Ancillary Sales Analysis Implementation

Overview

Implemented a comprehensive ancillary sales analysis feature for the Arizona territory, enabling data-driven marketing budget allocation decisions based on ZIP code performance and customer value metrics.

Data Processing

Source Data

- **File**: `Total Ancillary Sales Repair OTS Remodel for AP Phoenix.csv`
- **Records**: 27,434 transactions
- **Date Range**: 2020-2026
- **Sale Types**:
- **OTS (Other Than Service)**: Minor non-repair tasks (originally labeled as “Maintenance” in data)
- **Repair**: Major repair tasks
- **Remodel**: Major renovation projects

Processing Script

File: `nextjs_space/process_ancillary_sales.js`

Key Functions:
1. **CSV Parsing**: Processes sales data with amount normalization (removes $, commas)
2. **Type Mapping**: Converts “Maintenance” → “OTS” for consistency
3. **Aggregation**:
- View 1: Groups by ZIP code, year, and sale type
- View 2: Calculates 2025 totals and averages per active customer
4. **Customer Counts**: Integrates with `route-assignments.json` for active customer counts
5. **Coordinates**: Extracts ZIP centroids from `az-zip-boundaries.json`

Output: `public/ancillary-sales-data.json`

Data Structure

View 1: By Year Analysis


```
{
  "zip": "85122",
  "year": 2025,
  "city": "Casa Grande",
  "ots": 3191.19,
  "repair": 57029.05,
  "remodel": 0,
  "total": 60220.24,
  "latitude": 32.926,
  "longitude": -111.748
}
```

View 2: 2025 Detailed Analysis


```
{
  "zip": "85286",
  "city": "Chandler",
  "activeCustomers": 25,
  "ots": 258.86,
  "repair": 25926.41,
  "remodel": 95570.37,
  "total": 121755.64,
  "avgOts": 10.35,
  "avgRepair": 1037.06,
  "avgRemodel": 3822.81,
  "avgTotal": 4870.23,
  "latitude": 33.269,
  "longitude": -111.824
}
```


User Interface

Component: `AncillarySalesView`

File: `components/ancillary-sales-view.tsx`

Features:
1. **Dual View Mode**:
- **By Year**: Analyze total sales by ZIP code for any year (2020-2026)
- **2025 Analysis**: Detailed totals and per-customer averages for 2025

1. **Interactive Map**:
   - Color-coded ZIP boundaries by sales volume (gradient from green to red)
   - Clickable polygons with detailed info windows
   - Automatic centering on Arizona territory

2. **Summary Statistics**:
   - Total Sales card
   - OTS Sales card
   - Repair Sales card
   - Remodel Sales card

3. **Data Table**:
   - Top 20 ZIP codes ranked by total sales
   - Sortable columns for each sale type
   - Currency formatting for all amounts
   - Conditional columns based on view mode:
     - View 1: ZIP, OTS, Repair, Remodel, Total
     - View 2: ZIP, Active Customers, OTS, Repair, Remodel, Total, Avg per Customer

Navigation

Integration: `territory-map.tsx`
- Added “Ancillary Sales” button to Arizona-specific controls
- Button color: Amber (distinguishes from other view types)

- Icon: DollarSign (lucide-react)
- View mode: ‘ancillarySales’

Key Metrics

2025 Performance

- **Total Ancillary Sales**: $1,288,773.43
- **Top 5 ZIP Codes**:
  1. 85286 (Chandler): $121,755.64 (25 customers, $4,870 avg)
  2. 85122 (Casa Grande): $60,220.24 (89 customers, $677 avg)
  3. 85255 (Scottsdale): $51,341.38 (38 customers, $1,351 avg)
  4. 85009 (Phoenix): $30,434.40 (1 customer)
  5. 85018 (Phoenix): $29,270.19 (25 customers, $1,171 avg)

Sales Type Breakdown (2025)

- **OTS**: Minor revenue stream
- **Repair**: Consistent across territories
- **Remodel**: High-value opportunities, concentrated in specific ZIPs

Business Value

Marketing Allocation Insights

1. **High-Value ZIP Codes**:
   - ZIP 85286 shows exceptional remodel revenue ($95,570) with strong per-customer average
   - Ideal target for premium service promotions

2. **Volume vs. Value Analysis**:
   - ZIP 85122 has 89 customers but lower average ($677)
   - Opportunity for upselling repair and remodel services

3. **Trend Analysis**:
   - View 1 enables year-over-year comparison
   - Identify growing/declining territories
   - Adjust marketing spend accordingly

Technical Implementation

Dependencies Added

- `csv-parser@3.2.0` : CSV file parsing

File Modifications

1. **New Files**:
   - `process_ancillary_sales.js` : Data processing script
   - `components/ancillary-sales-view.tsx` : Main component (456 lines)
   - `public/ancillary-sales-data.json` : Processed data output

2. **Modified Files**:
   - `components/territory-map.tsx` :
     - Added ‘ancillarySales’ to ViewMode type

- Imported AncillarySalesView component
- Added navigation button
- Added rendering logic

Data Flow

1. User uploads CSV → `/Uploads/Total Ancillary Sales...csv`
2. Processing script reads CSV and integrates with existing data
3. Script outputs JSON to `public/ancillary-sales-data.json`
4. Component loads JSON and boundaries on mount
5. User interacts with view modes and filters
6. Map and table update dynamically

Usage Instructions

Accessing the Feature

1. Log in to the application
2. Ensure location is set to “Arizona”
3. Click “Ancillary Sales” button (amber-colored)

Using View 1 (By Year)

1. Select year from dropdown (2020-2026)
2. View color-coded map showing sales intensity
3. Click ZIP codes for detailed breakdown
4. Review top 20 ZIPs in table below map

Using View 2 (2025 Analysis)

1. Automatically shows 2025 data
2. Map displays sales density with customer count context
3. Click ZIP codes to see:
   - Active customer count
   - Total sales by type
   - Average per customer (key metric for marketing ROI)
4. Sort table by any column to find:
   - Highest total sales
   - Best per-customer averages
   - Remodel opportunities

Future Enhancements

Potential Improvements

1. **Filtering**:
   - Filter by sale type (OTS only, Repair only, etc.)
   - Filter by sales threshold (e.g., ZIPs > $10k)
   - Territory filter integration

2. **Visualizations**:
   - Trend charts showing YoY growth

   - Sale type distribution pie charts
   - Customer lifetime value calculations

3. **Export**:
   - CSV export of filtered data
   - PDF reports for executives
   - Marketing territory recommendations

4. **Automation**:
   - Scheduled data refresh from updated CSV
   - Automatic anomaly detection (sudden drops/spikes)
   - Predictive modeling for 2026 budget planning

Deployment Notes

Files to Deploy

- `nextjs_space/components/ancillary-sales-view.tsx`
- `nextjs_space/components/territory-map.tsx` (modified)
- `nextjs_space/public/ancillary-sales-data.json`
- `nextjs_space/process_ancillary_sales.js` (for future updates)

Environment Requirements

- Node.js with csv-parser package
- Access to route-assignments.json for customer counts
- Access to az-zip-boundaries.json for coordinates

Data Refresh Process

1. Replace CSV file in `/Uploads/`
2. Run: `cd nextjs_space && node process_ancillary_sales.js`
3. Verify output in `public/ancillary-sales-data.json`
4. Restart application or hard refresh browser

Summary

This implementation provides comprehensive ancillary sales analysis capabilities, enabling APS to make data-driven decisions about marketing budget allocation. The dual-view approach offers both historical trend analysis and detailed per-customer metrics, supporting both strategic planning and tactical marketing optimization.

Key Success Metrics:
- ✅ 794 view1 records (ZIP + Year + Type combinations)
- ✅ 155 view2 records (2025 ZIP-level analysis)
- ✅ 172 unique ZIP codes analyzed
- ✅ 7 years of historical data (2020-2026)
- ✅ Full integration with existing customer and territory data

Business Impact:
- Identify $1.3M in annual ancillary revenue opportunities
- Target high-value ZIP codes with avg customer value up to $4,870

- Optimize marketing spend across 172 ZIP codes
- Enable year-over-year performance tracking