



Key Performance Indicators for Transit Oriented Communities

Jurisdiction Scan Report

Key Performance Indicators for Transit-Oriented Communities

Executive Summary

This report analyzes global Transit-Oriented Communities (TOCs), spotlighting key performance indicators (KPIs), methodologies, and best practices to bridge academic insights with practical policymaking. The jurisdiction selection criteria were informed by a prior literature review prepared by Infrastructure Ontario, keyword searches, and benchmarking tools. The key themes for effective monitoring and evaluation (M&E) of TOCs encompass indicators for measuring Community Engagement, TOC Development, Transport Shift, Housing, Economic Impact, Accessibility and Proximity, Fiscal Performance, and Ecological Impact. The research unveils varied M&E strategies across jurisdictions, each highlighting different approaches to measuring TOC performance. Also, this globally-informed research has given rise to the following recommendations for any organization undertaking the measuring and tracking of TOC development in a jurisdiction like Ontario: 1) build a comprehensive KPI system, 2) foster data transparency, 3) prioritize sustainable mobility metrics, 4) include affordable housing, 5) engage communities, 6) facilitate public-private monitoring partnerships and 7) ensure an equity-based evaluation.

1. INTRODUCTION

The J-Scan represents a systematic effort to extract knowledge from TOCs across the globe. Building upon the foundational insights from an exhaustive literature review, the scan serves as an invaluable tool for policymakers seeking to monitor outputs and eventually evaluate outcomes of TOCs. By mapping out KPIs, methodologies, and practices, the J-Scan offers real-world examples, aligning them with theoretical underpinnings, thereby establishing a bridge between academic discourse and actionable policy and program recommendations.

2. METHODOLOGY

A detailed methodology was employed to ensure the authenticity and relevance of the J-Scan. Jurisdictions were selected based on their alignment with literature review findings, noteworthy examples in peer-reviewed articles, and cross-comparability with Ontario. For instance, popular benchmarking applications such as The TOC Scoring system, created by the Institute for Transportation and Development Policy, along with guidelines from the World Bank informed the selection process.¹ Comprehensive scanning of TOC project-related websites unveiled project phase-specific indicators. In instances where explicit reporting metrics were absent, the original source data for indicators was sought. Consequently, this scan offers a twofold value: firstly, it guides the formulation of tailored KPIs for each TOC, and secondly, it identifies the ideal data sources for measurement, considering various constraints. For this report, the terms “metrics” and “indicators” are used inter-changeably.

3. RESULTS AND DISCUSSION

The outcomes of TOCs can be tracked by KPIs that monitor outputs to offer insights into TOC progress, impact, and efficacy. A comparative analysis of publicly available information from different jurisdictions highlights differences in approaches, best practices, and areas of improvement for measuring TOC performance (See 5. Jurisdiction Scan).

TOC Performance Measurement Approaches:

- **USA:** Public data indicates that TOCs such as Downtown Portland and the Atlanta BeltLine employ KPIs centered around economic growth, housing outcomes, and sustainability.² In contrast, Hudson Bergen Light Rail's KPIs predominantly address the increase in housing supply.³
- **Canada:** Public records from Canadian municipalities like the City of Toronto, City of Guelph and the City of Vancouver prioritize KPIs measuring stakeholder input and community satisfaction using surveys and focused discussions. Such practices can help inform and refine TOC strategies.⁴
- **UK:** Reports and reviews on UK TOCs highlight the Elizabeth Line project, as a good TOC example. Available data on the Elizabeth Line shows a balanced measurement approach, integrating economic metrics with indicators of cost-effectiveness, notably through land value capture methods.⁵
- **Australia:** Articles, papers and government documents highlight TOCs implemented by the Western Australian state-level government. Information from the Western Australian government points to a focus on local economic indicators, as demonstrated by KPIs such as job vacancy rates.⁶
- **Others:** A World Bank report cites TOCs along transit systems in Hong Kong, Brazil, Singapore, and South Africa as international best practices for being cost-effective and economic transitions.⁷ For instance, the Hong Kong Mass Rapid Transit (MRT) system highlights cost-savings as a KPI.⁸

What's Working?

- **Innovative Revenue Models (UK):** The tax-based levy models spotlight the UK's forward-thinking approach to revenue generation.
- **Community Engagement (Canada):** The emphasis on community satisfaction surveys demonstrates the importance of continual feedback in shaping TOCs.
- **Diverse KPIs (USA):** Tracking a range of metrics, as seen in areas like the Atlanta BeltLine, ensures a multifaceted and phased understanding of TOCs.⁹

What's Not?

- **Holistic Sustainability Oversight:** While there are metrics for environmental sustainability, there is a lack of clear KPIs targeting social and economic sustainability such as community health outcomes, educational access, and long-term economic resilience.
- **Granularity:** While many jurisdictions focus on broader KPIs, there's a need to delve deeper. For instance, indicators can be developed to account for specific typologies of housing – like affordable housing, senior housing, or transit-friendly housing.
- **Technological Integration:** The use of smart technology, IoT devices, and data analytics can provide real-time insights into TOC operations and resident behaviors. There weren't many notable examples of digital tools or platforms leveraged for TOC KPI reporting like the Crossrail-Bentley Info-Academy.¹⁰
- **Preservation:** There weren't many examples of KPIs that monitor the preservation of local culture, heritage, and historical sites. Integration of these elements can help maintain a balance between growth and preservation.

3.1. KEY THEMES

Analyzing the Jurisdiction Scan (See 5. Jurisdiction Scan), a focus on KPIs related to distinct aspects of TOCs from various jurisdictions is evident. Distilling the data, the following major themes on KPIs are underscored:

Community Engagement: Governments have a responsibility to engage with and understand the perspectives of a TOC host community. Selected KPIs utilize survey-based measures that capture residents' opinions about TOC projects, feedback regarding amenities, and stakeholder consultation quality. Some metrics also monitor progress in addressing specific issues and the level of community participation in TOC planning. The Atlanta BeltLine, for instance, has metrics that consider support for local artists and cultural organizations.¹¹

Development: All jurisdictions measure infrastructure development, while some jurisdictions also measure growth and integration around TOCs. Core KPIs here involve milestones in transit and associated infrastructure development, alignment with existing urban infrastructures, and the functionality of constructed facilities. Additionally, TOCs like the Atlanta BeltLine also monitors the number of newly established amenities in proximity to transit locations.¹²

Transport Shift Indicators: The primary objective of TOCs is to drive citizen preferences towards sustainable modes of transportation. KPIs capturing this transition include metrics around variations in public transit patronage, reduction in private vehicle usage, and heightened reliance on pedestrian or bicycle commutes. Surveys that measure modal split, i.e., the percentage of travelers using a particular mode of transportation are common across most jurisdictions.

Housing: Housing has been established as an important TOC objective in urban areas. Typically, housing related KPIs measure the volume of housing units established, their types, brackets of affordability, and the modes of occupancy (rentals or ownership). Such KPIs were more prevalent in TOC examples from the UK, Canada, and Australia.

Economic Impact: The economic influence of TOCs is gauged through KPIs that capture direct indicators like job openings in TOC areas and indirect markers such as changes in local retail or property values. The UK's Elizabeth Line evaluates economic impacts using metrics such as local business revenue growth, job creation, property value fluctuations, and shifts in commercial foot traffic patterns near its stations.

Accessibility and Proximity: TOCs prioritize reducing distances between homes and essential services. KPIs measure average distances to key amenities, the percentage of residents living close to transit points, and general accessibility ratings. For instance, TOCs near Curitiba's BRT have KPIs to measure average distances to key amenities and the percentage of residents living within a 500-meter radius of transit points.¹³

Fiscal Performance: Assessing the financial sustainability of TOCs is crucial. Key indicators such as ROI, cost-saving measures, ticket sales revenue, and returns from public-private partnerships are monitored. For instance, Hong Kong's MTR system has a specific KPI tracking farebox recovery ratio (i.e., the fraction of operating expenses which are met by the fares paid by passengers), demonstrating their detailed approach to financial metrics.¹⁴

Ecological Impact: Given the global focus on sustainability, TOC KPIs also need to evaluate environmental impacts. Metrics such as carbon emission reductions per passenger-km, energy consumption per transit vehicle, and square meters of green spaces created per TOC project are essential. The Atlanta BeltLine, for instance, has a specific KPI for the number of acres of environmental cleanup accomplished, showcasing the depth of ecological metrics within some US TOC projects.¹⁵

4. RECOMMENDATIONS

Given Ontario's intent to maximize the impact of TOCs while maintaining transparency and accountability, the need to implement a robust and comprehensive KPI monitoring system is evident. The global benchmarks offer valuable insights that Ontario can adapt and integrate.

1. **Build a Comprehensive KPI System:** Drawing inspiration from the Atlanta BeltLine's diverse metrics tracking, Ontario should develop a sophisticated system that focuses not only on outcomes but also processes. This ensures a holistic performance assessment, covering all stages and dimensions of a TOC project.
2. **Foster Data Transparency with Centralized Platforms:** A key aspect of monitoring is the accessibility of information. Following Maryland's example, Ontario should consider establishing a centralized data portal. This platform would provide real-time updates, thereby enhancing stakeholder trust and ensuring that evaluations are based on current and comprehensive data.
3. **Prioritize Sustainable Mobility Metrics:** Inspired by Canada's modal split surveys, Ontario should emphasize KPIs that track shifts towards sustainable transport modes. This metric would be pivotal in evaluating the direct influence of TOCs on commuting patterns.
4. **Include Affordable Housing Metrics:** Leveraging insights from the US, Ontario should emphasize KPIs centered around housing diversity and affordability. Metrics that monitor the number of affordable units created and maintained within TOC zones will be integral.
5. **Engage Communities in Performance Assessment:** Emulating Canada's community satisfaction surveys, Ontario should integrate KPIs that gauge community feedback and satisfaction. This not only ensures that TOCs serve the community but also provides insights into areas of improvement. It's important that the metrics discern between community engagement and stakeholder interactions, recognizing the distinct roles both play.
6. **Facilitate Public-Private Monitoring Partnerships:** Observing the UK's Elizabeth Line, Ontario could promote collaborations where both sectors jointly monitor and evaluate performance, potentially streamlining data collection and sharing processes.
7. **Ensure an Equity-Based Evaluation:** Embracing the Atlanta BeltLine's equity-focused approach, Ontario should adopt KPIs that assess investments in "black, indigenous, and other people of color"-owned businesses, support for local arts, and other equity-centric facets.

This report has analyzed a collection of government reports, memos, comparative studies, and other official documents across multiple jurisdictions. These documents shed light on the diverse KPIs leveraged by TOCs such as the Elizabeth Line in the UK, Hong Kong's MTR system, and many more, covering areas from economic impact to ecological considerations.

Given the depth and breadth of this rich repository, it's highly advisable for policymakers to delve into the references used to inform the Jurisdiction Scan. By studying and integrating aspects from these globally recognized practices and documentation, Ontario can craft a well-informed, rigorous set of KPIs. This would facilitate not only a methodical assessment of TOC progress but also elevate Ontario's initiatives to be on par with, or even surpass, international standards.

In essence, Ontario's pursuit of optimal TOC performance necessitates a multi-faceted and globally informed KPI approach. By integrating best-practices and recommendations, the province can foster TOCs that are not just infrastructure-centric, but community-inclusive and value-driven. By integrating diverse metrics, the province can achieve a nuanced evaluation of TOCs.

5. JURISDICTION SCAN

#	Stage	Measure Type	KPI	Description	Calculation Methodology	Benchmark/ Target	Proposed Review Cycle	Data Source	Data Owners	TOC KPI Project / Example
1	Planning	Land Acquisition	# of Commercial Contracts	Total number of commercial contracts executed for land acquisition	Direct Count	Contracts /year	Annually	Municipal Land records	Municipal Property Department	USA: American Fork Station Area The development agreement between the City of American Fork, Utah and AF Utah LLC set requirements to meet TOC objectives. ¹⁶
2	Planning	Permits	% of Municipal Planning Approvals	Proportion of municipal planning permissions that are approved	(Permissions Approved / Total Applications) x 100	X% approvals	Bi-annually	Planning Records	Planning Departments	USA: Fruitvale Transit Village (Phase II) City of Oakland Filed a Notice of Determination confirming Municipal Approval & Additional Conditions (inclusive of utility, administrative and other permissions). ¹⁷
3	Planning	Permits	% of Zoning Changes Approved	Proportion of requested zoning changes that are approved	(Changes Approved / Total Applications) x 100	X% approvals	Annually	Zoning Records	Zoning Department	USA & Canada: State Street and Toronto TOCs City of Boise shared the Approved Zoning Code to enable State Street Urban Renewal ¹⁸ and City of Toronto website logging zoning approval status. ¹⁹
4	Planning	Permits	% of Environmental Clearances Obtained	Proportion of projects that receive required environmental clearances	(Clearances Obtained / Total Applications) x 100	X% clearances	Annually	Environmental Records	Municipality or Environmental Protection Agency	USA: Fruitvale Transit Village in Oakland, California Oakland City Planning Commission created an Environmental Review Checklist to enable TOC development (e.g., Air Quality, Hazards, Water Quality, Mineral Resources, Noise, Utilities). ²⁰
5	Planning	Partnerships	# of Agreements Formed	Number of formal partnership agreements established	Direct Count	X agreements /year	Annually	Partnership Agreements	Development Authority	Canada: Eglinton Crosstown Light Rail Transit A project agreement between Infrastructure Ontario, Metrolinx and CrossLinx for the provincial LRT project. ²¹
6	Planning	Partnerships	# of Public Announcements Made	Total number of public announcements related to the project	Direct Count	X announcements /year	Quarterly	Communication Logs	Comms. Departments	Canada: East Harbour TOC An announcement of P-3 projects to build five TOCs including East Harbour made by the Ontario Government. ²²
7	Planning	Partnerships	# of Stakeholder Meetings Held	Number of meetings with key stakeholders regarding the project	Direct Count	X meetings/ year	Bi-annually	Stakeholder Engagement Logs	Municipality	USA & Canada: Various Examples Numerous examples of reporting stakeholder engagement for various phases of TOC from the City of Boise (Zoning) ²³ , City of Toronto (Multi-Tenant Housing) ²⁴ , City of Seattle (Engagement Activity Summary) ²⁵ , City of Spokane (TOC Framework Engagement) ²⁶ & Greater Portland Council of Governments (Multi-Stakeholder Planning Meetings) ²⁷ .
8	Planning	Partnerships	# of community consultations	Number of meetings held with community members regarding the project	Direct Count	X meetings/ year	Annually	Community Engagement Plans	Municipality	Canada: Transit-Oriented Downtown Guelph A comprehensive community engagement summary report from the City of Guelph that included surveys, virtual town halls, community roundtables, stakeholder roundtables,

#	Stage	Measure Type	KPI	Description	Calculation Methodology	Benchmark/ Target	Proposed Review Cycle	Data Source	Data Owners	TOC KPI Project / Example
										workshops, planning committee meetings, Indigenous community meetings, youth engagement. ²⁸
9	Construction	Construction Timeline	% of Milestones Met on Time	Proportion of project milestones achieved within the designated timeline	(Milestones Met On Time / Total Milestones) x 100	X% on-time	Quarterly	Project Management Reports	Owner / Developer	Canada: Infrastructure Ontario Owner/developers such as the crown-corporation, Infrastructure Ontario, the province's infrastructure delivery agency have established processes to measure construction and development progress.
10	Construction	Budget Adherence	% of Budget Utilized	Proportion of allocated budget that has been expended	(Actual Expenditure / Total Budget) x 100	<X% utilization	Quarterly	Financial Statements	Owner / Developer	Canada: Infrastructure Ontario Owner/developers such as the crown-corporation, Infrastructure Ontario, the province's infrastructure delivery agency have established processes to measure costing and budgeting variances for development projects.
11	Construction	Compliance	% of Adhered Planning Permissions	Proportion of projects adhering to all granted planning permissions	(Adhered Permissions / Total Permissions) x 100	X% adherence	Bi-annually	Compliance Reports	Regulatory Compliance Team	Australia: Infrastructure Australia An Infrastructure Assessment framework that highlighted the importance of identifying costs incurred or avoided for compliance activities and effects on producer surplus. ²⁹
12	Construction	Community Satisfaction	# of Meeting Attendance	Number of attendees at community or stakeholder meetings	Direct Count	X attendees/ meeting	Bi-annually	Meeting Logs	Community Engagement Team	USA & Canada: Various Examples Various examples of reporting stakeholder engagement for various phases of TOC from the City of Boise (Zoning) ³⁰ , City of Toronto (Multi-Tenant Housing) ³¹ , City of Seattle (Engagement Activity Summary) ³² , City of Spokane (TOC Framework Engagement) ³³ & Greater Portland Council of Governments (Multi-Stakeholder Planning Meetings). ³⁴
13	Construction	Community Satisfaction	# of Formal Inputs into TOC	Number of formal feedback or inputs regarding the TOC project	Direct Count	X inputs/ year	Annually	Feedback Logs	Community Engagement Team	USA & Canada: Various Examples Various examples of reporting stakeholder engagement for various phases of TOC from the City of Boise (Zoning) ³⁵ , City of Toronto (Multi-Tenant Housing) ³⁶ , City of Seattle (Engagement Activity Summary) ³⁷ , City of Spokane (TOC Framework Engagement) ³⁸ & Greater Portland Council of Governments (Multi-Stakeholder Planning Meetings). ³⁹
14	Substantial Completion	Transit Efficiency	# of Riders (Ridership Levels)	Total number of riders using the transit system	Direct Count	X riders/ day	Quarterly	Public Transit Data	Transit Authority	USA: American Public Transportation Association (APTA) The APTA publishes a quarterly Public Transportation Ridership Report of passenger ridership for U.S. and Canadian transit agencies. ⁴⁰
15	Substantial Completion	Transit Efficiency	% of Network Connectivity Achieved	Proportion of the transportation network successfully connected	(Connected Nodes / Total Nodes) x 100	X% connectivity	Bi-annually	Transit Network Logs	Transit Authority	UK: National Infrastructure Commission A transport connectivity dataset prepared by Prospective Labs informed a UK government discussion paper on creating measures for transport connectivity. ⁴¹
16	Substantial Completion	Transit Efficiency	% Transit Usage/ Reliability	Proportion of transit operations that are reliable	(Reliable Transits / Total Transits) x 100	X% reliability	Monthly	Transit Reliability Reports	Transit Authority	USA: Maryland TOC An open data website for TOC in Maryland includes key facts and datasets for a number of transit related indicators including ridership, reliability, and usage. ⁴²

#	Stage	Measure Type	KPI	Description	Calculation Methodology	Benchmark/Target	Proposed Review Cycle	Data Source	Data Owners	TOC KPI Project / Example
17	Substantial Completion	Transit Efficiency	% of Service Efficiency	Proportion of transit services deemed efficient	(On-Time Services / Total Services) x 100	X% on-time	Monthly	Service Efficiency Reports	Transit Authority	UK: Great Britain Transport Statistics An annual report from the UK Department of Transport includes Transport Statistics for Great Britain, including key figures, modal comparisons, energy usage, etc. ⁴³
18	Substantial Completion	Housing	% Occupancy/ Tenancy Rates	Proportion of residential or commercial spaces occupied	(Occupied Units / Total Units) x 100	X% occupancy	Quarterly	Housing Data	Housing Authority	USA & Australia: Western Australia TOC & Fruitvale Transit Village Data on types of business activities, floor space occupied by a business, number of people supporting the activity is collected through a land use and employment survey by the Western Australia government, while a development case study conducted by the Urban Land Institute highlights key occupancy figures for the Fruitvale Transit Village. ⁴⁴
19	Substantial Completion	Local Economic Activity	# of Jobs Created	Total number of employment opportunities generated by the project	Direct Count	X jobs/year	Annually	Employment Records	Economic Development Department	Australia: Western Australia Data on types of business activities, floor space occupied by a business, number of people supporting the activity is collected through a land use and employment survey by the Western Australia government ⁴⁵
20	Substantial Completion	Local Economic Activity	Diversity Index of Businesses	Measure of the variety of businesses within the area	Diversity Score Calculation	Index > Y	Annually	Business Registry	Chamber of Commerce	Australia: Western Australia Data on types of business activities, floor space occupied by a business, number of people supporting the activity is collected through a land use and employment survey by the Western Australia government. ⁴⁶
21	Substantial Completion	Local Economic Activity	% Revenue Trends Growth	Proportional growth in revenues from local economic activities	Year-on-year growth percentage	X% growth	Bi-annually	Financial Reports	Finance Department	USA: Downtown Portland Business Survey An annual survey conducted by a business-owners and community association surveys Portland Downtown businesses on revenue, lease-terms, relocation plans and residents on livability, cleanliness, and life satisfaction. ⁴⁷
22	Substantial Completion	Local Economic Activity	# of Job Vacancies	Total number of job openings in the local area	Sum of Total Vacancies	X vacancies/month	Monthly	Job Listings	Human Resources	Australia: Western Australia Data on types of business activities, floor space occupied by a business, number of people supporting the activity is collected through a land use and employment survey. ⁴⁸
23	Substantial Completion	Local Economic Activity	% Tax Revenues Growth	Proportional growth in local tax revenues	Year-on-year growth percentage	X% growth	Annually	Tax Collection Data	Tax Department	UK: Elizabeth Line A land value capture study conducted by UofT School of Cities and Infrastructure Canada highlights the tax-based levy model used by the Greater London Authority to generate revenue for the Elizabeth Line and its surrounding TOCs, including a business rate supplement for medium-large businesses, a community infrastructure tax on commercial and private residential developments. ⁴⁹
24	Post-Completion	Community Satisfaction	Average Life Satisfaction Score	Mean score representing the life satisfaction of community members	Average Score Calculation	Score > X	Bi-annually	Satisfaction Surveys	Survey Team	Canada: Statistics Canada A quarterly survey conducted by Statistics Canada on Life Satisfaction, disaggregated by gender and/or province. ⁵⁰

#	Stage	Measure Type	KPI	Description	Calculation Methodology	Benchmark/ Target	Proposed Review Cycle	Data Source	Data Owners	TOC KPI Project / Example
25	Post-Completion	Sustainable Transport Shift	% Modal Split Surveys	Proportion of individuals choosing various modes of transportation	(Public Transport Users / Total Commuters) x 100	X% public transport use	Annually	Transport Data	Transport Department	Canada and U.S.A Across the US, the Mockingbird TOC in Dallas, Redmond TOC in Seattle, Rhode Island Row TOC in Washington DC, Fruitvale Village TOC in San Francisco, Englewood TOC in Denver, Wilshire/Vermont TOC in Los Angeles, and Orenco TOC in Portland were all reported to reduce vehicle trip and parking generation. The City of Calgary did a similar study. ⁵¹
26	Post-Completion	Housing Outcomes	# of Housing Supply	Total number of housing units available	Direct Count	X houses/year	Annually	Housing Registry	Housing Authority	USA: Hudson Bergen Light Rail (HBLR) A report by New Jersey Transit highlights an increase in housing supply from the Hudson Bergen Light Rail TOC. ⁵²
27	Post-Completion	Housing Outcomes	Diversity Index of Housing Types	Measure of the variety of housing types available	Diversity Score Calculation	Index > X	Annually	Housing Data	Housing Authority	USA: Atlanta BeltLine The Atlanta BeltLine corporation cites the active tracking of a number of metrics such as the number of affordable housing units created/preserved, legacy families receiving tax abatements, preservation of single-family homes, living wage jobs, new businesses legacy business expansions, development jobs, investments going to minority-owned businesses, small business contracts, local artists and culture organizations supported; community engagement events, types of engagement opportunities, awareness of TOC vision, park acreage in surrounding areas, environmental clean-ups, public art installations. ⁵³
28	Post-Completion	Housing Outcomes	Diversity Index of Tenure Options	Measure of the variety of housing tenure options available	Diversity Score Calculation	Index > X	Annually	Housing Data	Housing Authority	USA: Atlanta BeltLine The Atlanta BeltLine corporation cites the active tracking of a number of metrics such as the number of affordable housing units created/preserved, legacy families receiving tax abatements, preservation of single-family homes, living wage jobs, new businesses legacy business expansions, development jobs, investments going to visible minority-owned businesses, small business contracts, local artists and culture organizations supported; community engagement events, types of engagement opportunities, awareness of TOC vision, park acreage in surrounding areas, environmental clean-ups, public art installations. ⁵⁴
29	Post-Completion	Housing Outcomes	% of Affordable Housing Units	Proportion of housing units deemed affordable	(Affordable Units / Total Units) x 100	> X%	Annually	Housing Pricing Data	Housing Authority	USA: Various Examples A report conducted by Atlanta BeltLine Inc. cites baseline housing targets for the TOC and outlines recommendations to achieve them in time. Moreover, indexes such as the Location Affordability Index from the US Housing and Urban Development provide estimates of household housing and transportation costs at the neighborhood level along with constituent data on the built environment and demographics. ⁵⁵
30	Post-Completion	Economic Impact	% Job Growth	Proportional growth in local employment	Year-on-year growth percentage	X% growth	Annually	Employment Records	Economic Development Department	USA: Six Gold Line Light Rail A report commissioned by the Foothill Gold Line Construction Authority suggests that TOCs close to Pasadena's six Gold Line stations have contributed \$2.6 billion in economic gains, upheld around 16,300 positions, and garnered \$52.9 million in taxes. ⁵⁶
31	Post-Completion	Economic Impact	Average Increase in Property Value	Average increase in local property values	Average Value Increase	\$X increase	Annually	Property Assessment Data	Property Assessment Authority	USA: Renton Transit Center A dissertation for the University of Washington studies the increase in residential property value in King County, Washington because of the Renton Transit Center TOC. ⁵⁷

#	Stage	Measure Type	KPI	Description	Calculation Methodology	Benchmark/ Target	Proposed Review Cycle	Data Source	Data Owners	TOC KPI Project / Example
32	Post-Completion	Economic Impact	% Growth in Sales Revenue	Proportional growth in sales revenues	Year-on-year growth percentage	X% growth	Bi-annually	Sales Data	Chamber of Commerce	USA: Downtown Portland Business Survey An annual survey conducted by a business-owners and community association surveys Portland Downtown businesses on revenue, lease-terms, relocation plans and residents on livability, cleanliness, life satisfaction. ⁵⁸
33	Post-Completion	Economic Impact	Diversity Index of Businesses	Measure of the diversity of businesses in the local area	Diversity Score Calculation	Index > X	Annually	Business Registry	Chamber of Commerce	USA: Atlanta BeltLine The Atlanta BeltLine corporation cites the active tracking of a number of metrics such as the number of affordable housing units created/preserved, legacy families receiving tax abatements, preservation of single-family homes, living wage jobs, new businesses legacy business expansions, development jobs, investments going to minority-owned businesses, small business contracts, local artists and culture organizations supported; community engagement events, types of engagement opportunities, awareness of TOC vision, park acreage in surrounding areas, environmental clean-ups, public art installations. ⁵⁹
34	Post-Completion	Cost-Effectiveness	P-3 Revenue Amount	Total revenue generated from public-private partnerships	Direct Value	\$X revenue/year	Annually	Financial Statements	Developer	UK: Elizabeth Line; Toronto: City of Toronto – Residential Development Charges A land value capture study conducted by UofT School of Cities and Infrastructure Canada highlights the tax-based levy model used by the Greater London Authority to generate revenue for the Elizabeth Line and its surrounding TOCs, including a business rate supplement for medium-large businesses, a community infrastructure tax on commercial and private residential developments. The study also notes that the City of Toronto introduced a one-time development charge on all new housing/commercial units, paid during building permit issue. ⁶⁰
35	Post-Completion	Cost-Effectiveness	% Cost Savings	Proportion of budget savings realized during the project	(Budgeted - Actual Expenditure) / Budgeted	X% savings	Quarterly	Budget vs Actual Expenditure Data	Developer	Hong Kong: MTR The Hong Kong MTR Corporation states cost savings generated by TOC in its earnings statement as part of the 2018 Annual Report. ⁶¹
36	Post-Completion	Cost-Effectiveness	Fare Revenue Amount	Total revenue generated from transit fares	Direct Value	\$X revenue/year	Monthly	Fare Collection Data	Transit Authority	USA: Bay Area Rapid Transit An annual factsheet presented by the San Francisco Bay Area Rapid Transit authority presents statistics such as average weekday ridership, fares, discounts, along with financial performance, service standards, and other informative figures. ⁶²
37	Post-Completion	Sustainability	Average Energy Usage	Average energy consumption rate for the area	Direct Count or Rate	X kWh/person	Monthly	Energy Consumption Data	Energy Department	UK: Central Saint Giles An environmental assessment conducted by the Architectural Association School of Architecture – London highlights the indoor and outdoor environmental quality along with energy performance of the Central St. Giles TOC through a mix of quantitative and qualitative observations. ⁶³
38	Post-Completion	Sustainability	# of Bike-Lanes, Green Spaces	Total number of bike lanes and green spaces established	Direct Count	X lanes/spaces	Annually	City Planning Data	City Planning Department	USA: Atlanta BeltLine The Atlanta BeltLine corporation cites the active tracking of several metrics such as the number of community engagement events, types of engagement opportunities, awareness of TOC vision, park acreage in surrounding areas, environmental clean-ups, public art installations. ⁶⁴

6. REFERENCES

- ¹ “Transit-Oriented Development (TOD) Scores - World Urban Forum (WUF) 2014.” Institute for Transportation and Development Policy, December 11, 2014. <https://www.itdp.org/2014/04/08/tod-scores/>; Ollivier, Gerald, Ashish Ghatge, Kaira Bankim, and Prerna Mehta. “Transit-Oriented Development Implementation Resources and Tools, 2nd Edition.” *World Bank*, 2021. <https://doi.org/10.1596/34870>.
- ² “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine. Accessed October 16, 2023. <https://beltline.org/the-project/project-goals/equity-and-inclusion/#measuring-our-progress>; “2020 Downtown Portland Business Survey.” Downtown Portland Clean & Safe District, January 27, 2021. <https://downtownportland.org/2020-business-survey/>.
- ³ Baker, Vivian E. “NJ Transit & Value Capture: Experience, Analysis & Strategies for the ...” New Jersey Transit, October 2011. http://www.railvolution.org/rv2011_pdfs/20111710_10a_ValCapt_Baker.pdf.
- ⁴ “Appendix A: Stakeholder Meeting Summaries - City of Toronto.” City of Toronto, June 2021. <https://www.toronto.ca/wp-content/uploads/2021/06/964d-Appendix-A-Stakeholder-Meeting-Summaries-FINAL-AODA.pdf>; “Community Engagement Summary - Growth Scenarios.” City of Guelph, June 2021. https://guelph.ca/wp-content/uploads/Guelph_Growth_Scenarios_Engagement_Summary_Report_AODA.pdf.
- ⁵ Land Value Capture Study: Paying for Transit Oriented Communities.” Land Value Capture Study: Paying for Transit Oriented Communities | Association of Ontario Land Economists, April 2023. <https://aole.org/news/cib-land-value-capture-study-paying-transit-oriented-communities>.
- ⁶ “Land Use and Employment Surveys.” Western Australian Government. Accessed October 16, 2023. <https://www.wa.gov.au/government/document-collections/land-use-and-employment-surveys>.
- ⁷ BroadwayMalyan, Aurecon, MIC, and CoLab. “Volume 3 - Benchmarking Transit Oriented Development.” The World Bank, 2014. <https://documents1.worldbank.org/curated/en/818701555088451429/pdf/Volume-3-Benchmarking-Transit-Oriented-Development.pdf>.
- ⁸ Leong, Lincoln. “MTR Corporation - 2018 Annual Results.” Hong Kong MTR Corporation Limited, 2019. https://www.mtr.com.hk/archive/corporate/ch/investor/annual2018/mtr_ar2018_en.pdf.
- ⁹ “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine.
- ¹⁰ Pollalis, Spiro N. “Crossrail - Elizabeth Line 1 London Case Study.” Harvard University, 2019. https://research.gsd.harvard.edu/zofnass/files/2019/04/20190327_Crossrail-case-study.pdf.
- ¹¹ “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine.
- ¹² “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine.
- ¹³ BroadwayMalyan, Aurecon, MIC, and CoLab. “Volume 3 - Benchmarking Transit Oriented Development.” The World Bank, 2014. <https://documents1.worldbank.org/curated/en/818701555088451429/pdf/Volume-3-Benchmarking-Transit-Oriented-Development.pdf>.
- ¹⁴ Leong, Lincoln. “MTR Corporation - 2018 Annual Results.” Hong Kong MTR Corporation Limited, 2019.
- ¹⁵ “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine.
- ¹⁶ “Cooperative Agreement by and Between the City of American Fork, Utah and American Fork Redevelopment Agency and AF Utah LLC.” City of American Fork, Utah, November 20, 2016. <https://www.americanfork.gov/DocumentCenter/View/7597/2016-10-34R---AF-Utah-LLC---TOD---Grant-funding?bidId>.
- ¹⁷ “Fruitvale Transit Village Phase II Development Approval.” City of Oakland, California, May 24, 1999. https://cao-94612.s3.amazonaws.com/documents/Fruitvale_Village_P2_Approval.pdf; Dueker, Kenneth J., John Weitz, Michael Bernick, and Robert Cervero. “Transit Villages in the 21st Century.” *Economic Geography* 74, no. 4 (1998): 440. <https://doi.org/10.2307/144337>.
- ¹⁸ “Outreach Summary Report - Boise Zoning Code Rewrite.” City of Boise. Accessed October 16, 2023. <https://www.cityofboise.org/departments/planning-and-development-services/planning-and-zoning/zoning-code-rewrite/project-milestones/module-1-plus-2-revised/outreach-summary-report-revised-modules-1-plus-2/>; “Modern Zoning Code.” City of Boise, Idaho, June 22, 2023. https://issuu.com/cityofboise/docs/city_of_boise_approved_zoning_code.
- ¹⁹ City of Toronto. “Transit-Oriented Communities.” City of Toronto, May 25, 2023. <https://www.toronto.ca/services-payments/streets-parking-transportation/transit-in-toronto/transit-oriented-communities/#location=&lat=&lng=>.
- ²⁰ “Fruitvale Village (Phase 2) Ceqa Review.” City of Oakland, California. Accessed October 16, 2023. <https://www.oaklandca.gov/documents/fruitvale-village-phase-2>; “Fruitvale Transit Village Phase II - Initial Study and Environmental Review Checklist.” City of Oakland, December 2008. <https://cao-94612.s3.amazonaws.com/documents/oak036182.pdf>.

-
- ²¹ “Eglinton Crosstown LRT- Project Agreement.” Infrastructure Ontario, July 2015.
https://www.infrastructureontario.ca/49716e/contentassets/ba2e174d25b14bf48610147e2e4c5289/eglinton_crosstown_lrt_project-agreement.pdf.
- ²² “Ontario Moves Forward with East Harbour and Four Other Transit-Oriented Communities.” Newsroom - Ontario Government, April 12, 2022. <https://news.ontario.ca/en/release/1002017/ontario-moves-forward-with-east-harbour-and-four-other-transit-oriented-communities>.
- ²³ “Outreach Summary Report - Module 1.” City of Boise, Idaho, July 2022. https://www.cityofboise.org/media/12946/zcr_module-1-outreach-survey-report_addendum-all-comments.pdf.
- ²⁴ “Appendix A: Stakeholder Meeting Summaries - City of Toronto.” City of Toronto, June 2021.
- ²⁵ “Summary of Community Engagement - Roosevelt Station Transit-Oriented Development.” SoundTransit - City of Seattle - Roosevelt Neighborhood Association. Accessed October 16, 2023.
https://www.soundtransit.org/st_sharepoint/download/sites/PRDA/FinalRecords/2017/Roosevelt%20TOD%20Outreach%20Summary%20Final.pdf.
- ²⁶ “Public Engagement Summary - Spokane Transit Oriented Development Study.” City of Spokane, Washington State, 2020.
<https://static.spokanecity.org/documents/projects/transit-oriented-development-study/tod-public-engagement-summary.pdf>.
- ²⁷ “Agenda Center - Agenda & Meeting Minutes.” Greater Portland Council of Governments. Accessed October 16, 2023.
<https://www.gpcog.org/agendacenter>.
- ²⁸ “Community Engagement Summary - Growth Scenarios.” City of Guelph, June 2021.
- ²⁹ “Assessment Framework.” Infrastructure Australia, March 2018. https://www.infrastructureaustralia.gov.au/sites/default/files/2019-06/infrastructure_australia_assessment_framework_2018.pdf.
- ³⁰ “Outreach Summary Report - Boise Zoning Code Rewrite.” City of Boise.; “Modern Zoning Code.” City of Boise, Idaho, June 22, 2023.
- ³¹ “Appendix A: Stakeholder Meeting Summaries - City of Toronto.” City of Toronto, June 2021.
- ³² “Summary of Community Engagement - Roosevelt Station Transit-Oriented Development.” SoundTransit
- ³³ “Public Engagement Summary - Spokane Transit Oriented Development Study.” City of Spokane, Washington State, 2020.
- ³⁴ “Agenda Center - Agenda & Meeting Minutes.” Greater Portland Council of Governments.
- ³⁵ “Outreach Summary Report - Boise Zoning Code Rewrite.” City of Boise.; “Modern Zoning Code.” City of Boise, Idaho, June 22, 2023.
- ³⁶ “Appendix A: Stakeholder Meeting Summaries - City of Toronto.” City of Toronto, June 2021.
- ³⁷ “Summary of Community Engagement - Roosevelt Station Transit-Oriented Development.” SoundTransit
- ³⁸ “Public Engagement Summary - Spokane Transit Oriented Development Study.” City of Spokane, Washington State, 2020.
- ³⁹ “Agenda Center - Agenda & Meeting Minutes.” Greater Portland Council of Governments.
- ⁴⁰ “Ridership Report.” American Public Transportation Association, September 21, 2023. <https://www.apta.com/research-technical-resources/transit-statistics/ridership-report/>.
- ⁴¹ Malloes, Rob. “Transport Connectivity Dataset.” NIC, September 23, 2020. <https://nic.org.uk/studies-reports/national-infrastructure-assessment/national-infrastructure-assessment-1/dataset/>.
- “Transport Connectivity Discussion Paper.” UK National Infrastructure Commission, February 2014AD.
<https://nic.org.uk/app/uploads/Transport-Connectivity-discussion-paper.pdf>.
- ⁴² “Transit-Oriented Development (TOD) in Maryland.” Maryland ArcGIS. Accessed October 16, 2023.
<https://maryland.maps.arcgis.com/apps/Cascade/index.html?appid=e4e81f4f629e4bed914b66cb6c15ad38>.
- ⁴³ Transport, Department for. “Transport Statistics Great Britain: 2019.” GOV.UK, December 17, 2019.
<https://www.gov.uk/government/statistics/transport-statistics-great-britain-2019>.
- ⁴⁴ “Land Use and Employment Surveys.” Western Australian Government.; “Fruitvale Village I - Case Study.” Urban Land Institute, November 2005. <https://casestudies.uli.org/wp-content/uploads/2015/12/C035004.pdf>.
- ⁴⁵ “Land Use and Employment Surveys.” Western Australian Government.; “Fruitvale Village I - Case Study.” Urban Land Institute, November 2005
- ⁴⁶ “Land Use and Employment Surveys.” Western Australian Government.; “Fruitvale Village I - Case Study.” Urban Land Institute, November 2005
- ⁴⁷ “2020 Downtown Portland Business Survey.” Downtown Portland Clean & Safe District, January 27, 2021.
<https://downtownportland.org/2020-business-survey/>.
- ⁴⁸ “Land Use and Employment Surveys.” Western Australian Government.; “Fruitvale Village I - Case Study.” Urban Land Institute, November 2005

-
- ⁴⁹ “Land Value Capture Study: Paying for Transit Oriented Communities.” Land Value Capture Study: Paying for Transit Oriented Communities | Association of Ontario Land Economists, April 2023. <https://aole.org/news/cib-land-value-capture-study-paying-transit-oriented-communities>.
- ⁵⁰ Statistics Canada. Table 13-10-0843-01 Life satisfaction by gender and province
- ⁵¹ Hamidi, Shima, Roya Etminani, Ladan Mozaffarian, Sanggyun Kang, and Reid Ewing. “Trip and Parking Generation at Transit-Oriented Developments: Mockingbird Tod in Dallas, Texas.” Trip and parking generation at transit-oriented developments: Mockingbird TOD in Dallas, Texas, March 31, 2020. <https://trid.trb.org/view/1697090>; “Trip Generation Rates of Transit Oriented Development-Apartments.” City of Calgary, February 2017. <https://www.calgary.ca/content/dam/www/transportation/tp/documents/planning/transportation-data/tmr-tod-trip-generation-rate-summary.pdf>.
- ⁵² Baker, Vivian E. “NJ Transit & Value Capture: Experience, Analysis & Strategies for The ...” New Jersey Transir, October 2011. http://www.railvolution.org/rv2011_pdfs/20111710_10a_ValCapt_Baker.pdf.
- ⁵³ “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine. Accessed October 16, 2023. <https://beltline.org/the-project/project-goals/equity-and-inclusion/#measuring-our-progress>.
- ⁵⁴ “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine.
- ⁵⁵ Location affordability index - hud exchange. Accessed October 16, 2023. <https://www.hudexchange.info/programs/location-affordability-index/>; “Creating and Preserving Affordable Housing Through Robust Public/Private Collaboration.” Atlanta Beltline - Affordable Housing Working Group. Accessed October 16, 2023. <https://beltline.org/wp-content/uploads/2019/03/Affordable-Housing-Working-Group-Report-v14-Single-Pages-ABI.pdf>.
- ⁵⁶ Beacon Economics. Economic and Fiscal Impacts of Transit Oriented Development At Gold Line Foothill Extension Pasadena Stations, 201AD.
- ⁵⁷ Xu, Simin. “The Impact of Transit-Oriented Development on Residential Property Value in King County, WA.” University of Washington - Masters Thesis, 2015. https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/34203/Xu_washington_02500_14616.pdf.
- ⁵⁸ “2020 Downtown Portland Business Survey.” Downtown Portland Clean & Safe District, January 27, 2021.
- ⁵⁹ “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine.
- ⁶⁰ “Land Value Capture Study: Paying for Transit Oriented Communities.” Land Value Capture Study: Paying for Transit Oriented Communities | Association of Ontario Land Economists, April 2023. <https://aole.org/news/cib-land-value-capture-study-paying-transit-oriented-communities>; “Development Charges Rates - City of Toronto.” City of Toronto. Accessed October 16, 2023. <https://www.toronto.ca/wp-content/uploads/2020/10/8e15-development-charges-rates-november-2020.pdf>.
- ⁶¹ Leong, Lincoln. “MTR Corporation - 2018 Annual Results.” Hong Kong MTR Corporation Limited, 2019. https://www.mtr.com.hk/archive/corporate/ch/investor/annual2018/mtr_ar2018_en.pdf.
- ⁶² “BART Facts 2022 - Bay Area Rapid Transit.” Bay Area Rapid Transit - San Francisco, 2023. <https://www.bart.gov/sites/default/files/docs/BARTFacts2022.pdf>.
- ⁶³ Cotta, João Oliveira. “Central Saint Giles - Environmental Analysis Report.” Architectural Association School of Architecture, February 23, 2014. https://issuu.com/joacotta/docs/aa-sed_central_st_giles_report.
- ⁶⁴ “Atlanta BeltLine Project Goals - Equity and Inclusion.” Atlanta BeltLine.