



Individual Claim Reserving System

How BWC Reserves Are Set

Session 695

Kathleen Davenport
BWC Business Consulting



Individual Claim Reserving System

- Reserves defined
- Historical perspective of BWC reserves
- Understanding MIRA II
- MIRA II stop logic
- Elimination of transition rules
- MIRA II information on BWC web

Claim Reserve

- Estimate of the future cost of a claim at a specific point in time



What is the Purpose of a Reserve

- Allows BWC to account for outstanding liability of claim costs for **rate making purposes only**
- Reserves are used along with medical paid and indemnity paid to calculate the total claim cost
- The total claim costs are used in the calculation of an employer's premium rates.

BWC's Past Reserving Systems

Tabular reserves until 2002

- Based on type of compensation last paid and date of compensation last paid
- Based on multiplier of compensation paid
- Used very few data elements in claim-not based on the individual characteristics of the claim
- Easy to calculate...less accurate

BWC's Past Reserving Systems

- MIRA I – 2002 to 2008
 - Automated reserving system that uses advanced statistical analysis to predict future cost/liability of a claim
 - Reserve based on individual claim and specifics in claim

Why did we change to an automated reserving system?

- The need for more accurate estimates of future value
- The need for more equitable distribution of costs to employers

BWC's Current Reserving System

- MIRA II – 2008 to present
 - A more sophisticated computer modeling package is available. This package is widely used by other workers' compensation insurers in the United States.

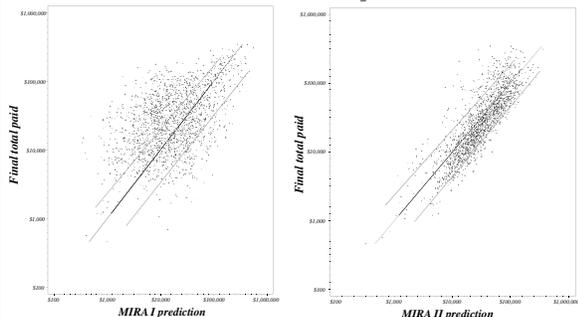
Why MIRA II?

- Uses recent claim history and regularly updates it
- Modeling can react to changes to payments and cost patterns
- Modeling distinguishes between inconsequential claim data and true cost driver
- Modeling learns complex relationships in the claim data
- No special logic on new claims as used in MIRA I
- Reserves on individual claim

Why MIRA II?

- More historical claim data
- Uses financial/transactional claim payment data
- Emphasis on more recent historical claim data
- More accurate claim data
- Established mapping and logic more closely related to BWC specific claims, rules, statutes and processes
- Provide customers with weekly reserves

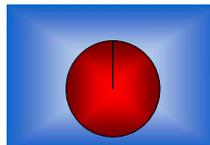
Claim-Level Accuracy



MIRA II Methodology

- MIRA will provide the ultimate cost of a claim at a specific point in time with the information available on the claim
- Ultimate Cost – Paid = Reserve

MIRA predicts the total incurred costs of the claim.



Payments made to date



MIRA II Methodology

- MIRA II predicts the future medical cost and future indemnity cost separately



MIRA II Claim Types

Injury type mapping

Ultimate claim severity at the current time

- **Type 1** = Death claim
- **Type 2** = Permanent total disability
- **Type 5** = Temporary total claim
- **Type 6** = Medical-only claim
- **Type 9** = Permanent partial disability claim

Prediction Components

MIRA II can predict the ultimate claim cost for each component

- Medical
- Indemnity
 - Death
 - Permanent total
 - Temporary total /Temporary partial disability
 - Wage loss
 - Living maintenance
 - Living maintenance wage loss
 - Change of occupation
 - Facial disfigurement
 - Permanent Partial

Prediction Components

- Each component has it's own prediction logic to:
 - Start reserving;
 - Stop reserving (Stop logic);
 - Change the prediction (Ultimate cost).

MIRA II Stop Logic

- Each benefit category has its own unique stop logic based on specific activity/inactivity criteria
- Pre-determined conditions within claim that when shuts off reserve
- MIRA II has very detailed, much quicker stop logic
- Stop logic allows BWC to determine when no liability exists

Claim Scenarios

Clerical Claudia	Construction Carl
Age 23	Age 53
Strain/sprain knee	Low back strain/sprain
Return to work (RTW) – No lost time	

Claim Scenarios

Clerical Claudia
Age 23
Strain/sprain knee
RTW – No lost time

**Type 6 –
medical only**
Medical

Construction Carl
Age 53
Low back strain/sprain
Herniated disc surgery

Type 5 – TT
Indemnity Medical
TTD

MIRA II Stop Logic - Medical

Examples:

- Claim settlement, medical settlement
- Total med paid = 0, more than 180 days since filing date last
- More than 180 days since last date of service

MIRA II Stop Logic-Medical Prediction

MIRAII – Prediction Logic Grid (Revised December 2010)

Ohio Bureau of Workers' Compensation
Performance Analysis and Training

Medical Model

Elements that cause a prediction to stop (set to zero)

Start logic	1. Death		2. PFD		3-TD and 4-PPD		5-IMD	
	Injury type + 1	PFD paid	Injury type + 1 or 8	LM or LMRL paid	COO paid	FD paid	Sub-Loss paid or C/A	PPD
Medical settlement date valid or								
Claim settlement date valid or when claim status is "TT" or								
Claim settlement date valid and more than 90 days since date of death or								
Claim pending medical (settlement) and lump sum settlement payment made or								
Total medical paid = 0, and more than 180 days since filing date or								
Accident type = Death and more than 90 days since last death/dependent benefit payment date (D3 to D46); or								
More than 180 days since last medical date of service, or								
Accident type = Death and more than 90 days since all death/dependent benefit termination date, or								
Accrual/retroactive status = "T"								
When C-32 indicator status is set to "N", and no last medical date of service or compensation paid (D3 to date) within 180 days of "N" indicator date for claims with date of injury (DOI) on or before June 30, 2006, and no subsequent medical date of service or compensation payment (D3 to date excluding NPT payments) = "N" indicator								

MIRA II Stop Logic - Indemnity

Each Indemnity component has its own stop logic

Examples:

- More than 90 days since Return to Work stops the temp total prediction
- More than 30 days since last Perm Partial Disability paid stops the Perm Partial prediction
- More than 180 days since last comp paid turns off all indemnity predictions

MIRA II Stop Logic –Indemnity Prediction

MIRAII – Prediction Logic Grid (Revised December 2010)

Ohio Bureau of Workers' Compensation
Performance Analysis and Training

Indemnity Model

Elements that cause the prediction to stop (set to zero)

Sub-models	1. Death		2. PFD		3-TD and 4-PPD		5-IMD	
	Injury type + 1	PFD paid	Injury type + 1 or 8	LM or LMRL paid	COO paid	FD paid	Sub-Loss paid or C/A	PPD
Claim settlement date valid or when claim status is "TT" or								
Claim pending indemnity (settlement) and lump sum settlement payment made, or								
Date of death is valid and more than 30 days since date of death, or								
More than 90 days since actual return-to-work (RTW) date and no wage loss paid (D3 to date) within last 60 days or Change implemented in Jan 2011								
More than 90 days have passed since the estimated RTW date, or								
More than 30 days since maximum medical improvement (MMI) date and no wage loss paid (D3 to date) within last 90 days and/or T1 (D3 to date) paid within the last 90 days. Change implemented Dec 2010 or								
More than 90 days since last TTD (D3 to date) and no subsequent T1/T1NL paid date (D3 to date), or								
More than 180 days since last comp paid date (D3 to date), or								
Total comp paid = 0, and more than 180 days since the filing date, or								
More than 30 days since Last PFD paid date (D3 to date), or								
More than 180 days since last comp paid date (D3 to date), or								

MIRA II Stop Logic on OhioBWC.com

The screenshot shows the OhioBWC.com website interface. At the top, there is a search bar and navigation links for Home, Injured Workers, Ohio Employers, Safety Services, Medical Providers, and BWC Library. Below this, there are several sections: Focus on Ohio Employers, Featured Links (including Experience modifier cap, NWP BWC II information and updates, and Non-compliance list), Policy Information (including Demographic information, Contract history, and Election coverage), Safety Services (including Consulting services, Training, and Online tools and resources), Rating Information (including Experience modifier history, Experience period data, Rating adjustment history, and Rating plan information), Programs (including NWP Drug-Free Safety Programs, Program Discount, and Competibility), and Financial Information (including Payroll reports, Payroll reporting information, Accounts receivable balance, and Coverage certificate report).

OSC 11
Ohio Safety Congress & Expo

MIRA II Stop Logic

OSC 11
Ohio Safety Congress & Expo

Elimination of Reserving Transition Rules

- o Created for the transition from old tabular system to MIRA I in 2002.
- o No longer needed since we transitioned to new reserving system MIRA II
- o Also Recommended elimination of these rules in Comprehensive Study by Deloitte

OSC 11
Ohio Safety Congress & Expo

Elimination of Reserving Transition Rules

- o Reserving on Medical Only claims
 - Implemented on Sept 30, 2010
 - Impacts all Medical Only claims regardless of Date of Injury
 - 1.5 mil medical only claims in the MIRA II system, 54,000 with a reserve, with an average reserve of \$780
 - Less than 1% of Active Medical Only claims for Private Employer Policy Year 2011 had a reserve, with avg reserve of \$1,900
 - Reserve shut off by the time Medical Only claim reaches experience
 - Reserving on Medical Only claims with long duration periods

OSC 11
Ohio Safety Congress & Expo

Elimination of Reserving Transition Rules

- o Claim with Salary Continuation are eligible for a reserve
 - Salary Continuation is in lieu of Temp Total only
 - Claims with Salary Continuation paid and with a Date of Injury prior to Jan 1, 2011 are grandfathered in and reserve may still be suppressed
 - Claims with Salary Continuation paid and with a Date of Injury on/after Jan 1, 2011 now eligible for a reserve
 - If there is ongoing medical payments, Salary Continuation claims will now have a medical reserve

OSC 11
Ohio Safety Congress & Expo

Elimination of Reserving Transition Rules

- o Claims with Living Maintenance as last paid comp will be fully reserved
 - Implemented Sept. 30, 2010
 - Transition rule was originally implemented in 2002 based on Tabular reserving system calculated a reserve 50% lower than a claim with Temp Total
 - Impacts all Lost Time claims with Living Maintenance as the last paid indemnity

OSC 11
Ohio Safety Congress & Expo

MIRA II Reserve History Report

Ohio Bureau Workers' Compensation
Ohio Bureau Reserve Report

Report of Reserve Data
Injured worker: [Name] Employer: [Name] Claim #: [Number] Date: [Date]

Reserve History Summary Table:

Quarter ending date	Total medical costs	Indemnity	Total reserve
03/31/2008	\$12,010.45	\$0.00	\$12,010.45
06/30/2008	\$12,010.45	\$0.00	\$12,010.45
09/30/2008	\$12,010.45	\$0.00	\$12,010.45
12/31/2008	\$12,010.45	\$0.00	\$12,010.45
03/31/2009	\$12,010.45	\$0.00	\$12,010.45
06/30/2009	\$12,010.45	\$0.00	\$12,010.45
09/30/2009	\$12,010.45	\$0.00	\$12,010.45
12/31/2009	\$12,010.45	\$0.00	\$12,010.45
03/31/2010	\$12,010.45	\$0.00	\$12,010.45
06/30/2010	\$12,010.45	\$0.00	\$12,010.45
09/30/2010	\$12,010.45	\$0.00	\$12,010.45
12/31/2010	\$12,010.45	\$0.00	\$12,010.45
03/31/2011	\$12,010.45	\$0.00	\$12,010.45
06/30/2011	\$12,010.45	\$0.00	\$12,010.45
09/30/2011	\$12,010.45	\$0.00	\$12,010.45
12/31/2011	\$12,010.45	\$0.00	\$12,010.45
03/31/2012	\$12,010.45	\$0.00	\$12,010.45
06/30/2012	\$12,010.45	\$0.00	\$12,010.45
09/30/2012	\$12,010.45	\$0.00	\$12,010.45
12/31/2012	\$12,010.45	\$0.00	\$12,010.45
03/31/2013	\$12,010.45	\$0.00	\$12,010.45
06/30/2013	\$12,010.45	\$0.00	\$12,010.45
09/30/2013	\$12,010.45	\$0.00	\$12,010.45
12/31/2013	\$12,010.45	\$0.00	\$12,010.45
03/31/2014	\$12,010.45	\$0.00	\$12,010.45
06/30/2014	\$12,010.45	\$0.00	\$12,010.45
09/30/2014	\$12,010.45	\$0.00	\$12,010.45
12/31/2014	\$12,010.45	\$0.00	\$12,010.45
03/31/2015	\$12,010.45	\$0.00	\$12,010.45
06/30/2015	\$12,010.45	\$0.00	\$12,010.45
09/30/2015	\$12,010.45	\$0.00	\$12,010.45
12/31/2015	\$12,010.45	\$0.00	\$12,010.45
03/31/2016	\$12,010.45	\$0.00	\$12,010.45
06/30/2016	\$12,010.45	\$0.00	\$12,010.45
09/30/2016	\$12,010.45	\$0.00	\$12,010.45
12/31/2016	\$12,010.45	\$0.00	\$12,010.45
03/31/2017	\$12,010.45	\$0.00	\$12,010.45
06/30/2017	\$12,010.45	\$0.00	\$12,010.45
09/30/2017	\$12,010.45	\$0.00	\$12,010.45
12/31/2017	\$12,010.45	\$0.00	\$12,010.45
03/31/2018	\$12,010.45	\$0.00	\$12,010.45
06/30/2018	\$12,010.45	\$0.00	\$12,010.45
09/30/2018	\$12,010.45	\$0.00	\$12,010.45
12/31/2018	\$12,010.45	\$0.00	\$12,010.45
03/31/2019	\$12,010.45	\$0.00	\$12,010.45
06/30/2019	\$12,010.45	\$0.00	\$12,010.45
09/30/2019	\$12,010.45	\$0.00	\$12,010.45
12/31/2019	\$12,010.45	\$0.00	\$12,010.45
03/31/2020	\$12,010.45	\$0.00	\$12,010.45
06/30/2020	\$12,010.45	\$0.00	\$12,010.45
09/30/2020	\$12,010.45	\$0.00	\$12,010.45
12/31/2020	\$12,010.45	\$0.00	\$12,010.45
03/31/2021	\$12,010.45	\$0.00	\$12,010.45
06/30/2021	\$12,010.45	\$0.00	\$12,010.45
09/30/2021	\$12,010.45	\$0.00	\$12,010.45
12/31/2021	\$12,010.45	\$0.00	\$12,010.45
03/31/2022	\$12,010.45	\$0.00	\$12,010.45
06/30/2022	\$12,010.45	\$0.00	\$12,010.45
09/30/2022	\$12,010.45	\$0.00	\$12,010.45
12/31/2022	\$12,010.45	\$0.00	\$12,010.45
03/31/2023	\$12,010.45	\$0.00	\$12,010.45
06/30/2023	\$12,010.45	\$0.00	\$12,010.45
09/30/2023	\$12,010.45	\$0.00	\$12,010.45
12/31/2023	\$12,010.45	\$0.00	\$12,010.45
03/31/2024	\$12,010.45	\$0.00	\$12,010.45
06/30/2024	\$12,010.45	\$0.00	\$12,010.45
09/30/2024	\$12,010.45	\$0.00	\$12,010.45
12/31/2024	\$12,010.45	\$0.00	\$12,010.45
03/31/2025	\$12,010.45	\$0.00	\$12,010.45
06/30/2025	\$12,010.45	\$0.00	\$12,010.45
09/30/2025	\$12,010.45	\$0.00	\$12,010.45
12/31/2025	\$12,010.45	\$0.00	\$12,010.45
03/31/2026	\$12,010.45	\$0.00	\$12,010.45
06/30/2026	\$12,010.45	\$0.00	\$12,010.45
09/30/2026	\$12,010.45	\$0.00	\$12,010.45
12/31/2026	\$12,010.45	\$0.00	\$12,010.45
03/31/2027	\$12,010.45	\$0.00	\$12,010.45
06/30/2027	\$12,010.45	\$0.00	\$12,010.45
09/30/2027	\$12,010.45	\$0.00	\$12,010.45
12/31/2027	\$12,010.45	\$0.00	\$12,010.45
03/31/2028	\$12,010.45	\$0.00	\$12,010.45
06/30/2028	\$12,010.45	\$0.00	\$12,010.45
09/30/2028	\$12,010.45	\$0.00	\$12,010.45
12/31/2028	\$12,010.45	\$0.00	\$12,010.45
03/31/2029	\$12,010.45	\$0.00	\$12,010.45
06/30/2029	\$12,010.45	\$0.00	\$12,010.45
09/30/2029	\$12,010.45	\$0.00	\$12,010.45
12/31/2029	\$12,010.45	\$0.00	\$12,010.45
03/31/2030	\$12,010.45	\$0.00	\$12,010.45
06/30/2030	\$12,010.45	\$0.00	\$12,010.45
09/30/2030	\$12,010.45	\$0.00	\$12,010.45
12/31/2030	\$12,010.45	\$0.00	\$12,010.45

OSC 11
Ohio Safety Congress & Expo

MIRA II Reserve Prediction Report

log off help print search glossary contact account

Injured worker: [Name] Employer: [Name] Claim #: [Number] Date: [Date]

OhioBWC - Employer - Service: (Individual claim reserve predictions) - Results

Claim number: [Number]
Last prediction date: 12/31/2010
Total medical paid: \$12,010.45
Total indemnity paid: \$0.00
Total reserve: \$0.00

Hide quarter ending dates

Quarter end date	Total medical paid	Total indemnity paid	Total reserve
03/31/2010	\$12,010.45	\$0.00	\$0.00
06/30/2010	\$12,010.45	\$0.00	\$0.00
09/30/2010	\$12,010.45	\$0.00	\$0.00
12/31/2010	\$12,010.45	\$0.00	\$0.00
03/31/2011	\$12,010.45	\$0.00	\$0.00
06/30/2011	\$12,010.45	\$0.00	\$0.00
09/30/2011	\$12,010.45	\$0.00	\$0.00
12/31/2011	\$12,010.45	\$0.00	\$0.00
03/31/2012	\$12,010.45	\$0.00	\$0.00
06/30/2012	\$12,010.45	\$0.00	\$0.00
09/30/2012	\$12,010.45	\$0.00	\$0.00
12/31/2012	\$12,010.45	\$0.00	\$0.00
03/31/2013	\$12,010.45	\$0.00	\$0.00
06/30/2013	\$12,010.45	\$0.00	\$0.00
09/30/2013	\$12,010.45	\$0.00	\$0.00
12/31/2013	\$12,010.45	\$0.00	\$0.00
03/31/2014	\$12,010.45	\$0.00	\$0.00
06/30/2014	\$12,010.45	\$0.00	\$0.00
09/30/2014	\$12,010.45	\$0.00	\$0.00
12/31/2014	\$12,010.45	\$0.00	\$0.00
03/31/2015	\$12,010.45	\$0.00	\$0.00
06/30/2015	\$12,010.45	\$0.00	\$0.00
09/30/2015	\$12,010.45	\$0.00	\$0.00
12/31/2015	\$12,010.45	\$0.00	\$0.00
03/31/2016	\$12,010.45	\$0.00	\$0.00
06/30/2016	\$12,010.45	\$0.00	\$0.00
09/30/2016	\$12,010.45	\$0.00	\$0.00
12/31/2016	\$12,010.45	\$0.00	\$0.00
03/31/2017	\$12,010.45	\$0.00	\$0.00
06/30/2017	\$12,010.45	\$0.00	\$0.00
09/30/2017	\$12,010.45	\$0.00	\$0.00
12/31/2017	\$12,010.45	\$0.00	\$0.00
03/31/2018	\$12,010.45	\$0.00	\$0.00
06/30/2018	\$12,010.45	\$0.00	\$0.00
09/30/2018	\$12,010.45	\$0.00	\$0.00
12/31/2018	\$12,010.45	\$0.00	\$0.00
03/31/2019	\$12,010.45	\$0.00	\$0.00
06/30/2019	\$12,010.45	\$0.00	\$0.00
09/30/2019	\$12,010.45	\$0.00	\$0.00
12/31/2019	\$12,010.45	\$0.00	\$0.00
03/31/2020	\$12,010.45	\$0.00	\$0.00
06/30/2020	\$12,010.45	\$0.00	\$0.00
09/30/2020	\$12,010.45	\$0.00	\$0.00
12/31/2020	\$12,010.45	\$0.00	\$0.00
03/31/2021	\$12,010.45	\$0.00	\$0.00
06/30/2021	\$12,010.45	\$0.00	\$0.00
09/30/2021	\$12,010.45	\$0.00	\$0.00
12/31/2021	\$12,010.45	\$0.00	\$0.00
03/31/2022	\$12,010.45	\$0.00	\$0.00
06/30/2022	\$12,010.45	\$0.00	\$0.00
09/30/2022	\$12,010.45	\$0.00	\$0.00
12/31/2022	\$12,010.45	\$0.00	\$0.00
03/31/2023	\$12,010.45	\$0.00	\$0.00
06/30/2023	\$12,010.45	\$0.00	\$0.00
09/30/2023	\$12,010.45	\$0.00	\$0.00
12/31/2023	\$12,010.45	\$0.00	\$0.00
03/31/2024	\$12,010.45	\$0.00	\$0.00
06/30/2024	\$12,010.45	\$0.00	\$0.00
09/30/2024	\$12,010.45	\$0.00	\$0.00
12/31/2024	\$12,010.45	\$0.00	\$0.00
03/31/2025	\$12,010.45	\$0.00	\$0.00
06/30/2025	\$12,010.45	\$0.00	\$0.00
09/30/2025	\$12,010.45	\$0.00	\$0.00
12/31/2025	\$12,010.45	\$0.00	\$0.00
03/31/2026	\$12,010.45	\$0.00	\$0.00
06/30/2026	\$12,010.45	\$0.00	\$0.00
09/30/2026	\$12,010.45	\$0.00	\$0.00
12/31/2026	\$12,010.45	\$0.00	\$0.00
03/31/2027	\$12,010.45	\$0.00	\$0.00
06/30/2027	\$12,010.45	\$0.00	\$0.00
09/30/2027	\$12,010.45	\$0.00	\$0.00
12/31/2027	\$12,010.45	\$0.00	\$0.00
03/31/2028	\$12,010.45	\$0.00	\$0.00
06/30/2028	\$12,010.45	\$0.00	\$0.00
09/30/2028	\$12,010.45	\$0.00	\$0.00
12/31/2028	\$12,010.45	\$0.00	\$0.00
03/31/2029	\$12,010.45	\$0.00	\$0.00
06/30/2029	\$12,010.45	\$0.00	\$0.00
09/30/2029	\$12,010.45	\$0.00	\$0.00
12/31/2029	\$12,010.45	\$0.00	\$0.00
03/31/2030	\$12,010.45	\$0.00	\$0.00
06/30/2030	\$12,010.45	\$0.00	\$0.00
09/30/2030	\$12,010.45	\$0.00	\$0.00
12/31/2030	\$12,010.45	\$0.00	\$0.00

OSC 11
Ohio Safety Congress & Expo

MIRA II Reserve Prediction Report

Ohio Bureau Workers' Compensation
Ohio Bureau Reserve Report

Report of Reserve Data
Injured worker: [Name] Employer: [Name] Claim #: [Number] Date: [Date]

Reserve Prediction Summary Table:

Category	Amount
Medical	\$12,010.45
Indemnity	\$0.00
Total Reserve	\$12,010.45

OSC 11
Ohio Safety Congress & Expo

MIRA II Annual Statistical Report

log off help print search glossary contact account

OhioBWC - Employer - Service: (Annual claims costs statistics) - Results

The data displayed on this page is based on Private Employer and Public Employer Telling District claims that are in Open (MIRA II) status.

ICR: 0.79210
Age of claims: 5 years

MIRA injury type	1-Death	2-PII	6-11	9-PII	Total lost time	Total 0-Medical only
Number of claims	32	35	162	813	1,103	151
Percent of total	0.10%	2.30%	11.70%	62.20%	100.00%	100.00%
Average medical incurred	\$89,317.11	\$319,471.70	\$25,100.10	\$94,492.04	\$98,162.23	\$10,000.30
Average indemnity incurred	\$267,000.00	\$300,135.20	\$0.00	\$40,467.20	\$65,001.00	\$0.00
Average total incurred	\$356,317.11	\$619,606.90	\$25,100.10	\$134,959.24	\$163,163.23	\$10,000.30

Lost time average medical paid: \$43,976.54
Lost time average indemnity paid: \$32,996.08

OSC 11
Ohio Safety Congress & Expo

Questions

OSC 11
Ohio Safety Congress & Expo

BWC Programs

Looking to reduce costs and protect your work force?

Learn more about BWC's incentive programs and safety services by visiting us online at ohiobwc.com.