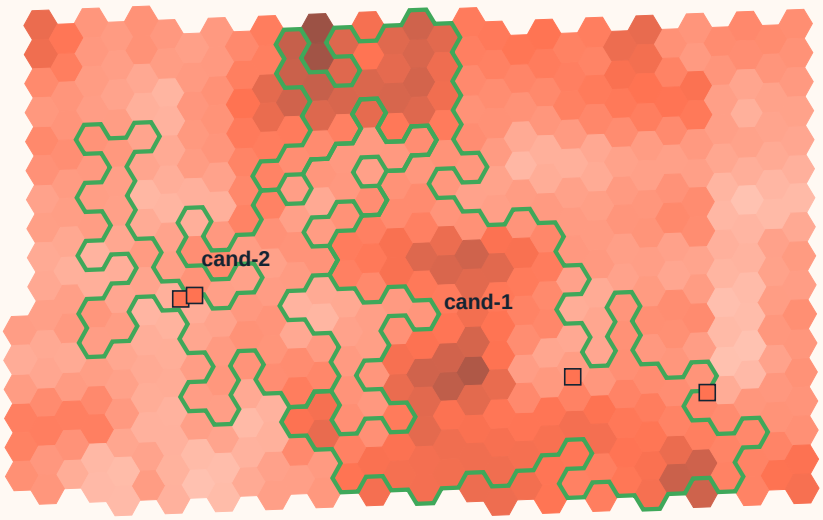
OPENTRANSIT LAB

Service Opportunity Brief

Long Beach, CA | Modeled estimate, not observed data

FAKE DATA (synthetic)

TRANSIT GAP INDEX AND CANDIDATE ZONES



Gap index 0 — 100 | hub | candidate zone

STUDY AREA AT A GLANCE

Residents (modeled from block groups)	**190,456**
Jobs (workplace counts)	**138,917**
High-need cells (top fifth of need)	**104 of 520**
Median jobs reachable in 45 min	**79,246**
Modeled on-demand trips per day	**4,268**

CANDIDATE ZONES (ILLUSTRATIVE)

Zone	Sq mi	Trips/day	Fleet	Hubs
cand-1	6.0	623	13	Belmont Shore, 2nd
cand-2	2.4	235	5	Downtown Long Beach A

SCENARIOS

Scenario	Trips/day	Pass./VRH	Cost/trip
baseline	667	3.6	$12.39
extension	727	3.2	$14.18
candidate	1,013	3.6	$12.78

HOW TO READ THIS

The gap index (0-100) combines need (zero-car households, seniors, low income, disability) with poor supply (distance to frequent transit, few jobs reachable in 45 minutes). Candidate zones grow from rail and bus hubs over cells with high gap and high modeled demand, within the area targets in planning.yaml. Trips, fleet and costs are modeled estimates for discussion, not forecasts or recommendations. Pass./VRH means passengers per vehicle-revenue-hour. The methods page lists data sources and vintages.

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Methods appendix

DATA SOURCES AND VINTAGES

Dataset	Mode	Vintage	License	Synthetic
acs_block_groups	fixture	synthetic	CC0 (synthetic)	yes (FAKE DATA)
gtfs_lametro-rail	fixture	synthetic	CC0 (synthetic)	yes (FAKE DATA)
gtfs_lbt	fixture	synthetic	CC0 (synthetic)	yes (FAKE DATA)
lodes_od	fixture	synthetic	CC0 (synthetic)	yes (FAKE DATA)
lodes_wac	fixture	synthetic	CC0 (synthetic)	yes (FAKE DATA)
lodes_xwalk	fixture	synthetic	CC0 (synthetic)	yes (FAKE DATA)
osm_pois	fixture	synthetic	CC0 (synthetic)	yes (FAKE DATA)

Grid H3 hexagons at resolution 9 (520 cells). Block-group counts are split by area; jobs are placed at census-block points; points of interest are counted per cell.

Access Method: simple_transit. Walk to a stop at 4.8 km/h (at most 800 m), wait half the AM peak headway, ride at 18 km/h (bus) or 35 km/h (rail), 5 minutes per transfer, walk to the destination. r5py (R5 routing engine) is used instead when enabled.

Gap index Weighted sum of min-max normalised need shares and poor-supply measures, scaled 0-100; weights from planning.yaml: {'zero_car': 0.25, 'seniors': 0.2, 'low_income': 0.2, 'disability': 0.1, 'distance_to_frequent_transit': 0.15, 'low_job_access': 0.1}.

Demand Trip ends = households x 5.6 + jobs x 1.6 (verify); gravity exp(-0.4 x km); scaled by 1.14 so LODES commutes are 20% of trips; on-demand capture 0.008 x (1 + 1.5 x gap/100), none beyond 6 km, halved under 0.8 km. 24 hourly shares sum to 1.

Zones Grown from hubs over high gap x demand cells within the target area. Fleet = ceil(peak-hour trips / target passengers per vehicle-revenue-hour) plus 15% spare.

Costs Same cost model as the OpenTransit funding package: drivers (revenue hours x 1.10 x wage x (1 + overhead)), leasing, insurance, energy and maintenance per mile at 11 mph, flat software fee, overhead percentage. Fare elasticity -0.3 around $2 (verify).

Limits Straight-line distances, no street network in the fallback; LODES covers primary jobs only; capture rates are assumptions until calibrated with observed trips. Observed cells with fewer than 10 trips are never shown.

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