	<ul style="list-style-type: none"> Positive change in Scale 3 emotional wellbeing scores Positive change in Scale 4 social wellbeing scores Positive change in Scale 5 community and cultural involvement scores Positive change in Scale 9 physical health scores
Increase family wellbeing	Penelope Life Matrix	Positive change in Scale 13 parenting and children scores
Positive parenting and relationships	Penelope Life Matrix	Positive change in Scale 13 parenting and children scores
Increased knowledge and capacity to make a decision	Safer pathways feedback form	100% learnt new skills and received knowledge to help with their situation
Increase ability to emotionally regulate and application of positive coping strategies	Safer pathways feedback form	89% feel better able to cope or deal with their issues
Engagement with required supports and services	SHIP exit data	Of those identified with needs <ul style="list-style-type: none"> Housing and accommodation referrals provided:100% short term or emergency accommodation. 100% family and domestic violence support General assistance and support most areas 100%. Assistance with challenging behaviours 88% , laundry/shower facilities 80%. Specialist services all areas 100%.
	Safer pathways feedback form	89% received adequate information including referrals to other services to meet my needs
Decrease in disruptive behaviour reports	Redacted	Redacted
Appropriate staff approaches to working with FDV victims	SHIP exit data	Of those identified with needs <ul style="list-style-type: none"> 100% family and domestic violence support
Increased awareness and understanding of FDV	Penelope Life Matrix	Positive change in Scale 1 FDV scores
Reduction in transfers and evictions	Redacted	Redacted
Reduction in strikes/complaints regarding FDV	Redacted	Redacted

Decrease in police callouts	Redacted	Redacted
Increase in perpetrator accountability	Penelope Outreach discharge form	<ul style="list-style-type: none"> 63% Linked in with WAPOL DVRT 38% Supported with FVRO
Breaking the cycle of FDV	SHIP exit data	100% support provided for victim support services
Decrease recidivism	Safer pathways feedback form	<ul style="list-style-type: none"> 13% have been supported by Zonta previously
Increase financial independence	Exit interview form	Main Income Source: <ul style="list-style-type: none"> 62% DSP 16% Newstart 12% single parent pension 8% FTB/FTA

3.6. Future Employment Connections results

There were 68 records extracted from Penelope for the Future Employment Connections program. The outcomes data are presented in the table below.

TABLE 3.6: FUTURE EMPLOYMENT CONNECTIONS RESULTS AND DATA SOURCES

Outcomes	Data source	Results
Have an up-to-date resume	Penelope FC Outcome assessment	63% have an up-to-date resume
Have a basic cover letter	Penelope FC Outcome assessment	70% have a basic cover letter
Women are equipped with the knowledge, skills and opportunities to either reskill, upskill or develop new skills	Future connections feedback form	<ul style="list-style-type: none"> 91% received relevant information and referrals to employment and volunteering opportunities 100% felt confident looking for jobs 100% felt encouraged and motivated to succeed
Increased in psychosocial and physical wellbeing	Penelope Life Matrix	<ul style="list-style-type: none"> Significant positive change in Scale 3 emotional wellbeing scores Significant positive increase in Scale 4 social wellbeing scores Positive increase in Scale 5 community and cultural involvement scores Positive change in Scale 9 physical health scores
Increased knowledge and capacity to make a decision	Future connections feedback form	96% learnt new skills and gained knowledge
Successful engagement with employment and training	SHIP exit data	<ul style="list-style-type: none"> 67% of women had part-time work, 22% had full-time work
Increase financial independence	SHIP exit data	<ul style="list-style-type: none"> 44% main income source was Newstart allowance, 13% employee income
Financial benefit to the economy through the engagement in community, reduced recidivism and decreased reliance on government allowances	SHIP exit data	<ul style="list-style-type: none"> 10% reliant on government pensions and allowances 31% no income

3.7. Positive Pathways results

There were 838 records extracted from Penelope for the Positive Pathways program. The outcomes data are presented in the table below.

TABLE 3.7 POSITIVE PATHWAYS RESULTS AND DATA SOURCES

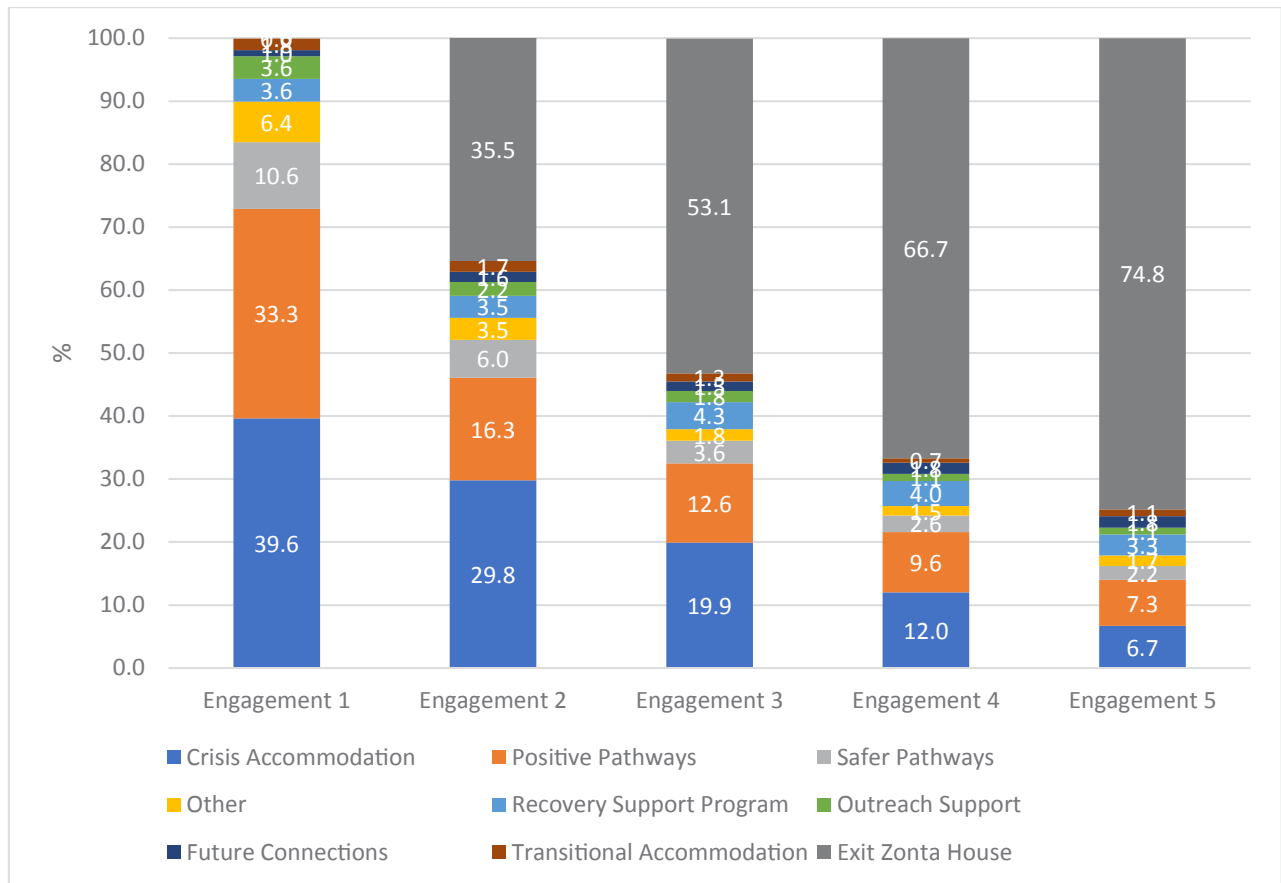
Outcomes	Data source	
Women are better informed about the characteristics of abuse	Penelope Positive Pathways Feedback form	98% - information included relevant and informative
Women are educated on how to recognise abuse and strategies to avoid the cycle of FDV	Penelope Positive Pathways Feedback form	96% - knowledge on topic increased and have better understanding
Women regain their sense of self, confidence and independence	Penelope Positive Pathways Feedback form	94% I learnt practical skills I will use in my everyday life
Improve financial skills	SHIP exit data	100% financial support provided, referrals arranged for 54%
Breaking the cycle of FDV	SHIP exit data	100% support provided for victim support services
A decrease in FDV generational recidivism re-establishing women who have experienced FDV in into the community	Penelope	66% attend program more than once
A reduction in mental health issues of women who have experienced FDV	Penelope Life Matrix	<ul style="list-style-type: none"> • Significant decrease in depression • Significant decrease in anxiety • Significant decrease in stress
Decreased long-term pressure and cost to emergency, crisis and mental health issues	Penelope Life Assessment, DASS	<ul style="list-style-type: none"> • Increase in satisfaction with level of vitality and wellbeing • Increase in support systems and structures in place that allow client to easily maintain health and wellbeing • Increase in approach to health in a proactive and generative way, rather than crisis management mode • Significant decrease in depression • Significant decrease in anxiety • Significant decrease in stress
Sustainable economic independence for women impacted by FDV	SHIP exit data	<ul style="list-style-type: none"> • 69% main income source was Newstart allowance

4. A WOMAN'S JOURNEY THROUGH ZONTA HOUSE

4.1. Types of program engagement

Almost 40% of a woman's first engagement with Zonta House programs is with Crisis Accommodation, followed by 33% Positive Pathways, 11% Safer Pathways and 6% other programs (eg Off site crisis accommodation, ReSet Housing, ReSet waitlist) (Figure 4.1). Of women engaging with Zonta House programs, 65% percent of women engage a second time, 47% a third time, one-third a fourth time, and one-quarter a fifth time. Thirty-five percent of women engage with Zonta House programs once, with 65% engaging in programs more than once. On average, a woman engages with Zonta House programs 4.1 times (sd=5.3, min=1, max=47). Clients are more likely to attend the Positive Pathways program multiple times (Table 2.1).

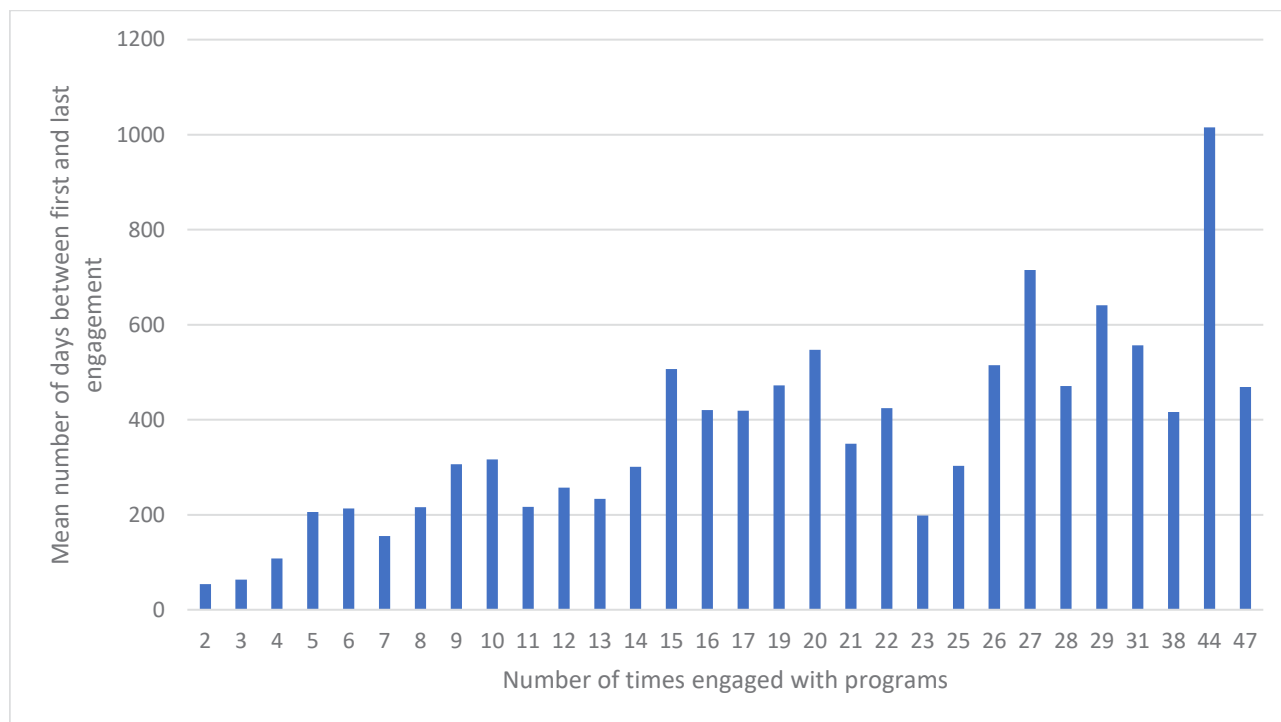
FIGURE 4.1 PROGRAM ENGAGEMENT WITH ZONTA HOUSE



4.2. Length of engagement

For those women who have engaged with Zonta House programs more than once (65%), the average time between first and last program engagement is 147 days (sd=237.8, min=1, max=2553).

FIGURE 4.2 TIMES ENGAGED WITH ZONTA HOUSE PROGRAMS BY NUMBER OF DAYS BETWEEN FIRST AND LAST ENGAGEMENT



4.3. Flow of movement between Zonta House programs

The flow of movement between a woman's first 4 engagements with Zonta House programs is mapped in Table 4.1 and Figures 4 to 8. If the woman's first program engagement with Zonta House was crisis or transitional housing, their second program engagement was also likely to be crisis or transitional accommodation. One in five women re-engaged with the Recovery Support Program as their second program engagement, approximately one in three re-engaged with Future Connections or Positive pathways, and one in two re-engaged with Safer Pathways, Outreach Support and Other programs. One in five women only accessed the Recovery Support Program, one in three Safer Pathways, one in three Outreach Support, two in three Positive Pathways and one in three Other services.

Half the women whose second program engagement with Zonta House involved crisis or transitional housing, engaged with crisis or transitional housing on their third engagement. The majority of women who engaged with Other services on their second program engagement left Zonta House.

Approximately one-third of the women whose third program engagement with Zonta House involved crisis accommodation, engaged with crisis accommodation on their fourth engagement, whereas approximately one-fifth of the women whose third program engagement with Zonta House involved transitional accommodation engaged with transitional accommodation on their fourth program engagement. The vast majority of women who engaged with Other services on their third program engagement left Zonta House.

TABLE 4.1: FLOW BETWEEN ZONTA HOUSE PROGRAM ENGAGEMENTS

Engagement 1 → Engagement 2		Engagement 2 → Engagement 3		Engagement 3 → Engagement 4	
Crisis Accommodation	70% Crisis Accommodation 13% Left Zonta House	Crisis Accommodation	51% Crisis Accommodation 27% Left Zonta House	Crisis Accommodation	38% Crisis Accommodation 39% Left Zonta House
Transitional Accommodation	73% Transitional accommodation 0% Left Zonta House	Transitional Accommodation	50% Transitional accommodation 21% Positive Pathways 7% Left Zonta House	Transitional Accommodation	18% Transitional accommodation 27% Positive Pathways 27% Future Connections 9% Left Zonta House
Future Connections	50% Positive Pathways 38% Future Connections 0% Left Zonta House	Future Connections	46% Positive Pathways 31% Future Connections 0% Left Zonta House	Future Connections	33% Positive Pathways 50% Future Connections 0% Left Zonta House
Recovery Support Program	27% Positive Pathways 23% Crisis accommodation 23% Recovery Support Program 23% Left Zonta House	Recovery Support Program	28% Positive Pathways 51% Crisis accommodation 10% Left Zonta House	Recovery Support Program	23% Positive Pathways 23% Recovery Support Program 40% Crisis accommodation 11% Left Zonta House
Safer Pathways	51% safer pathways 36% Left Zonta House	Safer Pathways	55% Safer Pathways 31% Left Zonta House	Safer Pathways	57% Safer Pathways 20% Positive Pathways 20% Left Zonta House
Outreach Support	50% Outreach Support 33% Left Zonta House	Outreach Support	61% Outreach 22% Left Zonta House	Outreach Support	53% Outreach 33% Left Zonta House
Positive Pathways	29% Positive pathways 66% Left Zonta House	Positive Pathways	43% Positive pathways 28% Left Zonta House	Positive Pathways	45% Positive pathways 19% Left Zonta House
Other	51% Other 36% Left Zonta House	Other	27% Other 62% Left Zonta House	Other	80% Left Zonta House

FIGURE 4.3 MAPPING OF FLOW BETWEEN FIRST AND SECOND PROGRAM ENGAGEMENT WITH ZONTA HOUSE

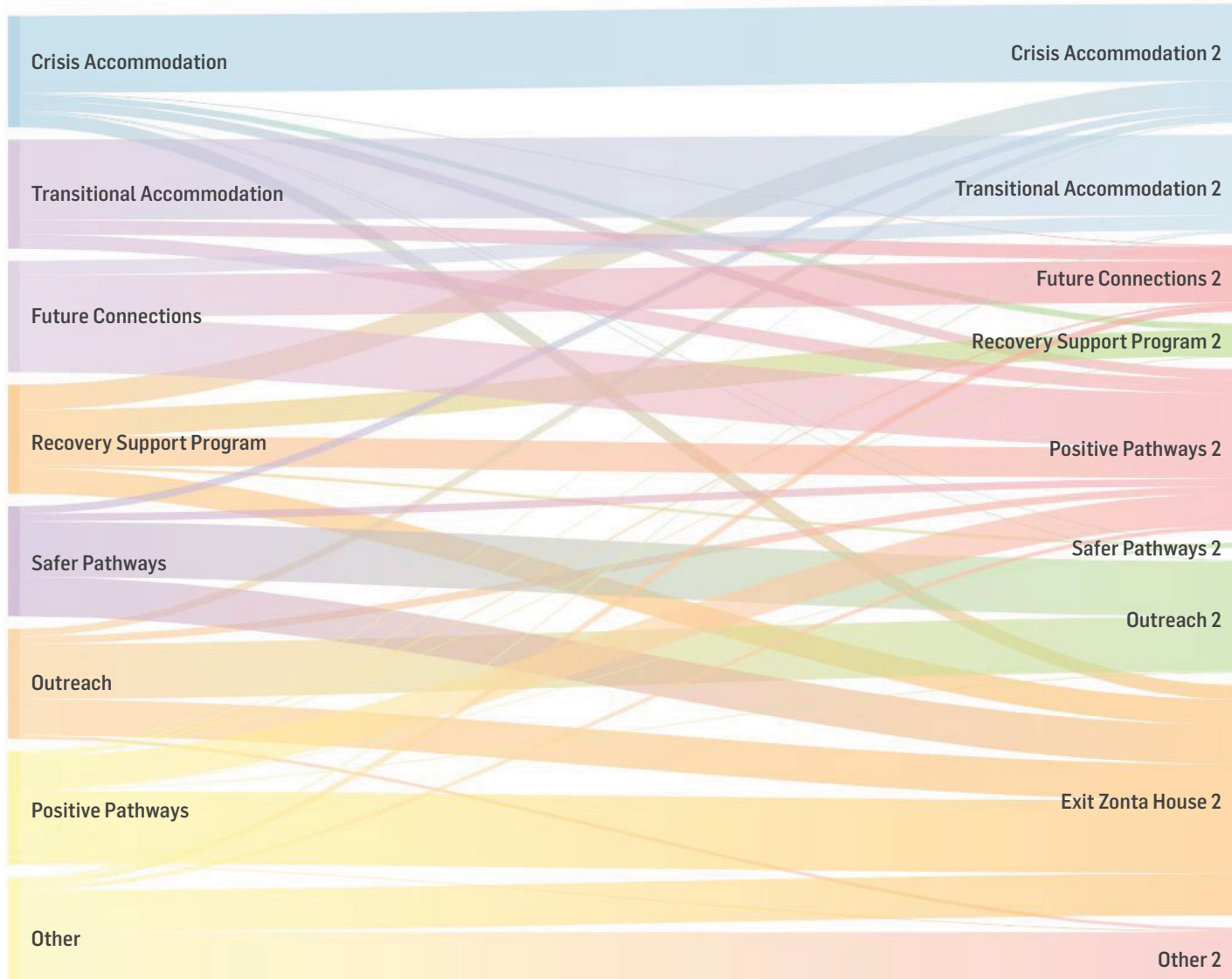


FIGURE 4.4 MAPPING OF FLOW BETWEEN SECOND AND THIRD PROGRAM ENGAGEMENT WITH ZONTA HOUSE

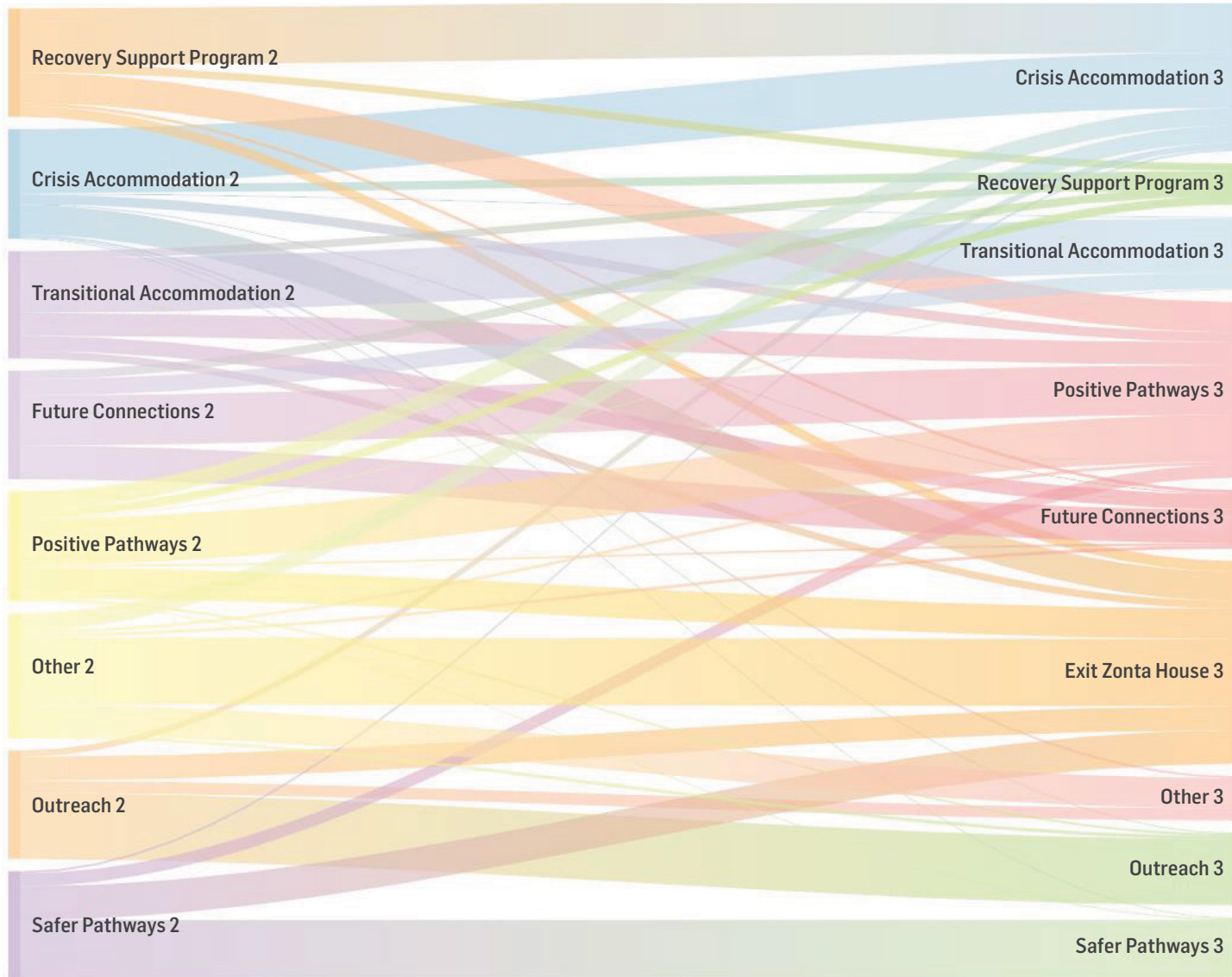
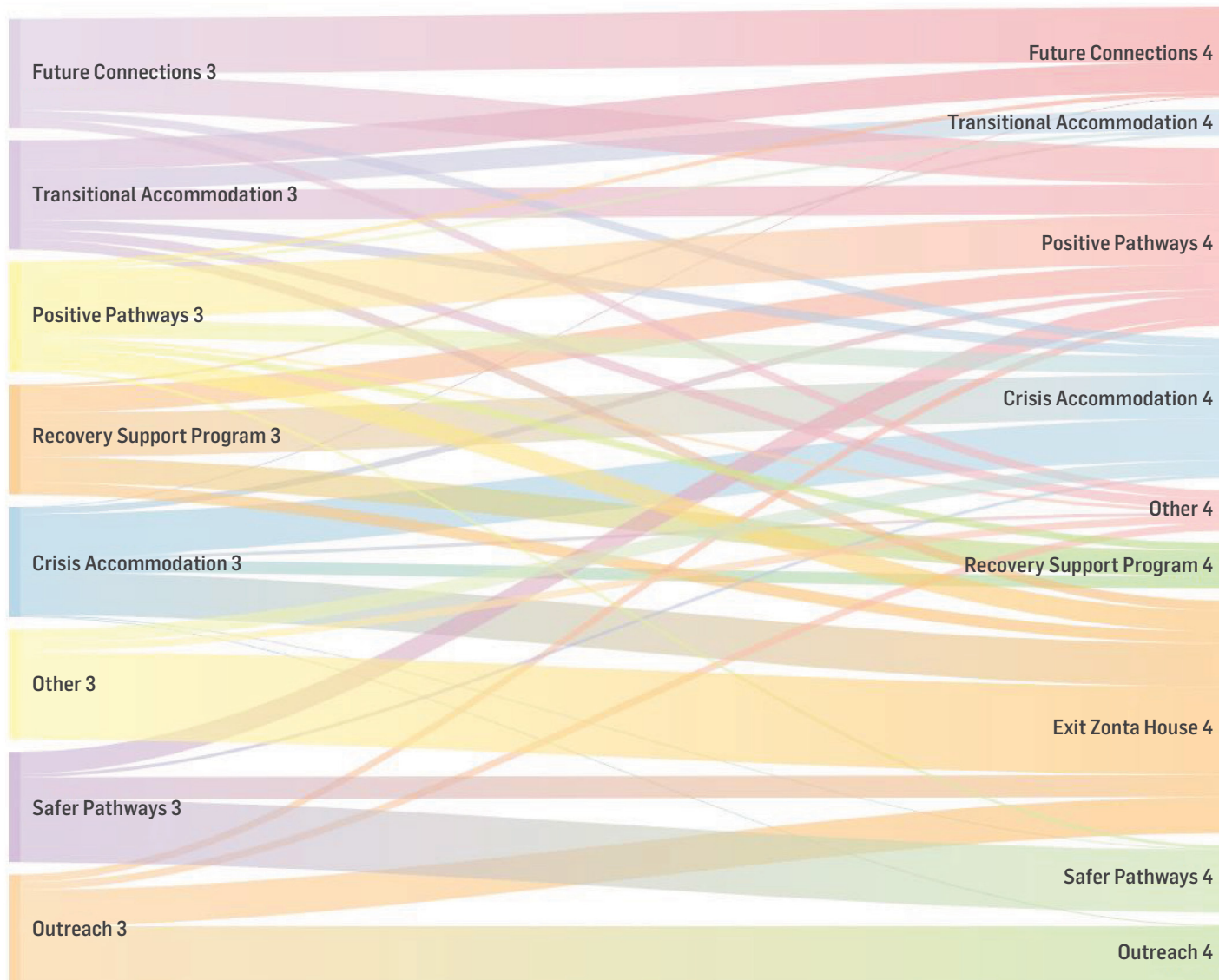


FIGURE 4.5 MAPPING OF FLOW BETWEEN THIRD AND FOURTH PROGRAM ENGAGEMENT WITH ZONTA HOUSE



5. RELIABILITY AND VALIDITY OF THE LIFE MATRIX

5.1. Reliability and validity

Reliability refers to the internal-consistency of the scale. What we are asking with this analysis is, do each of the questions correlate with each other? If they do, it suggests that they are measuring the same construct and can be summed to get a score. Validity on the hand, refers to whether a scale measures the construct that it is intended to measure.

5.2. Design and participants

The reliability and validity study employed a cross-sectional design, in which Zonta House clients who have engaged with certain programs were asked to complete the Life Matrix and the DASS 21 in a single sitting.

In this reliability and validity study, we sought to answer six questions about the Life Matrix, relevant to its potential use as a routine outcome measure. These are summarised in Table 4.1.

TABLE 5.1: RESEARCH QUESTIONS

Topic	Research question	Outcome if Life Matrix appropriate to use
Face validity and practicality	1. Is the Life Matrix simple to understand and complete?	The Life Matrix should be well understood and easily completed by participants with minimal missing data
	2. Can the Life Matrix be used as a total score (one underlying theme)?	A total Life Matrix score can be created from all 14 domains and used to compare pre and post program and across demographics.
Factor analysis	3. Are there many underlying themes?	A revised Life Matrix Total score can be created from the domains representing different underlying themes and scores can be used to compare pre and post program and across demographics.
	4. What is the internal consistency of the Total Life Matrix or the domains which represent underlying themes within the Life Matrix?	Instrument should have acceptable to excellent internal consistency indicating the items are tapping into the same general construct.
Reliability	5. How do items and scores on the Life Matrix correlate with DASS 21, a well-established and widely used mental health screening tool?	Scores on the Life Matrix should demonstrate predictable and moderate to high correlations with items and scores on the DASS 21, indicating they are tapping into the same broad construct (mental health).
	6. Can the Total Life Matrix or the domains which represent underlying themes within the Life Matrix discriminate between clients in the clinical and non-clinical range on the DASS 21?	Scores on the Life Matrix should be able to discriminate between clients at different mental health symptom severity levels.

5.3. Measures

5.3.1. The Life Matrix

The Life Matrix consists of 14 items each with a 5-level response category (1-no support to 5-highest support). Each item taps into a different domain (Family and domestic violence, Alcohol and other drugs, Emotional wellbeing, Social Wellbeing, Community and Cultural involvement, Housing, Finances, Employment, Physical health, Mental health, Legal, Education, Parenting and Children, Immigration and Visa). The time frame for the questions is “today”, with the Life Matrix completed at the start and end of various Zonta House programs. Clients are not required to answer information for all domains. Completed Life Matrix questionnaires were entered into the Penelope system.

5.3.2. DASS 21

The Depression Anxiety and Stress Scale (DASS 21) is a 21 item self-report questionnaire designed to measure the severity of a range of symptoms associated with depression, anxiety and stress. The DASS 21 is a reliable and valid screening tool.

In completing the DASS 21, clients are required to indicate the presence of a symptom over the previous week. Each item is scored from 0 (did not apply to me at all over the last week) to 3 (applied to me very much or most of the time over the past week). The instrument generates total scores for depression, anxiety and stress, with total scores ranging from 0 to 42, with higher scores indicating greater depression, anxiety or stress. The following cut-off scores define the clinical bands: normal; mild, moderate, severe, extremely severe.

TABLE 5.2: DASS 21 CATEGORIES

	Depression	Anxiety	Stress
Normal	0-4	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

5.4. Crossover between measures

There is one mental health domain in the Life Matrix which has an obvious corollary to the DASS 21.

5.5. Analysis

The Life Matrix records (n=2,334) and DASS 21 records (n=16,338) at October 2020 were downloaded from Penelope in a long format (unique event or question per row). Both files were converted to a wide format (unique client per row) and combined into one file. The final dataset contained n=417 records, pertaining to n=269 clients. Descriptive statistics such as age, Aboriginal and/or Torres Strait Islander status, and Zonta House program were tabulated (see Table 5.3). The DASS 21 scores were calculated for the depression, anxiety and stress subscales. A total of n=827 SHIP records (site 1 n=683, site 2 n=144) were downloaded from AIHW and joined to the Penelope dataset by birthdate.

5.5.1. Face validity

Life Matrix face validity was addressed by assessing the language used within the matrix and examining the proportion of missing data. We also utilised qualitative information from Zonta House staff.

5.5.2. Exploratory factor analysis

The Life Matrix currently has 14 items measuring 14 different dimensions. As it currently stands, 14 different scores could be calculated to measure the impact of the programs on each of the dimensions. Exploratory factor analysis is a dimension reduction technique used to investigate variable relationships by collapsing a large number of variables into underlying factors (concepts or themes). These themes become subscales. Exploratory factor analysis identifies groups of variables that can be grouped together to calculate a single score for an underlying theme, meaning conclusions can be drawn from fewer scores, rather than assessing individual scores. Exploratory factor analysis was performed to determine the underlying themes (subscales) of the Life Matrix.

5.5.3. Reliability

Reliability was estimated by calculating Cronbach's alpha for the themes found in the exploratory factor analysis of the Life Matrix. Cronbach's alpha takes into account the variances and covariances of the variables of a scale. For a scale to be considered reliable, the minimally acceptable level of Cronbach's alpha is 0.7, although higher levels indicate greater reliability.

5.5.4. Convergent validity

Convergent validity is the extent to which a scale is closely related to other (established) scales that measure the same construct. To examine convergent validity, the correlations (specifically, Pearson's product moment correlation) between the Revised Life Matrix Factor score and each of the DASS 21 domain scores (depression, anxiety and stress) was calculated. Additionally, correlations were calculated between the items of the Revised Life Matrix Factor and the DASS 21 in an item-level correlation matrix of scores and DASS 21 domain scores.

To assess whether the Revised Life Matrix Factor score predicted the DASS 21 domain scores, we regressed the DASS 21 domain scores on the individual items of the Revised Life Matrix Factor scores using simple linear regression with all Life Matrix domains entered simultaneously. We used significance and strength of β values to determine which Revised Life Matrix Factor score items were most predictive of DASS 21 Total scores.

To examine the differences in Revised Life Matrix Factor scores between respondent demographics, Revised Life Matrix Factor scores were cross-tabulated with age and Aboriginal and/or Torres Strait Islander status. Mann-Whitney U and Kruskal-Wallis tests were used to test for differences between groups based on these respondent demographics. Non-parametric tests were used as Revised Life Matrix Factor scores were not normally distributed.

5.6. Results

As the reliability and validity study is not concerned with individual clients but rather Life Matrix and DASS 21 scores, clients may be represented more than once in the following analysis and tables. A total of 417 Zonta House records were used in this analysis, equating to 269 individual clients as 148 clients accessed two or more services.

Records used in this analysis, demonstrate that the majority of clients accessing programs were aged between 26–45 years, 69% were non-ATSI, and 56% participating in the crisis accommodation programs.

TABLE 5.3: DESCRIPTIVE CHARACTERISTICS OF ZONTA HOUSE RECORDS*

	n	%
Age		
18 - 20	5	1.2
21 - 25	26	6.2
26 - 35	137	32.9
36 - 45	102	24.5
46 - 55	73	17.5
56 - 65	17	4.1
66 - 85	2	0.5
Missing	55	13.2
Total	417	100.0
Aboriginal and/or Torres Strait Islander		
Yes	75	18.0
No	287	68.8
Missing	55	13.2
Total	417	100.0
Zonta House Program		
Crisis Accommodation Site 1	141	33.8
Crisis Accommodation Site 2	94	22.5
Future Connections	51	12.2
Long Term Accommodation	11	2.6
LW Outreach CM	1	0.2
Off Site Crisis Accommodation	18	4.3
Positive Pathways	1	0.2
Recovery Support Program	39	9.4
Safer Pathways Case Management	29	7.0
Transitional Accommodation	11	2.6
Missing	21	5.2
Total	417	100.0

*clients may be represented more than once

TABLE 5.4: LIFE MATRIX AND DASS 21 SCORES

	Mean	SD
Life Matrix Domains		
FDV	2.6	0.8
AOD	4.3	1.0
Emotional wellbeing	3.4	1.2
Social wellbeing	3.3	1.3
Community and cultural involvement	3.1	1.4
Housing	2.7	1.3
Finances	3.0	1.3
Employment	2.7	1.0
Physical health	3.8	1.0
Mental health	3.8	1.1
Legal	3.6	1.6
Education	2.5	1.5
Parenting and children	3.8	1.5
Immigration and visa	4.4	1.2
DASS 21		
Depression	9.6	5.9
Anxiety	9.1	5.5
Stress	9.6	5.3

The highest scoring Life Matrix domains were Immigration and Visa (4.4), and AOD (4.3) where a higher score represents currently receiving greater support. Education (2.5) and FDV (2.6) were the lowest scoring Life Matrix domains.

At initial assessment, 44% of women reported experiencing severe depression. This proportion dropped to 17% after engagement with Zonta House. Similarly, 64% of women reported severe anxiety when first assessed, compared to 34% who reported severe anxiety at final assessment. Finally, 29% of women were experiencing severe stress at their initial assessment and this number dropped to 12% at close of engagement. Broadly, these findings indicate that the prevalence of severe or extremely severe mental health impairment (depression, anxiety, and stress) was more than halved over the course of client's involvement with Zonta House (Figure 5.1)

FIGURE 5.1: LIFE MATRIX DOMAINS – MEAN SCALE SCORE

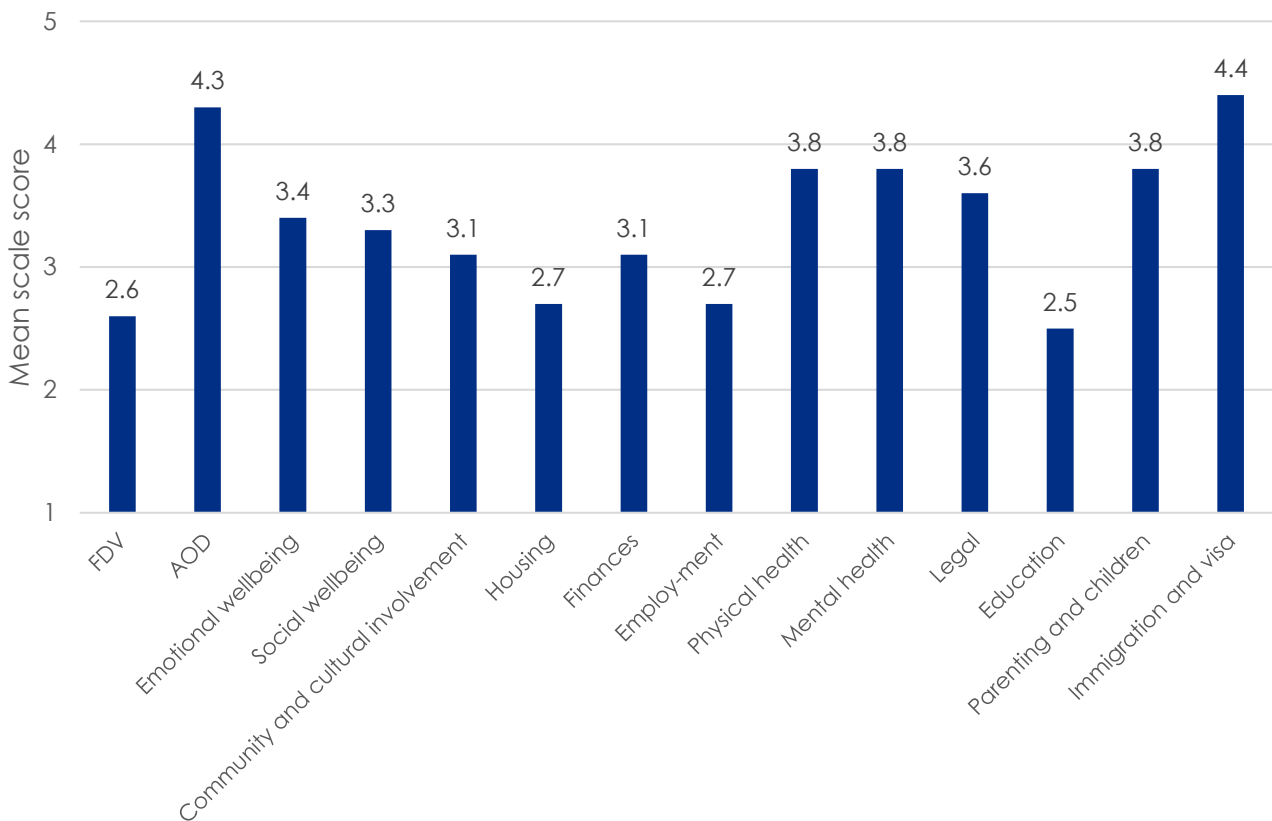
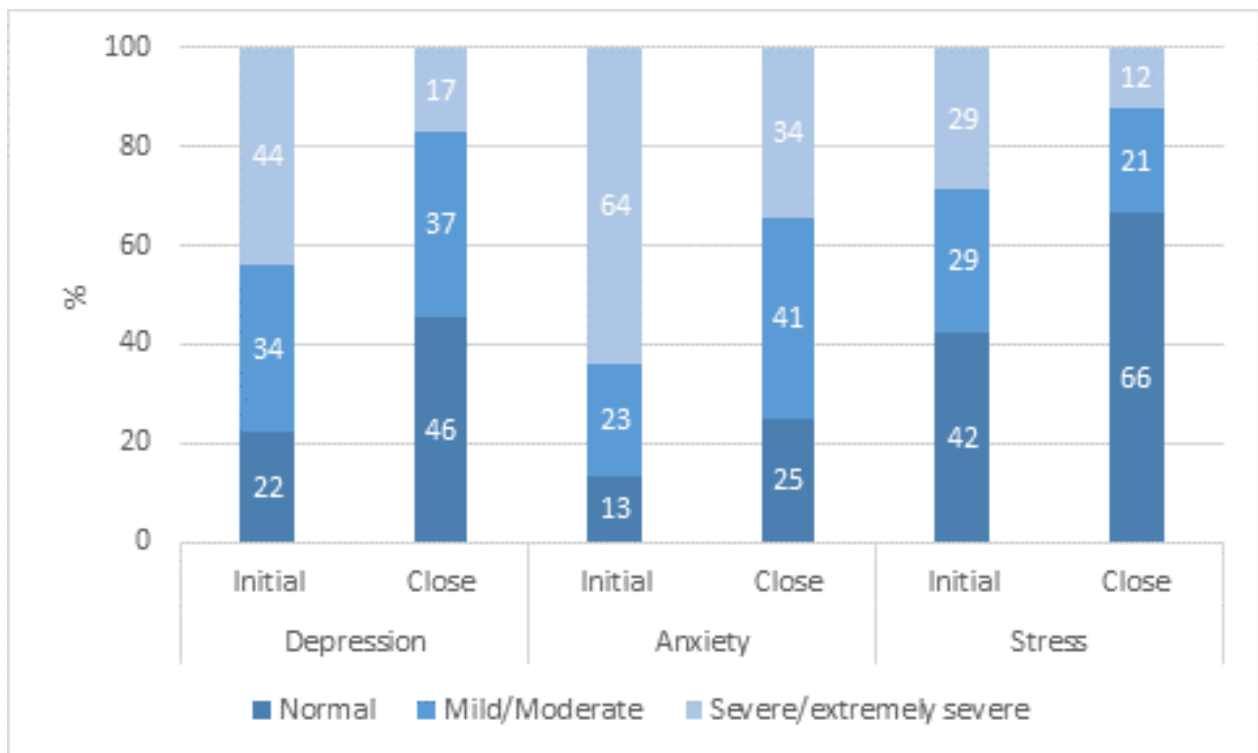


FIGURE 5.2: PERCENTAGE OF CLIENTS EXPERIENCING NORMAL, MILD/MODERATE, AND SEVERE/EXTREMELY SEVERE DEPRESSION, ANXIETY, AND STRESS AT INITIAL ASSESSMENT COMPARED TO FINAL ASSESSMENT AFTER ENGAGEMENT WITH ZONTA HOUSE SERVICES (N=258)



5.6.1. Face validity

Zonta House staff reported that the Life Matrix was simple and quick to administer. Missing Life Matrix data ranged from 0.2%–6.7%, with the immigration and visa domain having the largest amount of missing data (Table 4.5). The scale used within the Education domain has been identified as needing revision to allow for women who do not wish to further their education. At present it is difficult to differentiate between a purposeful 'non-response' and missing data. It is recommended that a value be entered into the Penelope system to indicate where a woman has declined to give information.

TABLE 5.5: LIFE MATRIX DOMAINS DESCRIPTIVES

	FDV	AOD	Emotional wellbeing	Social wellbeing	Community and cultural involvement	Housing	Finances	Employment	Physical health	Mental health	Legal	Education	Parenting and children	Immigration and visa
N	411	413	413	414	412	416	415	414	416	416	414	409	413	389
%														
1 (No support)	8.3	1.0	11.4	10.1	17.0	28.1	17.1	6.8	3.4	4.6	16.2	32.8	12.8	6.2
2	35.5	9.2	9.4	16.9	19.2	10.3	23.4	35.7	7.2	10.1	15.2	32.3	9.2	3.1
3	50.4	4.4	18.2	24.4	20.4	31.0	9.4	40.1	24.0	15.6	4.3	5.4	16.9	10.5
4	2.4	31.2	49.9	27.1	26.0	21.6	37.8	11.4	36.1	39.9	19.6	8.3	9.0	0.8
5 (Highest support)	3.4	54.2	11.1	21.5	17.5	8.9	12.3	6.0	29.3	29.8	44.7	21.3	52.1	79.4
Missing	1.4	1.0	1.0	0.7	1.2	0.2	0.5	0.7	0.2	0.2	0.7	1.9	1.0	6.7
Mean	2.6	4.3	3.4	3.3	3.1	2.7	3.1	2.7	3.8	3.8	3.6	2.5	3.8	4.4
SD	0.8	1.0	1.2	1.3	1.4	1.3	1.3	1.0	1.0	1.1	1.6	1.5	1.5	1.2

5.6.2. Exploratory factor analysis

A factor analysis was performed to determine the underlying themes of the Life Matrix. Five distinct factors were found with reliability ranging from 0.739 (good internal consistency) to 0.312 (poor internal consistency). It is recommended that if a total Life Matrix score is to be used (referred to from here as the Revised Total Life Matrix Score), the score should only include the following variables: emotional wellbeing; social wellbeing; community and cultural involvement; mental health; and physical health. These variables are probably the most likely to change after involvement in Zonta House programs.

5.6.3. Reliability

The Cronbach alpha for the Revised Total Life Matrix Score was .739, indicating an acceptable level of internal consistency.

5.6.4. Convergent validity

To assess whether there was convergent validity between the Revised Total Life Matrix Score, a series of Pearson correlations were run. The Revised Total Life Matrix Score was significantly correlated with depression ($r=-.479, p<0.01$), anxiety ($r=-.464, p<0.01$), and stress ($r=-.442, p<0.01$). What this demonstrates is that as depression, anxiety and stress scores increase, the Revised Total Life Matrix Score decreases.

The correlation matrix of Life Matrix Domains and DASS 21 (Table 5.6) revealed a predictable pattern. The strongest correlations were between the Revised Total Life Matrix Score domains emotional wellbeing, social wellbeing, community and cultural involvement, mental health, and physical health and DASS 21 scores. The directions of the correlations were all in expected directions (i.e higher scores/support for each of the Life Matrix domains were associated with lower depression, anxiety and stress scores) except for Immigration and visa.

A linear regression predicting the depression, anxiety and stress scores by the Revised Total Life Matrix Score domains revealed that mental health and community and cultural involvement were the strongest predictors of depression, emotional wellbeing and social wellbeing were the strongest predictors of anxiety, and emotional wellbeing was the strongest predictor of stress. Evidence of convergent validity exists as the Revised Total Life Matrix Score is significantly correlated with the DASS21 score.

TABLE 5.6: CORRELATION MATRIX OF LIFE MATRIX DOMAINS AND DASS 21 DOMAINS

	Depression	Anxiety	Stress
Scale 1 - FDV			
Scale 2 -AOD	-.270**		-.301**
Scale 3 -Emotional wellbeing	-.365**	-.283**	-.372**
Scale 4 -Social wellbeing	-.359**	-.406**	-.311**
Scale 5 -Community and cultural involvement	-.415**	-.346**	-.321**
Scale 6 -Housing		-.301**	
Scale 7 -Finances	-.180**		
Scale 8 -Employment			
Scale 9 -Physical health	-.200**		-.214**
Scale 10 -Mental health	-.355**	-.187**	-.358**
Scale 11 -Legal		-.417**	
Scale 12 -Education			
Scale 13 -Parenting and children			
Scale 14 -Immigration and visa	.140*		.206**
Revised Total Life Matrix Score	-.479	-.464	-.442

* $p<0.05$, ** $p<0.01$

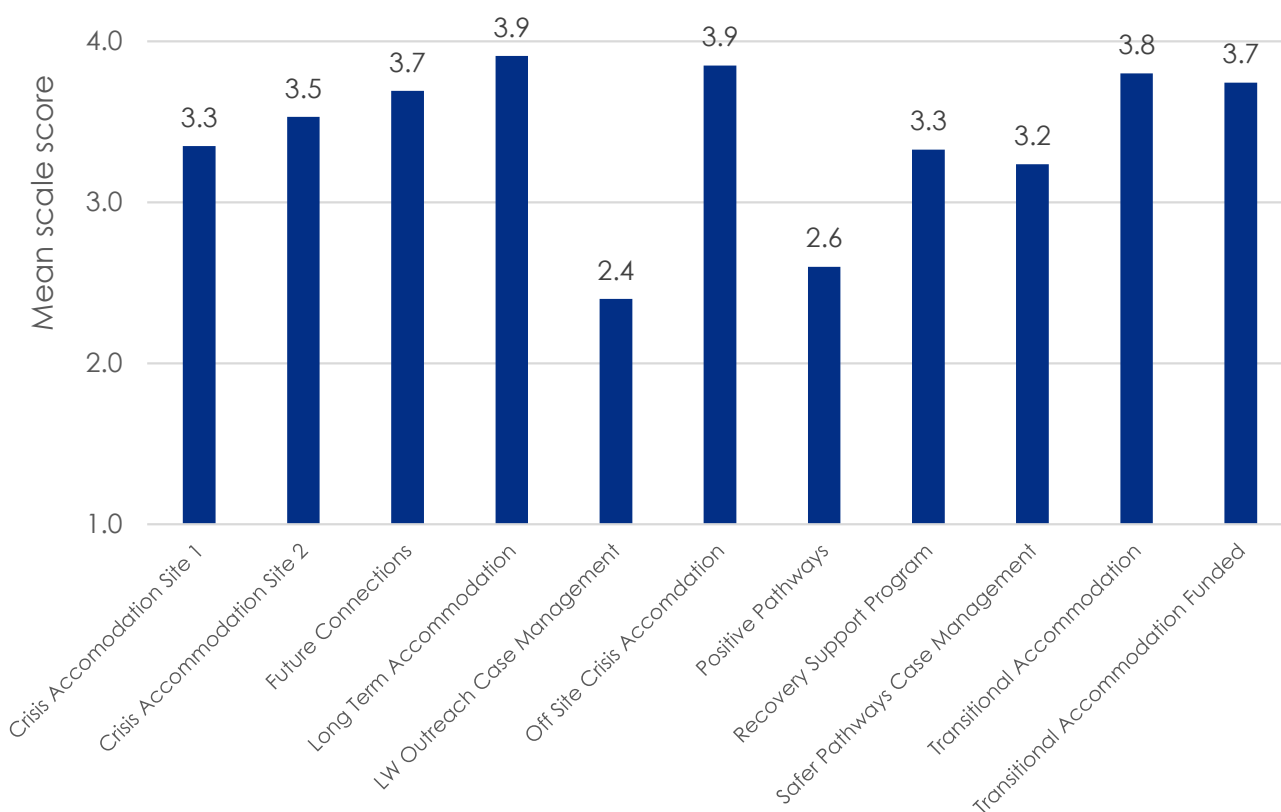
The Revised Total Life Matrix Score did not differ between age bands (p=.135), or Aboriginal and/or Torres Strait Islander status (p=.465). The Revised Total Life Matrix Score did however decrease linearly with increasing severity of depression and anxiety, thus demonstrating convergent validity (Table 5.7). Post hoc tests revealed those in the moderate/severe/extremely severe band had significantly lower Revised Total Life Matrix Scores than those in the normal and mild bands.

TABLE 5.7: MEAN REVISED TOTAL LIFE MATRIX SCORES BY DASS 21 CATEGORIES

	Depression	Anxiety	Stress
Normal	3.7	3.9	3.6
Mild	3.3	3.2	2.6
Moderate/severe/extremely severe	2.8	3.0	3.3

The Revised Total Life Matrix Score was significantly different for Zonta House programs, with those participating in LW outreach case management and Positive Pathways having significantly lower Revised Total Life Matrix Scores (Figure 5.3).

FIGURE 5.3: REVISED TOTAL LIFE MATRIX SCORE BY ZONTA HOUSE PROGRAMS



Tables 8.1 – 8.6 in the Appendix show the correlation of Life Matrix Domains and the Revised Total Life Matrix Score with SHIP variables. Significant correlations are marked and show which Life matrix domains are correlated with SHIP variables. Patterns show Life Matrix domains are significantly associated with similar SHIP variables.

6. PROGRAM LIFE MATRIX RESULTS

The Life Matrix records at December 31 2020 were downloaded from Penelope in a long format (unique event per row) and converted to a wide format (unique client per row). The final dataset contained n=1910 records, pertaining to n=324 clients.

The initial and final scores for the Life Matrix were calculated by each program. The revised Life Matrix score is the subscale that was created from the reliability analysis and includes the wellbeing scales 3, 4, 5, 9 and 10. Across programs, significant increases in life matrix scores were seen in all domains except for 'immigration and visa' (Figure 6.1). Revised life matrix score domains significantly increased in the following programs: crisis accommodation site 1, crisis accommodation site 2, and future employment connections (Table 6.1).

With respect to the individual programs and significant increases from initial revised life matrix scores to close revised life matrix scores:

- Crisis Accommodation Site 1 – significant increases were seen in the FDV, AOD, emotional wellbeing, community and cultural involvement, housing, finances, mental health, and legal domains.
- Crisis Accommodation Site 2 – significant increases were seen in the FDV, emotional wellbeing, social wellbeing, community and cultural involvement, housing, finances, and mental health domains.
- Future employment Connections – significant increases were seen in the emotional wellbeing, social wellbeing, housing, finances, employment and education domains.
- Off-site Crisis Accommodation – significant increases were seen in the housing domain.
- Recovery Support – significant increases were seen in the community and cultural involvement, housing, and finances domains.
- Transitional Accommodation – significant increases were seen in the housing, finances, employment and legal domains.
- Transitional Accommodation Funded – significant increases were seen in the housing domain.

FIGURE 6.1: REVISED TOTAL LIFE MATRIX SCORE BY ZONTA HOUSE PROGRAMS AND TIME

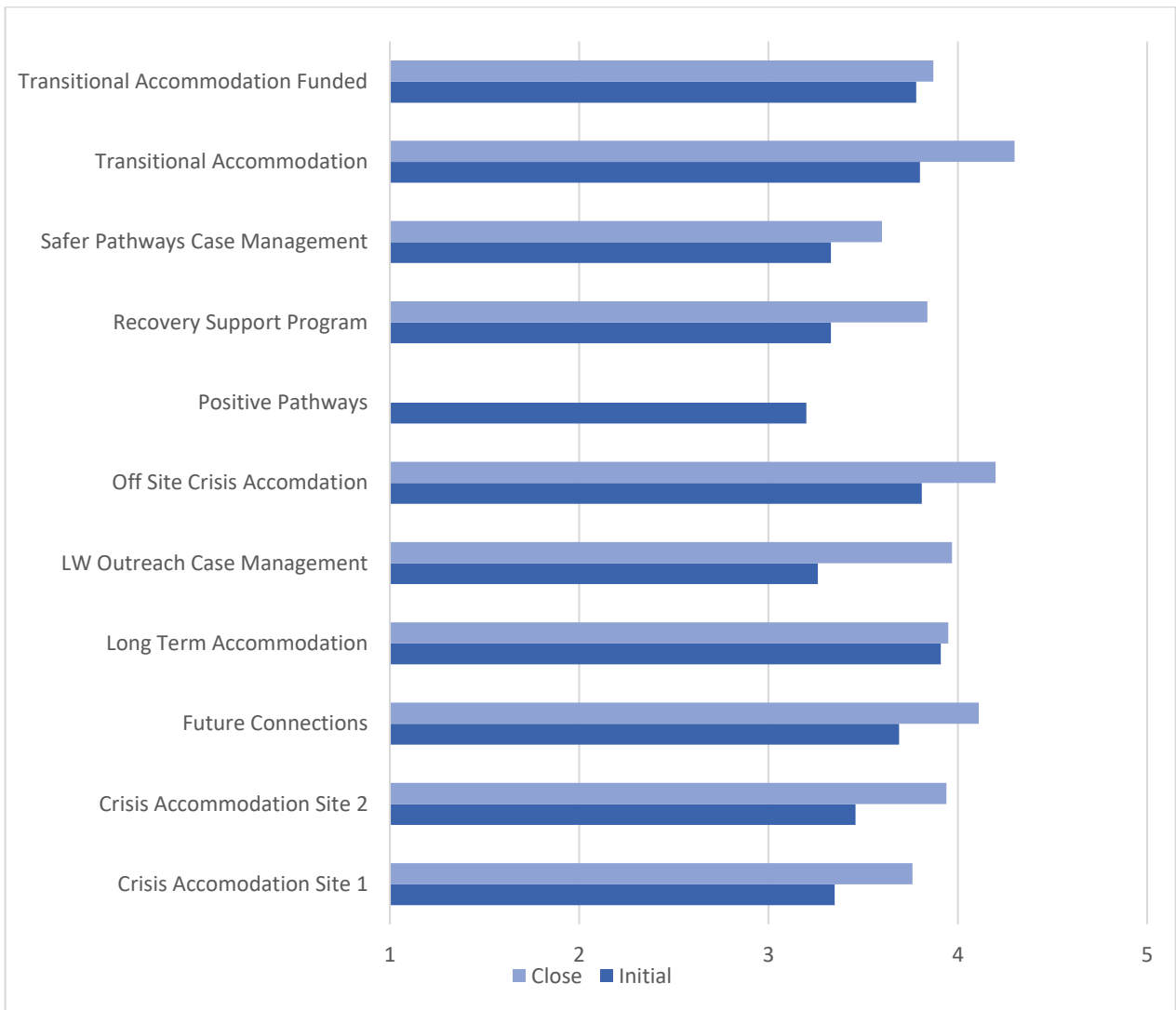


TABLE 6.1: LIFE MATRIX SCALE SCORES BY ZONTA HOUSE PROGRAM

Service	Scale 1 - FDV	Scale 2 - AOD	Scale 3 - Emotional wellbeing	Scale 4 - Social wellbeing	Scale 5 - Community and cultural involvement	Scale 6 - Housing	Scale 7 - Finances	Scale 8 - Employment	Scale 9 - Physical health	Scale 10 - Mental health	Scale 11 - Legal	Scale 12 - Education	Scale 13 - Parenting and children	Scale 14 - Immigration and visa	Revised Life Matrix Score
Crisis Accommodation Site 1															
First	2.46	4.07	3.20	3.34	2.98	2.48	3.23	2.64	3.64	3.60	3.38	2.48	3.67	4.63	3.35
Last	2.94	4.51	3.81	3.55	3.50	3.49	3.62	2.82	3.92	4.03	4.01	2.79	3.85	4.74	3.76
Sig.	**	**	**	NS	**	**	*	NS	NS	**	**	NS	NS	NS	**
Crisis Accommodation Site 2															
First	2.57	4.19	3.39	3.33	3.09	2.61	3.17	2.79	3.71	3.79	3.80	2.58	3.60	4.75	3.46
Last	3.02	4.34	3.97	3.95	3.75	3.73	3.85	2.95	3.89	4.13	3.80	2.95	3.95	4.77	3.94
Sig.	**	NS	**	**	**	**	**	NS	NS	**	NS	NS	NS	NS	**
Future Employment Connections															
First	2.84	4.76	3.62	3.30	3.04	3.14	2.66	2.75	4.18	4.27	4.00	2.28	4.33	3.53	3.69
Last	3.13	4.86	4.09	4.13	3.70	4.13	3.61	3.43	4.26	4.39	4.27	3.23	4.82	4.06	4.11
Sig.	NS	NS	**	*	NS	**	**	**	NS	NS	NS	**	NS	NS	*
Long Term Accommodation															
First	2.91	4.91	4.00	3.91	3.73	3.36	3.18	3.18	3.82	4.09	4.09	2.00	4.55	3.44	3.91
Last	3.25	4.75	4.00	3.75	4.25	4.00	3.50	3.75	4.00	3.75	4.75	3.25	4.25	4.00	3.95
Sig.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Outreach Support Case Management															
First	2.86	4.71	3.00	4.00	2.43	4.14	4.00	3.29	3.57	3.29	2.00	3.86	3.86	4.71	3.26
Last	3.17	5.00	3.67	4.33	3.33	4.33	4.33	3.83	4.67	3.83	3.33	3.67	4.00	5.00	3.97
Sig.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Off Site Crisis Accommodation															
First	3.07	4.44	4.15	3.37	3.54	2.89	3.81	2.85	3.96	4.08	4.30	2.96	3.93	4.26	3.81
Last	3.13	4.75	4.19	4.00	4.19	4.00	4.00	3.19	4.06	4.56	4.56	2.69	4.19	4.38	4.20
Sig.	NS	NS	NS	NS	NS	**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Positive Pathways															
First	3.00	4.00	1.00	3.00	5.00	1.00	5.00	3.00	3.00	4.00	4.00	1.00	5.00	5.00	3.20
Last	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sig.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Recovery Support															
First	2.41	4.08	3.28	3.08	2.87	2.28	2.90	2.74	3.87	3.51	3.47	2.82	3.37	4.59	3.33
Last	2.77	4.23	3.92	3.42	3.77	3.62	3.85	3.15	3.77	4.23	4.23	2.77	3.92	4.85	3.84
Sig.	NS	NS	NS	NS	*	**	*	NS	NS	NS	NS	NS	NS	NS	NS
Safer Pathways Case Management															
First	2.68	4.32	3.21	3.41	2.97	4.26	3.12	2.59	3.35	3.65	3.56	2.47	4.00	5.00	3.33
Last	3.00	4.26	3.57	3.61	3.57	4.30	3.65	2.73	3.50	3.74	3.78	2.39	4.04	5.00	3.60
Sig.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Transitional Accommodation															
First	2.73	4.82	3.82	3.36	3.27	2.91	2.64	2.36	4.09	4.45	3.45	2.18	4.27	3.50	3.80
Last	3.10	4.60	4.20	4.20	4.00	3.90	3.80	3.50	4.40	4.70	4.90	2.70	4.80	3.60	4.30
Sig.	NS	NS	NS	NS	NS	*	*	*	NS	NS	*	NS	NS	NS	NS
Transitional Accommodation Funded															
First	2.92	4.96	3.81	3.42	3.31	2.85	2.69	2.96	4.35	4.04	3.58	3.23	4.65	3.56	3.78
Last	3.33	4.83	4.00	3.94	3.56	4.00	3.44	3.44	3.94	3.89	4.00	2.61	4.89	4.28	3.87
Sig.	NS	NS	NS	NS	NS	**	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total															
First	2.60	4.26	3.39	3.34	3.05	2.78	3.15	2.72	3.75	3.77	3.63	2.54	3.78	4.51	3.46
Last	3.00	4.50	3.90	3.79	3.68	3.78	3.75	3.02	3.95	4.13	4.04	2.85	4.07	4.64	3.89
Sig.	**	**	**	**	**	**	**	**	**	**	**	**	**	NS	**

*p<0.05,**p<0.0,NS=not significant, – cannot calculate, Revised LM score calculated from emotional wellbeing, social wellbeing, community and cultural involvement, physical wellbeing and mental health

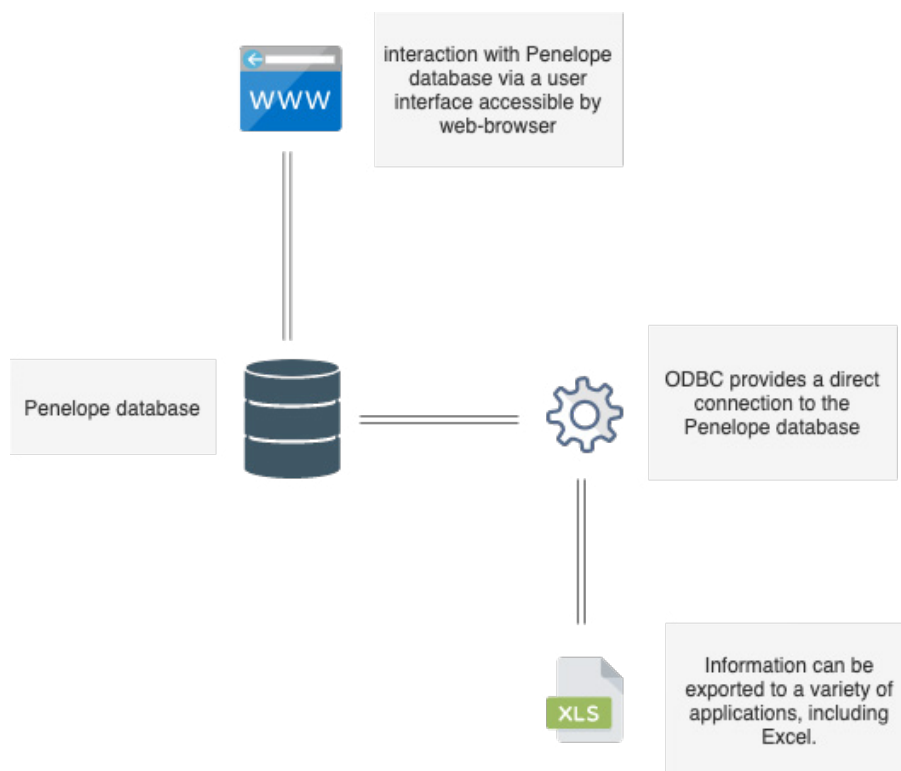
7. OPEN DATABASE CONNECTIVITY

We engaged students in their final year of the Master of Business Analytics degree to assess the connectivity options for Zonta House to link their different data collection programs to generate outcomes reports. Their report and recommendations are presented below.

7.1. Overview

Open Database Connectivity (ODBC) is a mechanism allowing programs to connect and interact with databases. Zonta House has direct access to the Postgres relational database underpinning their case management software, Penelope, via an ODBC connection.

FIGURE 7.1: RELATIONSHIPS BETWEEN PROGRAMS



The web-based interface of Penelope is the current mechanism by which Zonta House interacts with the database in the form of create, read, update and delete requests. For example, modifying the demographic information of a client would issue an update event to the relevant table(s) within the database.

While the web-based interface provides an accessible way for non-technical users to interact with the system, access to the underlying information in the database is constrained to the functionality offered via the interface.

Conversely, the ODBC connection provides direct access to information within the relational database, albeit in a more unfiltered format typically favouring technical users.

7.2. ODBC current limitations

Zonta House indicated to the UWA Team on the 23/09/20 that they would like the ability to extract any information entered into the system; this is not currently feasible given the reporting suite offered via the Penelope user interface. Specific examples cited included:

- Ability to drill down into client demographic information.
- Filtering/viewing program attendance at the individual level.

Zonta House has configured and explored connection to the Penelope database via ODBC, however identified the following limitations preventing use within the organisation:

- The single user account provides access to all ~1500 database table and view resources. This represents an overwhelming list of resources for non-technical users who may only require access to a minor subset of resources. Utilising Excel to interact with these resources requires users to manually scroll through a single list; there is no facility to search or otherwise refine results.
- Table and view resources are often named using abbreviations and acronyms, for example 'pw_view_case_doc_with_case_demographic'. Users are required to determine the information content of resources by name alone. Zonta House has indicated that they are often unsure where to locate specific information within the resource list.
- Once database resources have been accessed, report headings are often unclear due to naming conventions. For example, the demographic table contains the attribute 'individual_dropdown_3'. Zonta House has indicated it can be difficult to determine what the underlying information represents due to obfuscated heading names.

Use cases of the ODBC database connection are explored below with reference to the above identified limitations.

7.3. ODBC potential use cases

Recommendations for streamlining and making information extracted from the database intuitive for non-technical users by are discussed below.

7.3.1. Creating database accounts based on roles

The permissions of these accounts could be tailored, only granting access to resources deemed necessary to the role. As an example, a reporting account may only be authorised to access the set of custom reporting views defined in point (ii). Connecting to the database via a custom account would shield the accessing user from extraneous resources; reducing the list of approximately 1500 tables and views to a more manageable and targeted subset.

Additionally, this is desirable from a security perspective, conforming to the principle of least privilege as outlined in the Athena Software Privacy and Security Whitepaper (p. 19). Essentially, access to information and resources should be limited to only that which is necessary. This is not currently implemented given the account Zonta House uses has access to all information within the database.

Implementation of this recommendation would require Zonta House to provide Athena Software with the desired names and privileges of accounts. This activity could be completed in-house, however would require a user with knowledge of database management.

7.3.2. Creating custom views

Creating custom views; virtual database tables able to join, filter and customise information from a number of tables. As an example, the Penelope database may store client personal details in one table and demographic information in a separate table. Currently, Zonta House would be required to extract information sets from both tables and to manually link this information by the identifiers in each table to achieve a single dataset of personal and demographic information.

The manual nature of data linking increases the likelihood of errors, representing a risk if information will be used to assist decision making. Additionally, manually refining and modifying information in Excel may represent a time intensive activity and would need to be completed each time the data is accessed. The act of linking also requires users have technical knowledge of Excel data manipulation features.

Alternatively, a view could be created to extract and format the desired information from each table into a single virtual table. Essentially, end users would be abstracted from the underlying information wrangling and formatting processes; the information exported to Excel would be in a 'ready to use' format based on the requirements of Zonta House. Other advantages of using views to facilitate reporting include:

- Views can be named. Zonta House could ensure the function/purpose of views can be derived from the name by using terminology understandable to the business context rather than language and terminology used by the software provider.
- Headings can be named. Zonta House could ensure the names of headings within reports are logical and understandable. In the example cited above, 'individual_dropdown_3' could be named 'medical_conditions'.

Implementation of this recommendation would require Zonta House to liaise with Athena Software, providing the desired name of the view and the headings within the view. Athena Software would be required to interpret the requirements and build the underlying code to extract information in the desired format.

Alternatively, the creation of custom reporting views could be achieved in-house, however this would require a user with technical knowledge of databases and an understanding of the underlying structure of the Penelope database. Athena Software provides a number of resources to assist users in understanding the database structure, reducing the 'barriers to entry' for this task to be completed in-house.

7.3.3. Connecting directly to Tableau software

Tableau is a reporting and visualisation software that supports ODBC database connection. Zonta House could connect Tableau to the database using the custom accounts described in 7.3.1 to access the custom information reports defined in 7.3.2.

While the Penelope utilises Tableau to produce visualisations, Zonta House has indicated that these visualisations cannot be customised or modified beyond the embedded filters. Connecting the standalone, desktop version of Tableau to the database would allow Zonta House to create and customise bespoke visualisations relevant to business needs. While the desktop version of Tableau has an approximate \$1200 per year licence fee, Zonta House may be eligible to explore free licences given their not-for-profit status.

Implementing this recommendation would require Zonta House to develop knowledge of Tableau in-order to internally develop visualisations, however this would also negate the need to outsource development to Athena Software. Zonta House would have the ability to be adaptable and responsive to evolving reporting and visualisation requirements.

Other options such as Power Query, which comes with a graphical interface for getting data from sources and an editor for applying transformations, could be explored as an intermediary program between Penelope and Tableau.

8. APPENDIX

TABLE 8.1: CORRELATION OF SHIP VARIABLES WITH LIFE MATRIX SCALES 1-5

	Scale 1 FDV	Scale 2 AOD	Scale 3 - Emotional wellbeing	Scale 4 - Social wellbeing	Scale 5 - Community and cultural involvement
Presenting reasons					
Financial difficulties		.134*	.152**		
Housing affordability stress					
Housing crisis (e.g. eviction)		-.155**			
Inadequate or inappropriate dwelling conditions		-.113*			
Previous accommodation ended			.111*		
Time out from family/other situation					
Relationship/family breakdown			.112*		
Presenting reasons -Sexual abuse					
Domestic and family violence	-.126*				-.163**
Non-family violence					
Mental health issues		-.112*		-.107*	
Medical issues			.110*		
Problematic drug or substance use		-.203**			
Problematic alcohol use					
Presenting reasons -Employment difficulties					
Unemployment					
Problematic gambling					
Transition from custodial arrangements					
Transition from foster care and child safety residential placements					
Transition from other care arrangements					
Discrimination including racial and sexual					
Itinerant					
Unable to return home due to environmental reasons					
Disengagement with school or other education and training			.149**		
Lack of family and/or community support					

*p<0.05, **p<0.01

TABLE 8.2: CORRELATION OF SHIP ACCOMMODATION AND SERVICE USE VARIABLES WITH LIFE MATRIX SCALES 1-5

	Scale 1 FDV	Scale 2 AOD	Scale 3 - Emotional wellbeing	Scale 4 - Social wellbeing	Scale 5 - Community and cultural involvement
Previously homeless in last month					
Sleeping rough or in non-conventional accommodation	-.124*	-.121*	-.116*	-.133*	
Short-term or emergency accommodation, due to a lack of other options					
Not homeless	.110*	.162**			
Don't know			.158**		
Previously homeless in last 12 months					
Sleeping rough or in non-conventional accommodation	-.114*			-.159**	
Short-term or emergency accommodation, due to a lack of other options					
Not homeless	.108*	.180**		.121*	
Don't know			.161**		
Facilities / institutions client has been in over the last 12 months					
Hospital (excluding psychiatric)		-.117*			
Psychiatric hospital/unit		-.136*			
Disability support					
Rehabilitation		-.128*		.105*	
Adult, correctional facility				.129*	
Youth/juvenile justice correctional centre					
Immigration detention centre					
No institution					
Don't know					

*p<0.05, **p<0.01

TABLE 8.3: CORRELATION OF SHIP VARIABLES WITH LIFE MATRIX SCALES 6-10

	Scale 6 Housing	Scale 7 Finances	Scale 8 - Employment	Scale 9 - Physical health	Scale 10 Mental health
Presenting reasons					
Financial difficulties		-.153**		-.105*	.103*
Housing affordability stress					
Housing crisis (e.g. eviction)					
Inadequate or inappropriate dwelling conditions					-.122*
Previous accommodation ended				.105*	
Time out from family/other situation					
Relationship/family breakdown		-.106*			
Presenting reasons -Sexual abuse					-.186**
Domestic and family violence			-.150**		.129*
Non-family violence					
Mental health issues					-.155**
Medical issues					
Problematic drug or substance use					
Problematic alcohol use					
Presenting reasons -Employment difficulties					
Unemployment		-.122*			
Problematic gambling					
Transition from custodial arrangements					
Transition from foster care and child safety residential placements					
Transition from other care arrangements					
Discrimination including racial and sexual					
Itinerant					
Unable to return home due to environmental reasons					
Disengagement with school or other education and training					
Lack of family and/or community support		-.130*			

*p<0.05, **p<0.01

TABLE 8.4: CORRELATION OF SHIP ACCOMMODATION AND SERVICE USE VARIABLES WITH LIFE MATRIX SCALES 6-10

	Scale 6 Housing	Scale 7 Finances	Scale 8 - Employment	Scale 9 - Physical health	Scale 10 Mental health
Previously homeless in last month					
Sleeping rough or in non-conventional accommodation	-.126*				-.136**
Short-term or emergency accommodation, due to a lack of other options			-.131*		
Not homeless	.200**				
Don't know	-.111*			.122*	
Previously homeless in last 12 months					
Sleeping rough or in non-conventional accommodation			-.122*	-.130*	-.123*
Short-term or emergency accommodation, due to a lack of other options			-.150**		
Not homeless	.176**				
Don't know					
Facilities / institutions client has been in over the last 12 months					
Hospital (excluding psychiatric)		.112*		-.140**	
Psychiatric hospital/unit					
Disability support					.117*
Rehabilitation					
Adult, correctional facility					
Youth/juvenile justice correctional centre					
Immigration detention centre					
No institution				.117*	.143**
Don't know					

*p<0.05, **p<0.01

TABLE 8.5: CORRELATION OF SHIP VARIABLES WITH LIFE MATRIX SCALES 11-14, AND TOTAL SCORES

	Scale 11 Legal	Scale 12 Education	Scale 13 Parenting and children	Scale 14 - Immigration and visa	Revised Total Life Matrix Score
Presenting reasons					
Financial difficulties			.115*	-.270**	
Housing affordability stress			.123*		
Housing crisis (e.g. eviction)			-		
Inadequate or inappropriate dwelling conditions			-.126*		
Previous accommodation ended					
Time out from family/other situation					
Relationship/family breakdown					
Presenting reasons -Sexual abuse				-.151**	
Domestic and family violence		-.125*			
Non-family violence					
Mental health issues					-.121*
Medical issues			.132*		
Problematic drug or substance use			-.128*		
Problematic alcohol use	.107*				
Presenting reasons -Employment difficulties					
Unemployment	.137**			-.124*	
Problematic gambling					
Transition from custodial arrangements					
Transition from foster care and child safety residential placements					
Transition from other care arrangements					
Discrimination including racial and sexual					
Itinerant					
Unable to return home due to environmental reasons					
Disengagement with school or other education and training	-.104*			-.168**	
Lack of family and/or community support				-.163**	

*p<0.05, **p<0.01

TABLE 8.6: CORRELATION OF SHIP ACCOMMODATION AND SERVICE USE VARIABLES WITH LIFE MATRIX SCALES 11-14, AND TOTAL SCORES

	Scale 11 Legal	Scale 12 Education	Scale 13 Parenting and children	Scale 14 - Immigration and visa	Revised Total Life Matrix Score
Previously homeless in last month					
Sleeping rough or in non-conventional accommodation		-.138**			-.114*
Short-term or emergency accommodation, due to a lack of other options	-.140**				
Not homeless	.117*				
Don't know	.109*				
Previously homeless in last 12 months					
Sleeping rough or in non-conventional accommodation		-.158**		.125*	-.122*
Short-term or emergency accommodation, due to a lack of other options	-.169**				
Not homeless	.126*				
Don't know	.116*		-.106*		
				.146**	
				.127*	
Facilities / institutions client has been in over the last 12 months					
Hospital (excluding psychiatric)					
Psychiatric hospital/unit			-.135*		
Disability support		-.112*	0.080		.103*
Rehabilitation					
Adult, correctional facility					
Youth/juvenile justice correctional centre					
Immigration detention centre					
No institution		-.108*			
Don't know					

*p<0.05, **p<0.01

